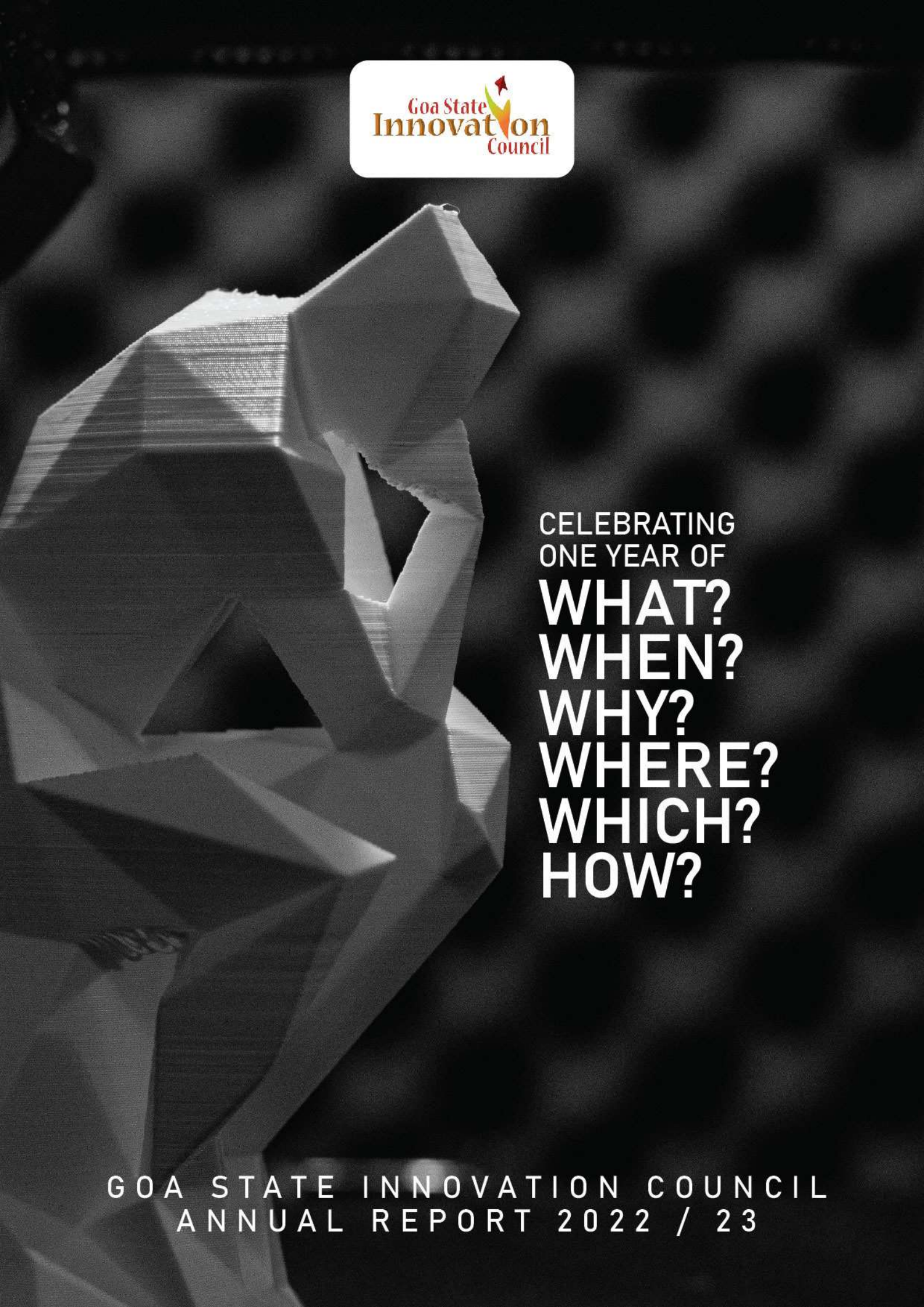
Goa State
Innovation
Council
CELEBRATING
ONE YEAR OF
WHAT?
WHEN?
WHY?
WHERE?
WHICH?
HOW?
GOA STATE INNOVATION COUNCIL
ANNUAL REPORT 2022 / 23

Goa State Innovation Council

# ANNUAL REPORT 2022-23

Atanasio Monserrate
Minister for Revenue, Labour & Waste Management
Government of Goa

**Ref No: 1/2023-Min (Revenue)/308** **Date: -05/07/2023**

Dear fellow innovators, entrepreneurs, and stakeholders,

It gives me great pleasure to share my heartfelt appreciation for the remarkable efforts of the Goa State Innovation Council (GSINC) in fostering a thriving ecosystem for innovation and startups in our beautiful state.

Since its inception, GSINC has consistently spearheaded initiatives to promote and support innovation and entrepreneurship across the state. One notable initiative that deserves special mention is the Virtual Innovation Register (VIR), an innovative platform hosted on the Goa State Innovation Council website, www.goastateinnovationcouncil.com. The VIR serves as a gateway, bringing together the imaginative minds, determined entrepreneurs, and creative thinkers of Goa, enabling them to pool their talents, ideas, and drive to create sustainable and scalable business opportunities.

I invite each and every one of you to actively participate in this movement, to become agents of change, and help Goa ascend to the status of the innovation capital of our great nation. Together, let us harness the untapped potential that resides within our state and unlock new avenues of growth and prosperity.

I extend my heartfelt gratitude to the entire GSINC team, comprising dedicated professionals and visionary individuals, who have worked tirelessly to drive the agenda of innovation and startups in Goa. Your commitment and passion have been instrumental in the success we have achieved thus far.

Wishing you all continued success in your endeavors.

Warm regards,

**(Atanasio Monserrate)**
Minister for Revenue, Labour
& Waste Management
Government of Goa

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201, Ministerial Block, Second Floor, Secretariat,
Porvorim, Goa, India. 403 521

Mobile: +91 9822100010
Tel.: 0832 2419829/2419532 Fax: 0832 2419836
Email: min-rev.goa@gov.in

**Miramar Office Address**
Shop No. 8, 9, 10, Kamat Mansion,
Miramar, Goa, India. 403 001

GOA STATE INNOVATION COUNCIL
www.goastateinnovationcouncil.com

**Jose Manuel Noronha**
*Chairman*

## Chairman's Message

I am pleased to present the Annual Report of the Goa State Innovation Council for the year 2022-23. One of the main objectives of the Council has been to build an ecosystem which will sustain innovation and this has been successfully achieved over the years. A large number of programmes have been conducted for the benefit of youth and the details of these programmes are available in the Report. During the year, the Council also collaborated with the Indian Innovators Association and IBS Global, Poland to organize "INEX 2022' at the Ravindra Bhavan, Margao which saw more than seven thousand five hundred youth attending and learning various facets of innovation.

I wish to place on record my sincere gratitude to the Hon'ble Chief Minister, Dr. Pramod Sawant, Hon'ble Minister for Science and Technology Shri Atanasio Monserrate for assisting the Council in achieving its objectives

(Jose Manuel Noronha)

**Department of Science & Technology**
*Government of Goa*
*(O) 0832 222 3117 | (E) chajrman@gsic.in*

**Secretariat**
*Don Bosco College of Engineering*
*Fatorda - Margao*

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# INDEX

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# 01 INTRODUCTION

# Chapter 01
# INTRODUCTION

"All truly great thoughts are conceived
while walking."

- Friedrich Nietzsche

## 1.1 General Introduction

The Goa State Innovation Council (GSInC) was set up by the Directorate of Science and Technology of the Government of Goa under the auspices of the National Innovation Council and is responsible for creating a conducive ecosystem for innovation and entrepreneurship in the state.

The primary objective of GSInC is to encourage and support the development of new technologies, products, and services through innovation, research, and development. The council aims to foster collaboration among academia, industry, and government agencies to promote innovation-driven economic growth and social development.

The GSInC plays a crucial role in promoting innovation and entrepreneurship in Goa and fostering economic and social development in the state by identifying and promoting innovative ideas and technologies that can be commercialized and implemented for societal and economic benefits. It also provides a platform for innovators, entrepreneurs, and startups to connect with mentors, investors, and other stakeholders in the innovation ecosystem.

Moreover, through its various programs and initiatives, the GSInC aims to create an innovation culture in Goa and develop a knowledge-based economy. The council also works towards creating a skilled workforce for the future and promoting sustainable development in the state.

**Objectives of the Goa State Innovation Council**

- Support the Government to promote innovation in Science and Technology and strengthen the Innovation ecosystem in the State of Goa.
- Organize seminars, workshops, lectures, and symposia on innovation and related areas.
- Identify, encourage and reward young talent in innovation related to Science and Technology.
- Map opportunities for innovation in the State of Goa.
- Assist in identifying and setting up common facility centres for "Robotics and Coding" at educational institutions.
- Create periodic reports on innovations in the State of Goa.
- Create and maintain the Council Web portal, which includes monitoring and evaluating the Virtual Innovation Register.
- Organize risk capital and venture capital for young innovators in the State of Goa.

- Identify High Net-worth Individuals (HNI) and Angel Investors (AI) and organize periodic “Pitching Sessions” for the innovators of the State with the HNIs and AIs.
- Engage with the Innovation Community to develop ideas and strategies for the growth of Innovation in the State of Goa.
- Connect and develop a closer linkage between National and State Innovation ecosystems.
- To provide financial support for prototyping technology-based innovative projects/ideas under the Virtual Innovation Register (VIR) to make it affordable for students, startups, innovators, research faculty, and entrepreneurs who require necessary support in converting ideas into marketable products.

## 1.2 The Secretariat

The Secretariat of Goa State Innovation Council is established at Don Bosco College of Engineering, Fatorda, Goa. Presently, Goa State Innovation Council Secretariat employs two personnel whose details are given below:

Table: 1.2: Name & Designation of Staff employed by GSInC

| Sr. No. | Name of the Employee | Designation |
|---|---|---|
| 01 | Mr. Sudip Faldesai | Project Officer |
| 02 | Mrs. Valencia Fernandes | Secretarial Assistant |

The Organizational Chart is attached in Annexure I.

Photograph 1:

The Secretariat of Goa State Innovation Council established at Don Bosco College of Engineering, Fatorda


# 02

# CONSTITUTION OF THE COUNCIL

# Chapter 02
# CONSTITUTION OF THE COUNCIL

"If everyone is moving forward together,
then success takes care of itself."

- Henry Ford

To achieve its objectives, the GSInC has appointed distinguished personnel from various sectors, including, academia, industry, and government agencies, as Council Members. These experts and professionals from diverse fields, bring their knowledge and expertise to support the council's initiatives. The following table lists the constitution of the Goa State Innovation Council and its members.

## 2.1 Constitution of the Council

Chairman:

SHRI JOSE MANUEL NORONHA
Chairman, Goa Public Service Commission, Panaji, Goa

Member:

PROF. SUNIL KUMAR SINGH
Director, CSIR-National Institute of Oceanography (NIO), Dona Paula, Goa

Member:

PROF. O. R. JAISWAL
Director, National Institute of Technology Goa

Member:

DR. SUMAN KUNDU
Director, BITS Pilani K K Birla Goa Campus

Member:

MR. SUNEEL ANCHIPAKA, IAS
Director, Department of Information Technology, Government of Goa

Member:

DR. VIVEK KAMAT
Director, Directorate of Technical Education, Porvorim, Goa

Member:

SHRI. BHUSHAN K. SAVAIKAR
Director, Directorate of Education

Member:

DR. M. S. KRUPASHANKARA
Principal, Goa College of Engineering, Farmagudi

Member:

DR. NEENA PANANDIKAR
Principal, Don Bosco College of Engineering, Fatorda

Member:

DR. SUNIL PAUL
Assistant Professor, Indian Institute of Technology Goa

Member:

DR. KAUSTUBH PRIOLKAR
Professor, Department of Physics, Goa University

Member:

SHRI. D. S. PRASHANT
CEO, Forum for Innovation Incubation Research & Entrepreneurship, Fatorda, Goa

Member:

SHRI. BRENDA FERNANDES
Member Secretary, Goa State Council for Science and Environment, Saligao, Goa

Member:

SHRI. SREEDHAR BEVARA
CEO, BMR Innovations

Member:

SHRI. YASHVIT NAIK
Co-Founder & CTO, Teknorix Systems

Member Secretary:

SHRI. LEVINSON MARTINS
Director, Department of Science and Technology, Govt. of Goa

## 2.2 Constitution of the Board

No. 3-191/2011/STE-DIR/
Office of the Director/Ex-Officio, Jt. Secy
(S&T&WM)
Dept. of Sci. Tech. & Waste Management .
Porvorim - Goa.

**Dated:**/10/2021

**ORDER**

1. Read Order No. 9/309/2011HE/SInC/1673 dated 4th August 2011.
2. Read Order No. 3-191/2011/STE-DIR/702 dated 12th September 2013.
3. Read Order No.3-191/2011/STE-DIR/725 dated 18th January 2021.

In supersession of the above referred order, Government is pleased to reconstitute the Goa State Innovation Council (GSInC) comprising the following members:

1. Shri Jose Manuel Noronha, .....Chairman
   Bagbhat, Raia, Salcete, Goa
2. Director, ....Member
   Indian Institute of Technology,
   Farmagudi, Ponda Goa or his nominee
3. Director, ....Member
   National Institute of Technology,
   Farmagudi, Ponda Goa or his nominee
4. Director,
   National Institute of Oceanography,
   Dona Ponda, Goa or his nominee
5. Director, ....Member
   Birla Institute of Technology & Science,
   Zuarinagar, Sancoale or his nominee
6. Director, ....Member
   Department of Information Technology,
   Government of Goa,
   Altinho, Panaji - Goa.
7. Director, ....Member
   Directorate of Higher Education,
   Government of Goa,
   Porvorim, Goa

8. Director, ....Member
Directorate of Technical Education,
Government of Goa,
Porvorim, Goa.

9. Principal, ....Member
Goa College of Engineering,
Farmagudi, Ponda, Goa.

10. Principal, ....Member
Don Bosco College of Engineering,
Fatorda, Goa

11. Shri Shreedhar Bevara, .... Member
CEO,
BMR Innovations,
Vishakapatnam, Andhra Pradesh

12. Shri D.S. Prashant, .... Member
CEO,
Forum for Innovation, Incubation, Research and Entrepreneurship,
Fatorda, Goa.

13. Shri Kastubh Priolkar, .....Member
Professor, Department of Physics,
Goa University, Taleigao Plateau, Goa

14. President .....Member
Goa Technology Association,
Ponda, Goa or his nominee

15. Member Secretary, .... Member
Goa State Council for Science and Technology
Department of Science and Technology,
Government of Goa,
Saligao, Bardez - Goa.

16. Director, .... Member Secretary
Department of Science and Technology & Waste
Management,
Government of Goa,
Saligao, Bardez - Goa.

Following shall be the **'Terms of Reference'** for the council:-

1. Support the Government to promote innovation in Science and Technology and to strengthen the Innovation ecosystem in the State of Goa.
2. Organize seminars, workshops, lectures and symposia on innovation and related areas.
3. Identify, encourage and reward young talent in innovation related to Science and Technology.
4. Map opportunities for innovation in the State of Goa.
5. Assist in identifying and setting up common facility centers for " Robatics and Coding" at educational institutions.
6. Create periodic reports on innovations in the State of Goa.
7. Create and maintain the Council Web portal which includes monitoring and evaluating the Virtual Innovation Register.
8. Organize risk capital and venture capital for young innovators in the State of Goa.
9. Identify High Networth Individuals (HNI) and Angel Investors (AI) and organize periodic "Pitching Sessions" for the innovators of the State with the HNIs and AIs.
10. Engage with the Innovation Community to develop ideas and strategies for the growth of Innovation in the State of Goa.
11. Connect and develop closer linkage between National and State Innovation ecosystems.
12. To provide financial support for prototyping technology based innovative projects/ideas under the Virtual Innovation Register (VIR) to make it affordable for students, startups, innovators, research faculty and entrepreneurs who require necessary support in converting ideas into marketable products.

1/C

The Non Official members of the Council shall be paid sitting fees @ Rs.2000/- per sitting. Outstation Members will be paid TA/DA as per prevalent rules in addition to sitting fees.

(Levinson J. Martins)
**Director (S&T &WM) / Ex-Officio,**
**Jt. Secretary to Government**

**To,**
**All the Members.**

**Copy to:**

1. P.S. to Secretary for Hon'ble Chief Minister, Government of Goa, Secretariat, Porvorim Goa.
2. O.S.D to Hon'ble Minister for Science & Technology & Waste Management, Secretariat, Porvorim Goa.
3. P.S. to Chief Secretary, Government of Goa, Secretariat, Porvorim Goa.
4. P.A to Secretary, Science & Technology & Waste Management, Government of Goa, Secretariat, Porvorim Goa.
5. The Director of Accounts, Panaji Goa.
6. Guard File.
7. Order File.
8. O/c.

# 03

# MEETINGS OF THE COUNCIL

# Chapter 03
# Meetings of the Council

"Stop thinking, and end your problems.."

- Lao Tzu

## 3.1 Meeting of the Council

During the year under the report, the Goa State Innovation Council held three Council Meetings under the reconstituted Council. The details of the meeting held during the year are presented in the table below:

Table: 3.1: List of Goa State Innovation Council meetings

| Sr. No. | Sr. No. of the Meeting | Date of Meeting | Venue |
|---|---|---|---|
| 1 | 22nd | 24/05/2022 | Don Bosco College of Engineering, Fatorda |
| 2 | 23rd | 12/10/2022 | Online Meeting |
| 3 | 24th | 30/03/2023 | Don Bosco College of Engineering, Fatorda |

## 3.2 Extracts of minutes of 22nd Meeting of the Council held during the year under report

| Meeting Agenda | |
|---|---|
| Purpose: The 22nd Members meeting of the Goa State Innovation Council | |
| Objectives: To follow up on the decisions of the previous meeting and to discuss the agenda as mentioned. | |
| Location: Ground Floor, Conference Room, Next to Civil Department, Don Bosco College of Engineering, Fatorda | |
| Date & Time: 24th May 2022 & 9:30 am | |
| **Agenda Item** | **Who** |
| 1. Reading and confirming the minutes of the last meeting | |
| 2. Strengthening of GSInC<br>2.1 Appointment of Staff<br>2.2 Purchase of Office furniture & IT equipment<br>2.3 Proposal for AR/VR & Media Lab at Don Bosco College of Engineering, Fatorda | Project Officer |
| 3. Proposal for creating Subcommittees<br>3.1 Subcommittees for Virtual Innovation Register (VIR)<br>3.2 Subcommittees for Provisional Patent Scheme<br>3.3 Any other committee to be decided by the Council | Project Officer |
| 4. Discussion on Identifying and setting up common facility centres for “Robotics and Coding” at educational institutions | Project Officer |
| 5. Supplementary Budget Proposal for GSInC | Project Officer |
| 6. Any other matter with the permission of the Chair | Project Officer |

## MINUTES OF 22ND MEETING OF THE COUNCIL

The following members were present at the meeting:

| | | |
|---|---|---|
| 1 | SHRI. JOSE MANUEL NORONHA<br>Chairman, Goa Public Service Commission, Panaji, Goa | Chairman |
| 2 | PROF. SUNIL KUMAR SINGH<br>Director, CSIR-NIO, Goa | Member |
| 3 | DR. VIVEK B. KAMAT<br>Director, Directorate of Technical Education, Porvorim, Goa | Member |
| 4 | DR. R.B. LOHANI<br>Principal, Goa College of Engineering, Farmagudi, Ponda, Goa | Member |
| 5 | PROF. SUMAN KUNDU<br>Director, BITS Pilani, Goa | Member |
| 6 | DR. NEENA PANANDIKAR<br>Principal, Don Bosco College of Engineering, Fatorda, Goa | Member |
| 7 | SHRI KASTUBH PRIOLKAR<br>Professor, Department of Physics, Goa University | Member |
| 8 | DR. SUNIL PAUL<br>Assistant Professor, Indian Institute of Technology Goa | Member |
| 9 | SHRI D S PRASHANT<br>CEO, FiiRE, Goa | Member |
| 10 | SHRI SHREEDHAR BEVARA<br>CEO, BMR Innovations, Vishakapatnam, Andhra Pradesh | Member |
| 11 | SHRI YASHVIT NAIK<br>Co-Founder & CTO, Teknorix Systems | Member |
| 12 | SHRI. LEVINSON MARTINS<br>Director, Department of Science, Technology & Waste Management, Govt. of Goa, Porvorim, Goa | Member Secretary |
| 13 | SHRI SAIRAJ B DESAI<br>Assistant Director, Directorate of Higher Education, Goa | Invitee |
| 14 | SMT BRENDA FERNANDES<br>Project Scientist, Goa State Council of Science and Technology, Goa | Invitee |

Prof. Gopal Mugeraya and Ms. Ankita Anand could not attend the meeting and were granted leave of absence. Shri Sreedhar Bevara and Prof. Sunil Kumar Singh attended the meeting online. Thereafter, Chairman welcomed the members of the Goa State Innovation Council for the meeting and Shri Levinson Martins, Member Secretary introduced the agenda.

1. At the outset, the minutes of the meeting held on 12th Jan, 2022 were read and confirmed.

2. The Chairman informed the members that the Government of Goa had recommended around eight innovative projects from the State of Goa which were being implemented by the Government of Goa and the Virtual Innovation Register of the Goa State Innovation Council was one such project to be considered for an award under Innovations category on Civil Services day held on 21st April 2022 at New Delhi. He further mentioned that around 840 proposals in total from across the country were submitted to the Ministry of Personnel, Public Grievances & Pensions, Department of Administrative Reforms & Public Grievances, Government of India at New Delhi out of which under the State award category twelve innovations were published in the e-coffee table book and the Goa State Innovation Council's Virtual Innovation Register was one such innovation to be published in this book titled 'Cutting-edge Transformations'. Members appreciated this achievement of the council and urged that this initiative be strengthened and its utility be brought to the attention of all stakeholders in the state.

3. Strengthening of Goa State Innovation Council

a) It was informed that the activities of the Council were increasing and there was a need felt to appoint additional staff to carry out these activities. Member Secretary proposed that the council comprise the following staff structure:

- Program Manager
- Project Officers (2 Nos.)
- Senior Assistant
- Junior Assistant

Further, while discussing this proposal, it was informed that presently the Council operates from Don Bosco College of Engineering with the following staff:

- Project Officer
- Secretarial Assistant

The members discussed this proposal at length, and it was decided to propose to the government that the following staff be approved for the appointment and they be paid salaries as under:

| Sr. | Role | Nos | Salary per month |
|---|---|---|---|
| 01 | Program Manager | 1 | Rs 75,000.00 |
| 02 | Project Officers | 2 | Rs 35,000.00 |
| 03 | Senior Assistance | 1 | Rs 30,000.00 |
| 04 | Junior Assistance | 1 | Rs 20,000.00 |

It was further decided that an enhanced budget be prepared to accommodate these new positions, and the Project officer was directed to submit a supplementary budget amounting to Rs 100 lakhs to the Director of the Department of Science, Technology & Waste Management Government of Goa so that the same could be considered in the supplementary budget during the monsoon assembly session.

b. The Project officer informed that there was a need to purchase more office furniture and IT equipment for the Council Secretariate, and after discussions, it was approved to purchase the following Items:

| | | |
|---|---|---|
| 1 | IT equipment | Windows Desktop, Apple Macbook Air (2 nos), Apple Macbook Pro, Photocopying Machine, Colour Multifunctional Printers |
| 2 | Office Furniture | Office Table, Chairs, Office Storage Cabinets & Cupboards |
| 3 | Prototyping Lab | Windows Desktop, Multifunctional Speakers system, Office Table, Chairs, Office Storage Cabinets & Cupboards |

c. It was proposed that an AR/VR and Media Lab be established at the Don Bosco College of Engineering for the exclusive use of the Goa State Innovation Council for the Students and Startups from Goa. After discussions, a budget of Rs 20 Lakhs was set aside to meet the requirements for the AR/VR & Media Lab and procurement of equipment for this proposed facility be carried out after following approved purchase procedures.

4. It was proposed that the following Subcommittees be constituted:

i. Subcommittees for Virtual Innovation Register (VIR)

ii. Subcommittees for Provisional Patent Scheme

It was proposed to nominate the following members for the subcommittee for Virtual Innovation Register (VIR)

| | | |
|---|---|---|
| 1 | Mr BS Revankar<br>Ex-Director, CEDOK, STEP-NITK Surathkal | Chairman |
| 2 | Shri Kastubh Priolkar<br>Professor, Department of Physics, Goa University | Member |
| 3 | Shri DS Prashant<br>CEO, FiiRE, Fatorda | Member |
| 4 | Shri Yashvit Naik<br>CTO-Teknorix | Member |
| 5 | Project Officer<br>Goa State Innovation Council | Member Secretary |

The roles & responsibilities of the subcommittee would be as follows:

- Regular assessment of applications & Ideas
- Classification into IP, Incubation, ToT & more
- Recommendation of ecosystem support partners to the Council
- Any other matter assigned by the Chairman of GSInC

The proposal for the reconstitution of the subcommittee for the Provisional Patent Scheme was discussed and the Chairman directed the project officer to suggest the names in the upcoming council meeting for consideration and approval.

5. The status report for the Virtual Innovation Register as on date was presented, and it was mentioned that a total number of 403 new Ideas and a total of 56 Startups are registered on the VIR. The council members appreciated the utility of the VIR in the state of Goa.

6. It was informed that at present the Directorate of Technical Education were setting up 430 laboratories in the State for introduction to robotics and coding at the school level. Members discussed this matter at length and it was decided that since a similar effort is initiated by the Government of Goa the discussion on this agenda item kept on hold to avoid duplication of effort and resources.

7. The meeting ended with a vote of thanks.

## 3.3 Extracts of minutes of 23rd Meeting of the Council held during the year under report

| | |
|---|---|
| Objectives: To discuss on the agenda as mentioned | |
| Location: Online | |
| Date & Time: 12th Oct 2022 & 9:00 am | |
| **Agenda Item** | **Who** |
| 1. Discussion on the India International Innovation & Invention Expo (INEX) 2022 | Project Officer |
| **Meeting Agenda** | |
| Purpose: The 23rd Members' meeting of Goa State Innovation Council | |
| 2. Discussion on MoU between GSInC, Indian Innovators Association (IIA) & IBS Global | Project Officer |
| 3. Any other matter with the permission of the Chair | Project Officer |

## MINUTES OF 23RD MEETING OF THE COUNCIL

The following members were present at the meeting:

| | | |
|---|---|---|
| 1 | SHRI. JOSE MANUEL NORONHA<br>Chairman, Goa Public Service Commission, Panaji, Goa | Chairman |
| 2 | DR. NEENA PANANDIKAR<br>Principal, Don Bosco College of Engineering, Fatorda, Goa | Member |
| 3 | DR. KAUSTUBH PRIOLKAR<br>Professor, Goa University, Goa | Member |
| 4 | SHRI. D. S. PRASHANT<br>CEO, Forum for Innovation, Incubation, Research and Entrepreneurship, Fatorda, Goa | Member |
| 5 | SHRI. LEVINSON MARTINS<br>Director, Department of Science and Technology, Govt. of Goa | Member |
| 6 | SHRI. RAMAN TEJA<br>IBS Global, Poland | Member |
| 7 | SMT. EDYTA<br>IBS Global, Poland | Member |
| 8 | DR. AS RAO<br>President, Indian Innovators Association | Member |

The Chairman welcomed the members of the Goa State Innovation Council for the meeting.

India International Innovation & Invention Expo (INEX) 2022 was presented and the proposed dates were 17th & 18th Nov 2022. The venue for INEX 2022 was finalised at the Ravindra bhavan, Margao. The following schedule was presented during the meeting:

| Sr. No. | Day & Date | Time | Details |
|---|---|---|---|
| 1 | Day 1<br>17-11-2022 | 8:30 AM to 10:00 AM | Stall Setup |
| | | 10:00 AM to 10:30 AM | INEX 2022 Inauguration |
| | | 10:30 AM to 10:45 AM | Jury Briefing session |
| | | 10:45 AM to 4:30 PM | Jury evaluation for all innovations |

| Sr. No. | Day & Date | Time | Details |
|---|---|---|---|
| | Day 1<br>17-11-2022 | 11:00 AM to 5:00 PM | Expo visiting hours |
| | | 12:00 PM to 1:00 PM | Seminar 1 |
| | | 1:00 PM to 1:30 PM | Indian Innovators Association Book Launch |
| | | 1:30 PM to 2:00 PM | MoU Signing between IIA, IBS and GSInC |
| | | 2:00 PM to 3:00 PM | Panel Discussion |
| | | | |
| 2 | Day 2<br>18-11-2022 | 10:00 AM to 1:00 PM | Jury evaluation for all innovations |
| | | 10:00 AM to 3:00 PM | Expo visiting hours |
| | | 11:00 AM to 12:00 PM | Seminar 2 |
| | | 3:00 PM to 4:00 PM | Result consolidation |
| | | 4:00 PM to 5:00 PM | Award Announcement |

The council members approved the following list of deliverables for the Goa State Innovation Council:

| Sr. No. | List of deliverables | Nodal Agency |
|---|---|---|
| 1 | Venue Booking for INEX 2022<br>Open Ground at Ravindra Bhavan, Margao<br>Conference Hall at Ravindra Bhavan, Margao | Goa State Innovation Council |
| 2 | Mementos for Guest at INEX 2022 | Goa State Innovation Council |
| 3 | Media Coverage for Event publicity<br>Proposal of Goa News Hub for Press release,<br>Pre event publicity, during event coverage & interviews and Post event branding | Goa State Innovation Council |
| 4 | Internet Connectivity & Power Supply<br>Invitation to Schools & Colleges<br>Press Meet proposed on 22nd Oct 2022<br>Special Invitee for INEX from GSInC | Goa State Innovation Council |

2. The proposed draft of the MoU between GSInC, Indian Innovators Association (IIA) & IBS Global was presented to the council members. The MoU highlighted the following points:

- Scaling potential innovative ideas of Goa based innovators, into prototypes, MVP, and explore Market Access through pre-incubation/incubation programs
- Demo days for Innovators (students and innovators of Goa)
- GSIC may extend its infrastructure facilities (including accommodation) as and when needed to conduct workshops/sessions/seminars, and for innovators (students and innovators of Goa) to work on their prototype/product development
- Technical Mentorship to support Goa based innovators
- To explore funding/grant/prototyping opportunities to Innovators and Start-ups
- IBS will facilitate potential innovators of Goa to exhibit/showcase their innovations at various global exhibitions
- The above MoU shall be valid for a period of 3 years

The council members appreciated the efforts of the Goa State Innovation Council.

3. The meeting ended with the vote of thanks.

## 3.4 Extracts of minutes of 24th Meeting of the Council held during the year under report

| Meeting Agenda | |
|---|---|
| Purpose: The 24th Members meeting of Goa State Innovation Council | |
| Objectives: To discuss on the agenda as mentioned | |
| Location: Ground Floor, Conference Room, Don Bosco College of Engineering, Fatorda | |
| Date & Time: 30th Mar 2023 (Thr) & 3:00 pm | |
| **Agenda Item** | **Who** |
| Reading and confirming the minutes of the last meeting | Project Officer |
| Updates on previously conducted events | Project Officer |
| Proposal of GSInC's Initiatives for 2023-24 | Project Officer |
| Any other matter with the permission of the Chair | Project Officer |

## MINUTES OF 24TH MEETING OF THE COUNCIL

The following members were present at the meeting:

Table: 3.2: GSInC Members present for 24th Meeting

| | | |
|---|---|---|
| 1 | SHRI. JOSE MANUEL NORONHA<br>Chairman, Goa Public Service Commission, Panaji, Goa | Chairman |
| 2 | PROF. SUNIL KUMAR SINGH<br>Director, CSIR-NIO, Goa | Member |
| 3 | DR. VIVEK B. KAMAT<br>Director, Directorate of Technical Education, Porvorim, Goa | Member |
| 4 | DR. R.B. LOHANI<br>Principal, Goa College of Engineering, Farmagudi, Ponda, Goa | Member |
| 5 | PROF. SUMAN KUNDU<br>Director, BITS Pilani, Goa | Member |
| 6 | DR. NEENA PANANDIKAR<br>Principal, Don Bosco College of Engineering, Fatorda, Goa | Member |
| 7 | SHRI KASTUBH PRIOLKAR<br>Professor, Department of Physics, Goa University | Member |
| 8 | DR. SUNIL PAUL<br>Assistant Professor, Indian Institute of Technology Goa | Member |
| 9 | SHRI D S PRASHANT<br>CEO, FiiRE, Goa | Member |
| 10 | SHRI SHREEDHAR BEVARA<br>CEO, BMR Innovations, Vishakapatnam, Andhra Pradesh | Member |
| 11 | SHRI YASHVIT NAIK<br>Co-Founder & CTO, Teknorix Systems | Member |
| 12 | SHRI. LEVINSON MARTINS<br>Director, Department of Science, Technology & Waste Management, Govt. of Goa, Porvorim, Goa | Member Secretary |
| 13 | SHRI SAIRAJ B DESAI<br>Assistant Director, Directorate of Higher Education, Goa | Invitee |
| 14 | SMT BRENDA FERNANDES<br>Project Scientist, Goa State Council of Science and Technology, Goa | Invitee |

Prof. Sunil Kumar Singh, Dr. Vivek B. Kamat, Dr. Ms Krupashankara, Shri. Prasad V. Lolayekar, and Smt Brenda Fernandes could not attend the meeting and were granted a leave of absence. Shri Kastubh Priolkar, Dr. Sunil Paul, Shri Shreedhar Bevara, and Shri Yashvit Naik attended the meeting online. Thereafter, Chairman welcomed the members of the Goa State Innovation Council for the meeting, and Shri Levinson Martins, Member Secretary introduced the agenda.

1. At the outset, the minutes of the meeting held on 12th Oct 2022 were read and confirmed.

2. The reconstituted subcommittee for the Provisional Patent Filing Scheme was presented & approved by the council members for the following members:

| | | |
|---|---|---|
| 01 | Mr BS Revankar<br>Ex-Director, CEDOK, STEP-NITK Surathkal | Chairman |
| 02 | Dr. Sunil Bhand<br>Senior Professor, Chemistry Project Director, BITS BioCyTiH Foundation Ex-Dean (Institute wide) Sponsored Research and Consultancy | Member |
| 03 | Project Officer<br>Goa State Innovation Council | Member Secretary |

3. The Project Officer reported the updates on previously conducted events:

| Sr. No. | Initiatives | Sessions Planned | Sessions Conducted | Total Participants |
|---|---|---|---|---|
| 1 | STEM – Think, Design & Prototyping Workshops at Lab | 50 | 63 | 2518 |
| 2 | IPR Sessions | 2 | 2 | 140 |
| 3 | Bootcamps on Innovation, Creativity & Startups | 20 | 14 | 2100 |
| 4 | Sensitisation Workshop in Schools | 50 | 35 | 4175 |
| 5 | Women Centric Workshop | 3 | 2 | 90 |
| 6 | Faculty Development Program | 1 | 1 | 28 |
| 7 | Risk Capital Session on Venture Capital | 2 | 1 | 95 |
| 8 | Industry Institute Interaction | 2 | 2 | 47 |
| 9 | Competition for Goa's Young Innovators Award 2023 | 1 | 1 | - |
| 10 | INEX - India International Innovation & Invention Expo 2022 | - | 1 | 7500 |
| 11 | iDEX - Defence India Startup Challenge | - | 1 | 50 |
| 12 | Manohar Parrikar Vidnyan Mahotsav at DBCE | - | 1 | 450 |

| Sr. No. | Initiatives | Sessions Planned | Sessions Conducted | Total Participants |
|---|---|---|---|---|
| 13 | Startup Innovation Acceleration Workshop | - | 1 | 30 |
| 14 | Goa Drone Policy Launch Event by DoIT | - | 1 | - |
| 15 | NoMoZo Porvorim | - | 1 | - |
| 16 | Community Meet Series by Startup Promotion Cell | - | 1 | 32 |
| 17 | Visit by Indian Army | - | 1 | 5 |
| 18 | Rapid Prototyping Lab Visitors (2022-23) | - | | 1338 |
| 19 | Documentation & Publication for Innovations in Goa | 5 | 5 | |
| | **TOTAL** | 136 | **134** | **18598** |

It was reported that a total of 134 sessions were conducted and a total of 18598 participants attended the various programs, initiatives & events conducted by Goa State Innovation Council for 2022-23.

| Sr. No. | Initiatives | Project Mentored & Supported |
|---|---|---|
| 1 | Goa's Young Innovators Award 2023 | 75 |
| 2 | Provisional Patent Grant | 3 |
| 3 | Prototyping Grant | 12 |
| 4 | Products developed at the Rapid Prototyping Lab | 74 |
| | **TOTAL** | **304** |

It was reported that a total of 304 projects were mentored and supported by Goa State Innovation Council for 2022-23 in which the Rapid Prototyping Lab mentored and supported a total number of 74 projects of school & college students, Startups & Industries.

4. The status report for the Virtual Innovation Register as of date was presented and it was mentioned that a total number of 476 new Ideas and a total of 67 Startups are registered on the VIR.

5. The awards & recognitions received by the Goa State Innovation Council during 2022-23 were presented.

Virtual Innovation Register (VIR) featured in the E coffee table book on best innovations titled 'Cutting-Edge Transformations' released by the Hon'ble Prime Minister of India, Shri Narendra Modi at the Civil Services Day held on April 21, 2022

The Chairman presented the E coffee table book to the Hon'ble Minister for Science, Technology & Waste Management, Shri Atanasio Monserrate and Secretary for Science, Technology & Waste Management, and Dr. Tariq Thomas along with the Member Secretary, Shri Levinson Martins.

Virtual Innovation Register (VIR) received the prestigious SKOCH ORDER OF MERIT Award 2022.


The Chairman presented the SKOCH ORDER OF MERIT Award 2022 to the Hon'ble Minister for Science, Technology & Waste Management, Shri Atanasio Monserrate.

The council members appreciated this achievement of the council.

The status of the Grant-In-Aid and the Utilization Certificate of the Goa State Innovation Council for 2022-23 was presented by the Project Officer:

**Grant-In-Aid**

| Sr. No. | Date | Amount | Order No. |
|---|---|---|---|
| 1 | 9/06/2022 | Rs. 7,50,000.00 | No. 3-191-2011/14-15/STE-DIR/GSInC/Part/247 |
| 2 | 5/08/2022 | Rs. 20,00,000.00 | No. 3-191-2011/14-15/STE-DIR/GSInC/Part/522 |
| 3 | 24/11/2022 | Rs. 15,00,000.00 | No. 3-191-2011/14-15/STE-DIR/GSInC/Part/971 |
| 4 | 24/11/2022 | Rs. 7,50,000.00 | No. 3-191-2011/14-15/STE-DIR/GSInC/Part/972 |

**Utilization Certificate**

| Sr. No. | Receipt No | Amount | Order No. |
|---|---|---|---|
| 1 | 096 | Rs. 20,00,000.00 | No. 3-191-2011/14-15/STE-DIR/GSInC/ Part/522 |
| 2 | 018 | Rs. 7,50,000.00 | No. 3-191-2011/14-15/STE-DIR/GSInC/ Part/247 |
| 3 | | Rs. 15,00,000.00 | No. 3-191-2011/14-15/STE-DIR/GSInC/ Part/971 |
| 4 | | Rs. 7,50,000.00 | In utilisation |

7. The proposal for the Initiatives of the Goa State Innovation Council 2023-24 was presented and noted by the Council Members:

| Sr. No. | Initiatives | No. Of Sessions | Estimate (Rs in Lacs) |
|---|---|---|---|
| 1 | Virtual Innovation Register | | 04.00 |
| 2 | Provisional Patent Scheme | 10 projects | 01.00 |
| 3 | Prototyping Grant Scheme | 25 projects | 05.00 |
| 4 | Bootcamps in Colleges | 50 | 05.00 |
| 5 | Sensitisation Workshops in Schools | 50 | 06.00 |
| 6 | Faculty Development Program | 1 | 02.00 |
| 7 | Women Centric Workshops | 3 | 01.00 |
| 8 | Intellectual Property Rights Training | 5 | 02.00 |
| 9 | Industry Institute Interaction | 2 | 01.50 |
| 10 | Risk Capital Session | 2 | 01.00 |
| 11 | STEM – Think, Design & Prototyping Workshops | 60 | 11.00 |
| 12 | Prototyping Lab – Projects to Product Development from VIR | 10 | 10.00 |
| 13 | Prototyping Lab – Purchase of Prototyping Consumables & Maintenance | | 02.50 |
| 14 | Most Innovative Student Projects Competition | | 03.00 |
| 15 | Competition for Goa's Young Innovators Award | | 03.00 |
| 16 | Ideathon/Hackathons on Problem Statements | | 02.00 |
| | **TOTAL** | | **60.00** |

8. The Scheme to Encourage Students for Innovative Projects was presented during the meeting. The Scheme provides financial support to convert Innovative Ideas into projects making it affordable for the students from the Educational Institutes of Goa to develop Innovative projects. A total of 10 projects will be supported through the scheme with financial support of up to Rs 50,000/- per project.

The proposed members of the Selection Committee were presented:

| | | |
|---|---|---|
| 01 | Mr BS Revankar<br>Ex-Director, CEDOK, STEP-NITK Surathkal | Chairman |
| 02 | Dr Anurag Thakur<br>Senior Principal Scientist, Department of Chemical Oceanography (COD), NIO Goa | Member |
| 03 | Project Officer<br>Goa State Innovation Council | Member Secretary |

The Chairman requested the council members to actively participate in implementing this scheme and to recommend/nominate the members for the selection committee.

9. The scheme titled "Goa Rajya Vidnyanik Puraskar (GRVP)" was presented to the council members. It was informed that the GRVP is an award to encourage, identify and recognize Innovators/Scientists who have implemented their Ideas into Innovations that are changing the lives of the world. The GRVP will be awarded each year to Innovators/Scientists who develop their Ideas into a Product or Process that has been adopted or has a high probability of being adopted in the State of Goa. Three Awards each worth two lakhs rupees to be awarded to the Innovators/Scientists in the categories of Innovation, Environment & Societal Impact. The scheme consists of the Technical Advisory Committee (TAC) and Expert Committee as per the guidelines mentioned in the scheme notifications.

- Technical Advisory Committee (TAC)

TAC shall consist of a Chairman & three expert members on each from the disciplines of Science, Technology & Innovations. TAC will be appointed by the Chairman of GSInC. Project Officer- GSInC will be the Member Convenor.

| | | | |
|---|---|---|---|
| 1 | | Science | Chairman |
| 2 | | Technology | Member |
| 3 | | Innovation | Member |
| 4 | Project Officer, GSInC | | Member Convenor |

The Chairman requested the council members to recommend/nominate the members for the selection process of the Technical Advisory Committee (TAC). It was informed that the Expert Committee members are to be nominated by the Government. Expert Committee members can be professionals or experts or recipients of awards for outstanding achievements in the field of Science, Technology & Innovations.

10. The Project Officer updated the status of the Society Registration of the Goa State Innovation Council. The Proposal is submitted to the Director of Science, Technology & Waste Management, Government of Goa for the approval of the Law Department.

11. The status report of the International Conference on Natural Science and Green Technologies for Sustainable Development (NTSD-2022) was presented. The Chairman informed the members that the event jointly organized by the School of Biological Sciences and Biotechnology, Goa University with National Environmental Science Academy, New Delhi & Goa State Innovation Council. The Council members appreciated this achievement of the council

12. The meeting ended with a vote of thanks.

# 04

# COMMITTEES

# Chapter 04
# Committees

"Simple can be harder than complex. You have to work hard
to get your thinking clean to make it simple."

- Steve Jobs

## 4.1 Provisional Patent Grant

6th Meeting of the Provisional Patent Interview

| Meeting Agenda | |
|---|---|
| Purpose: The 6th meeting of Technical Advisory Committee of GSInC for Provisional Patent Grant | |
| Objectives: To follow up on the decisions of the previous meeting and to discuss the agenda as mentioned. | |
| Location: | |
| Date & Time: 27th February, 2023 at 10.00 am (Mon) | |
| **Agenda Item** | **Who** |
| 1. Reading and confirming the minutes of the last meeting | 10.00 am – 10.15 am |
| 2. Provisional Patent Interviews | 10.15 am – 11.00 am |
| 3. Any other matter with the permission of the Chair | 11.00 am |

Interview Schedule for Provisional Patent Grant

25th February, 2023 | 10.00 am

| Sr. No. | Unique ID | Idea Titles | Name | Contact | Email | Time Slot |
|---|---|---|---|---|---|---|
| 1 | 567 | Design and Development of Forklift Attachment for ATV | Kelan Barreto | 8605977746 | | 10:15 am |
| 2 | 319 | Development of Green Composite from Cashew Nut Shell oil | Gaurish Samant | 7411357170 | | 10:25 am |
| 3 | 529 | “Balanced” piezoelectric microphone with phantom-powered preamplifier | Anand Lobo | 7507648215 | | 10:35 am |
| 4 | 561 | Automated robots for neural kissan | Rhys | 7588354003 | | 10:45 am |

**MINUTES OF THE MEETING FOR THE SIXTH TECHNICAL ADVISORY COMMITTEE (TAC) OF GOA STATE INNOVATION COUNCIL HELD ON 27TH FEB 2023.**

Members Present

| | | |
|---|---|---|
| 1 | **MR. B S REVANKAR**<br>Ex-Director, NITK – STEP, Surathkal, Karnataka | Chairman |
| 2 | **PROF SUNIL BHAND**<br>Dean, Sponsored Research & Consulting, Professor of Chemistry BITS, Pilani - K.K. Birla, Goa | Member |
| 3 | **MR. SUDIP FALDESAI**<br>Project Officer, Goa State Innovation Council | Member |

Proceedings

1. At the outset, the Chairman welcomed the members to the Meeting.

2. The Minutes of previous meeting were read and confirmed by the members.

3. Action taken on proceedings of the previous meeting were discussed.

4. During the presentations it was observed that a total of 4 Ideas were present for the evaluation by the Technical Advisory Committee out of 4 invitees. The Ideas with the Unique Registration Numbers 319, 561 and 529 were shortlisted by the TAC, the Idea with the Unique Registration Number 567 was directed to revert with Novelty Claims and other supporting documents. Annexure I – List of applications is attached

5. It was decided by the committee to schedule the next meeting in the third/fourth week of July 2023.

6. The meeting ended with Vote of Thanks by the Chairman.

## 4.2 Prototyping Grant

5th Meeting of Prototyping Grant

| Meeting Agenda | |
|---|---|
| Purpose: The 5th meeting of of GSInC's Prototyping Grant | |
| Objectives: To follow-up on the decisions of the previous meeting and to discuss on the agenda as mentioned. | |
| Location: Conference Room, First Floor, FiiRE Building, Don Bosco College of Engineering, Fatorda | |
| Date & Time: 21st June 2022 at 9:30 am | |
| **Agenda Item** | **Time** |
| 1. Reading and confirming the minutes of the last meeting | 9:15 am – 9:30 am |
| 2. Online Interviews | 9:30 am – 12 pm |
| 3. Any other matter with the permission of the Chair. | |

Interview Schedule for Prototyping Grant

| Sr. No. | Unique ID | Idea Titles | Name | Email | Time Slot |
|---|---|---|---|---|---|
| 1 | GSIC-533 | SelFly drones are the ones which can go from one point to another whitout the help of a pilot | T Athul | athulmurali257@gmail.com | 9:30 |
| 2 | GSIC-529 | "Balanced" piezoelectric microphone with phantom-powered preamplifier | Lobo | anandrlobo@gmail.com | 9:40 |
| 3 | GSIC-422 | Web OR App controlled Tri faced advertisement display-board System | Sandip A Parab | myeduroz@gmail.com | 9:50 |
| 4 | GSIC-520 | Agro water canal | Mahesh Kumar | dikshacraft2008@gmail.com | 10 |
| 5 | GSIC-401 | Innovative linear motion systems for CNC router at affordable prices | Vipul | | 10:10 |
| 6 | GSIC-495 | Smart Broom \| Smart HPT \| Smart Tumbler \| Smart Baby Feed Bottle | Gunjan | gunjan.xo@outlook.com | 10:20 |
| 7 | GSIC-459 | Retrofitting of 3-D printer for ready to serve baked cakes | Omer Qabeer | mohdomerqabeer@gmail.com | 10:30 |
| 8 | GSIC-464 | HVAC | Kong | | 10:40 |

| Sr. No. | Unique ID | Idea Titles | Name | Email | Time Slot |
|---|---|---|---|---|---|
| 9 | GSIC-457 | Using a plug and play device we can monitor vehicle performance ,tracking, and other safety features. | Amey Tilve | | 10:50 |
| 10 | GSIC-452 | Lung Cancer Detection Using Image Processing | Sanjana Narvekar | sanjana0110narvekar@gmail.com | 11:00 |
| 11 | GSIC-449 | Design and Fabrication of Fire Extinguishing Rover | Yash | | 11:10 |
| 12 | GSIC-436 | AI Based Driver Alerting System | Vaqibhav-Giridhar | giridharvaibhav04@gmail.com | 11:20 |
| 13 | GSIC-442 | Face recognition and temperature detection attendance system. | Shawn | shawnjorge96@gmail.com | 11:30 |
| 14 | GSIC-425 | Design and Development of Coconut Harvesting Bot | | | 11:40 |
| 15 | GSIC-418 | Design and fabrication of a wind powered system for protection of crops from birds | Sharad Shanbag | | 11:50 |
| 16 | GSIC-415 | Using VR Box for improving customer experience in building construction industry | Akhilesh | | 12 |
| 17 | GSIC-432 | Design and Testing of squat Analyser for powerlifting Sport | Suraj Marathe | suraj.marathe@dbce-goa.ac.in | 12:10 |
| 18 | GSIC-534 | Design and Fabrication of Exoskeleton for Assistance in walking | Suraj Marathe | suraj.marathe@dbce-goa.ac.in | 12:20 |
| 19 | GSIC-319 | Development of Green Composite from Cashew nut shell oil | Gaurish | | 12:30 |
| 20 | GSIC-427 | Fabrication and designing of Coconut Dehusking machine. | | | 12:40 |
| 21 | GSIC-505 | Automatic Kombucha Maker | Pratyusha Jain | pratyushajain@gmail.com | 12:50 |

**MINUTES OF THE MEETING FOR THE FIFTH SELECTION COMMITTEE FOR PROTOTYPING GRANT OF GOA STATE INNOVATION COUNCIL HELD ON 21ST JUNE 2022.**

Members Present

| | | |
|---|---|---|
| 1 | **MR. B S REVANKAR**<br>Ex-Director, NITK – STEP, Surathkal, Karnataka | Chairman |
| 2 | **PROF SUNIL BHAND**<br>Dean, Sponsored Research & Consulting, Professor of Chemistry BITS, Pilani - K.K. Birla, Goa | Member |
| 3 | **MR. SUDIP FALDESAI**<br>Project Officer, Goa State Innovation Council | Member |

Proceedings

1. At the outset, the Chairman welcomed the members to the Meeting.

2. The Minutes of previous meeting were read and confirmed by the members.

| Sr. No. | Unique ID | Idea Titles |
|---|---|---|
| 1 | GSIC-533 | SelFly drones are the ones which can go from one point to another without the help of a pilot |
| 2 | GSIC-529 | “Balanced” piezoelectric microphone with phantom-powered preamplifier |
| 3 | GSIC-422 | Web OR App controlled Tri faced advertisement display-board System |
| 4 | GSIC-520 | Agro water canal |
| 5 | GSIC-401 | innovative linear motion systems for CNC router at affordable prices |
| 6 | GSIC-495 | Smart Broom \| Smart HPT \| Smart Tumbler \| Smart Baby Feed Bottle |
| 7 | GSIC-459 | Retrofitting of 3-D printer for ready to serve baked cakes |
| 8 | GSIC-464 | HVAC |
| 9 | GSIC-457 | Using a plug-and-play device, we can monitor vehicle performance and other safety features. |
| 10 | GSIC-452 | Lung Cancer Detection Using Image Processing |
| 11 | GSIC-449 | Design and Fabrication of Fire Extinguishing Rover |
| 12 | GSIC-436 | AI based Driver Alerting System |
| 13 | GSIC-442 | Face recognition and temperature detection attendance system |
| 14 | GSIC-425 | Design and Development of Coconut Harvesting Bot |
| 15 | GSIC-418 | Design and fabrication of a wind powered system for protection of crops from birds |
| 16 | GSIC-415 | Using VR Box for improving customer experience in building construction industry |

| Sr. No. | Unique ID | Idea Titles |
|---|---|---|
| 17 | GSIC-432 | Design and Testing of Squat Analyser for Powerlifting Sport |
| 18 | GSIC-534 | Design and Fabrication of Exoskeleton for Assistance in walking |
| 19 | GSIC-319 | Development of Green Composite from Cashew nut shell oil |
| 20 | GSIC-427 | Fabrication and designing of Coconut Dehusking machine. |
| 21 | GSIC-505 | Automatic Kombucha Maker |

3. A total of 14 ideas with the following URN were approved by the selection committee based on the eligibility criteria of Novelty, Usefulness, Scalability, Innovative approach & Prototyping attempt.

| Sr. No. | Unique ID |
|---|---|
| 1 | GSIC-533 |
| 2 | GSIC-529 |
| 3 | GSIC-495 |
| 4 | GSIC-459 |
| 5 | GSIC-457 |
| 6 | GSIC-449 |
| 7 | GSIC-436 |
| 8 | GSIC-442 |
| 9 | GSIC-425 |
| 10 | GSIC-418 |
| 11 | GSIC-415 |
| 12 | GSIC-432 |
| 13 | GSIC-534 |
| 14 | GSIC-319 |

The Idea with URN GSIC-505 was provisionally approved by the committee and advised to provide the project execution roadmap during the next interview. The Ideas with URN GSIC-520, GSIC-401, GSIC-422, GSIC-452, GSIC-464 and GSIC-427 were absent and directed by the chairman to present for the next interview.

4. It was decided by the committee to schedule the next meeting in the third week of Nov 2022.

5. The meeting ended with Vote of Thanks by the Chairman.

# 05

# VIRTUAL INNOVATION REGISTER

# Chapter 05
# Virtual Innovation Register

"People don't like to think, if one thinks, one must reach conclusions.
Conclusions are not always pleasant."

- Helen Keller

## 5.1 Introduction

The genesis of every start-up is an idea, but ideas are fragile and fleeting in nature. And even if an idea withstands the rigorous evaluation process, it still may not receive the necessary platform for growth and success.

The Virtual Innovation Register (VIR) solves this problem by securing the ownership of the idea, while also providing adequate handholding and support opportunities for the entrepreneurs and innovators in transforming their ideas into prototypes or MVPs.

**Virtual Innovation Register**

The Virtual Innovation Register is an initiative of the Goa State Innovation Council to promote innovation and entrepreneurship in the state of Goa, India. The VIR is an online platform that allows innovators and entrepreneurs to showcase their ideas and projects, and connect with investors and other stakeholders in the innovation ecosystem.

Aspiring entrepreneurs can share their start-up ideas and receive validation from leading mentors with relevant industry expertise through the VIR platform. Moreover, VIR offers access to advanced tools for evaluating the commercial feasibility of ideas, making it easier for innovators to refine and develop their concepts.

The VIR is open to all innovators and entrepreneurs in Goa, regardless of their sector or stage of development. The platform is easy to use, helping innovators can upload their projects and ideas with minimal effort. It also has a search feature using which investors and other stakeholders can quickly search for projects based on various criteria such as sector, stage of development, and location. Moreover, the VIR serves as a platform for showcasing prototypes by young innovators and facilitating direct communication between them and potential buyers.

How VIR Helps Innovators & Startups?

- Protection of Intellectual Property: The original ideas of innovators and start-ups are safeguarded under the IPR Act once entered in the Virtual Innovation Register.
- Expert Validation: The ideas entered in the VIR get validation from industry experts based on factors such as cost viability, market feasibility and scalability among others.
- Digital Edge: Inventors and entrepreneurs can register their ideas online without the need or the hassles of visiting the GSInC office.

Innovations and ideas can be registered under VIR in two categories - New Ideas and Startups.

Benefits of Registering New Ideas Under VIR:

- Intellectual Property Rights Protection
- Support for commercialisation
- Pitching to prospective buyers

Benefits of Registering Your Start-up Under VIR:

- Collaboration with mentors and experts
- Support for raising Funds
- Access to resources (Incubation, Co-Founders, etc.)

Since its launch in the year 2018, the VIR has contributed significantly in encouraging innovation and entrepreneurship in the state, while also boosting the startup ecosystem of Goa. At present, a total of 476 innovative ideas and 67 startups are registered on the VIR.

## 5.2 Scheme for Patent filing under Virtual Innovation Register(VIR)

**Scheme objective:** The scheme aims to promote awareness and adoption of Intellectual Property Rights amongst students and innovators.

**Financial support:** An applicant under this Scheme shall be eligible for support of up to Rs. 10,000 for filing a provisional patent application through the aforesaid patent agents/ firms.

To Apply: www.goastateinnovationcouncil.com/schemes

## 5.3 Scheme of Financial Assistance for Prototyping under the VIR

**Scheme objective:** The scheme aims to provide financial assistance for prototyping technology-based innovative projects/ideas under the Virtual Innovation Register (VIR).

**Financial support:** An applicant under this scheme shall be eligible for financial assistance of up to Rs. 20,000/- per project.

To Apply: www.goastateinnovationcouncil.com/schemes

## 5.4 Scheme to encourage Students for Innovative Projects

**Scheme objective:** The scheme aims to encourage students for innovative projects to make it affordable for Students who require the necessary financial support in converting Innovative Ideas into projects

**Eligibility:** Students from Educational Institutes from the State of Goa may apply under this scheme. The Applicant may be a final year student working on a college project or a High School or Higher Secondary School students working on a school project participating either in State or National level competitions from the State of Goa.

**Financial support:** A maximum of 10 projects will be supported through the scheme with financial support of up to Rs 50,000/- per project. The amount shall be deposited in the beneficiaries Institute's bank account directly on submission of the pre-receipt for the said amount by the institution.

## 5.5 - Scheme for Goa Rajya Vidnyanik Puraskar (GRVP)

**Scheme objective:** GRVP is an award to encourage, identify and recognize Innovators/Scientist who have implemented their Ideas to Innovations that are changing the life of the world. The GRVP will be awarded each year to Innovators/Scientists who develop their Ideas into a Product or Process that has been adopted or has high probability of being adopted in the State of Goa.

**Eligibility:**

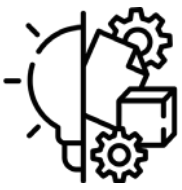
- Permanent resident of the State of Goa for at least 15 years.
- Participants may be Individual or collaborating Individuals.

**Scope of the Scheme:** Three Awards in each financial year to the Innovators/Scientist in categories of Innovation, Environment & Societal Impact. Each Award of Rs 2,00,000/-

## 5.6 Status Report

In the Financial Year 2022-23, the Virtual Innovation Register has successfully registered path-breaking start-up ideas across sectors and industries.

**Ideas**



**750**

**Startups**

**67**

Table No. 5.1: List of Beneficiaries of Provisional Patent Scheme

| Sr. No. | Unique ID | Title |
|---|---|---|
| 1 | 319 | Development of Green Composite from Cashew Nut Shell oil |
| 2 | 529 | “Balanced” piezoelectric microphone with phantom-powered preamplifier |
| 3 | 561 | Automated robots for neural Kissan |

# Development of Green Composite from Cashew nut shell oil

**Unique Registration Number: GSIC-**319

Name of Applicant/s: Nathan Mazarello
Amston Sanches
Ashish Tarale
Chirag Naik
Lemuel De Cunha
Name of Mentor/s: Prof. Gaurish M. Samant
Name of School/College/Startup/Organisation: Don Bosco College of Engineering
Address: Fatorda, Margao, Goa
Contact Number: 7411357170
Contact Email ID: samantgaurish@gmail.com

Project Objective:

- To develop a composite lamina made up of natural fibres and CNSL (Bio-based matrix).
- To test the lamina and obtain its tensile and flexural properties.
- To perform statistical analysis of the results obtained from the tests.
- To carry out analysis for correlating obtained results.

Abstract:
Composites have gained prime importance due to their high strength-to-weight ratios that make them applicable for various useful applications as compared to traditional metals.

However, with certain advantages, these composites are a threat to the environment due to their toxic nature and non-biodegradability.

Hence, a heightened need of the hour is producing green composites made of naturally available fibres and bonding matrix materials.

This project aims to produce green composites of three different natural fibres (Bamboo, Coconut Midrib and Areca leaf sheath), locally available in and around Goa, bonded together by Cardanol resin, a derivative of cashew nut shell oil.

Silicon dioxide nanoparticles, graphene nanoparticles and single walled carbon nanotubes are added to increase its mechanical properties.

Prior to composite manufacturing, the fibres are subjected to chemical treatments such as alkali treatment (NaOH), Silane treatment and Benzoyl peroxide treatment to improve bonding properties between fibre and matrix, thereby increasing mechanical properties.

A total of twenty seven composite samples are produced, where nine are produced by Compression Moulding, nine by vacuum bagging technique and the rest nine by hand layup process.

All samples are tested to obtain tensile and flexural properties by performing the tensile test and flexural test.

The obtained properties are statistically analysed and compared with properties of already produced green composites.

Project Outcome/result/findings: (in 50 words)

- Obtaining twenty-seven different composites manufactured by varying fibre percentage, nanofillers and manufacturing methods.
- Obtaining tensile and flexural properties by performing mechanical tests.
- Theoretical analysis of composite in software such as MATLAB, Ansys and COMSOL.
- Comparative study of each composite based on the different types of fibres used.

Innovative Approach:

- Use of cardanol based resin which is rarely used in composites.
- Addition of three different nanofillers to enhance properties.
- Use of non-traditional and all-natural fibres and matrix.

Photograph 5.1: Development of Green Composite from Cashew nut shell oil

Photograph 5.2: Development of Green Composite from Cashew nut shell oil

Photograph 5.3: Students presenting the Green Composite from Cashew nut shell oil

# Piezophone™ Piezoelectric Microphone

**Unique Registration Number: GSIC-529**

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Name of Mentor: Kishore Shah
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Project Objective:
To build a better piezoelectric microphone / preamplifier for string instruments and other recording applications.

Abstract: (in 250 words)
Piezoelectric microphones (piezo pickups) are generally frowned upon in the professional audio industry because they are known to sound 'tinny'; generally associated with a sharp, high-pitched audio signal with no 'body' or 'warmth' i.e. almost no low-frequency content.
Even so, many brand-name manufacturers still create many varieties of piezoelectric microphone, and while cheaper ones do nothing to help matters, even expensive, branded piezo pickups have some of the same problems, despite seemingly different designs.

This piezoelectric microphone is designed to be a significant improvement over existing products, thanks to:
- different design of the piezoelectric element, and
- a better design of preamplifier circuit.

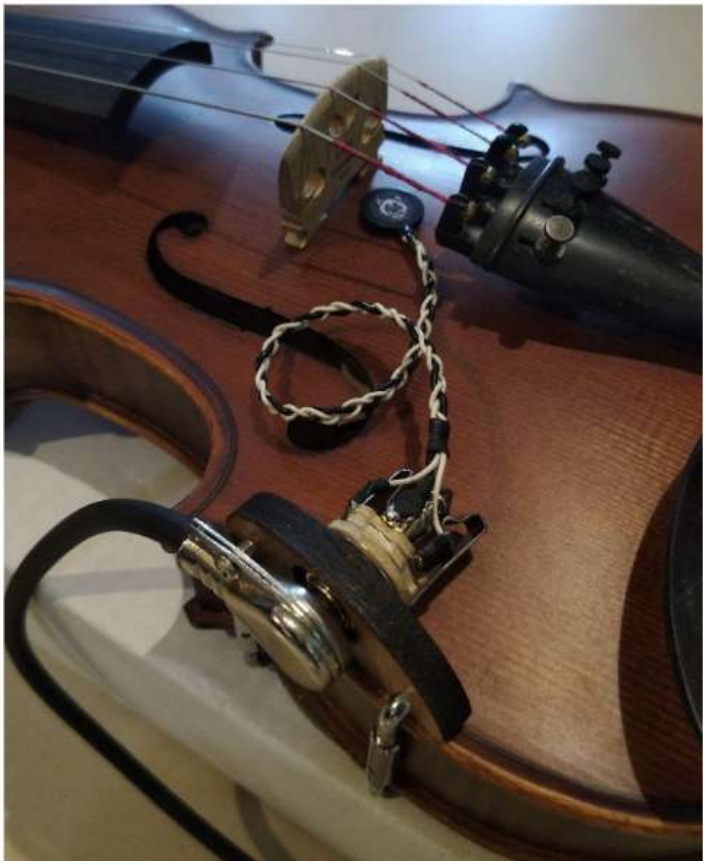
Project Outcome/result/findings: (in 50 words)
The microphone design was originally built for acoustic musical instruments, and as a bonus it can, in fact, be used on almost any surface from which the user wants to record mechanical (acoustic) vibration. This can be extended to also record sounds underwater, if the piezoelectric transducer and its connections can be suitably waterproofed.

As the creator of this product, I have been using the microphone continuously for over 2 years since coming up with the design, and sold a few prototypes to other musicians who are also using it regularly with good success.

Innovative Approach: (in 50 words)
The piezoelectric disc, and the circuit inside the preamplifier, is arranged in such a way as to reduce electrical interference (EMI) through a widely-used configuration known as 'differential signal' or 'balanced audio'. This provides a clear, powerful sound, while minimizing the 'hum' of electrical noise.

In addition, powering the preamplifier circuit uses an industry standard called 'phantom power' which is available on practically all professional audio equipment. This avoids the need for constantly buying and maintaining batteries, reducing e-waste.

Photograph 5.4: Piezophone™ Piezoelectric Microphone



# Automated robots for neural Kissan

**Unique Registration Number: GSIC-561**

Name of Applicant/s: Sai Rane
Pranav Naik
Rhys Rodrigues
Kapil Patil
Name of Mentor/s: Prof.Amey K.Shet Tilve
Name of School/college/startup/organization: Don Bosco College of Engineering

Project Objective:

The project objective of "Neural Kissan" is to facilitate plant growth in controlled environments, such as indoor or greenhouse setups. By utilizing neural network algorithms and AI technologies, the project aims to simplify the process of cultivating plants in contained environments, making it more convenient and efficient for growers.

Abstract: (in 250 words)

"Neural Kissan" is an innovative project that leverages artificial intelligence (AI) and neural network algorithms to revolutionize plant cultivation in contained environments. The objective of this project is to create a system that simplifies and optimizes the process of growing plants indoors or in greenhouse setups.

By harnessing the power of AI, Neural Kissan aims to address the challenges faced by growers in controlled environments. The system utilizes neural network algorithms to analyze various factors affecting plant growth, such as temperature, humidity, lighting conditions, and nutrient levels. Through continuous monitoring and data analysis, Neural Kissan can provide real-time insights and recommendations to optimize plant growth and ensure optimal resource utilization.

The key focus of Neural Kissan is to enhance the overall efficiency and productivity of plant cultivation in contained environments. By automating and optimizing key aspects of the growing process, such as irrigation, lighting schedules, and nutrient delivery, Neural Kissan aims to make plant cultivation more accessible, efficient, and yield-focused.

Furthermore, Neural Kissan incorporates machine learning techniques to adapt and improve its recommendations over time. By continuously learning from data patterns and user feedback, the system can refine its algorithms and provide personalized guidance tailored to specific plant species and environmental conditions.

The Neural Kissan project holds great promise for the agriculture industry, offering a novel approach to plant cultivation that reduces reliance on traditional farming methods and enables year-round production. By leveraging AI and neural networks, Neural Kissan aims to empower growers with advanced tools and insights, ultimately leading to higher crop yields, resource efficiency, and sustainability in contained plant cultivation.

Photograph 5.5: Automated robots for neural Kissan

## 5.8 Beneficiaries of Prototyping Grant

| Sr. No. | Unique ID | Title |
|---|---|---|
| 1 | GSIC-529 | “Balanced” piezoelectric microphone with phantom-powered preamplifier |
| 2 | GSIC-422 | Web OR App controlled Tri faced advertisement display-board System |
| 3 | GSIC-495 | Smart Broom \| Smart HPT \| Smart Tumbler \| Smart Baby Feed Bottle |
| 4 | GSIC-459 | Retrofitting of 3-D printer for ready to serve baked cakes |
| 5 | GSIC-457 | Using a plug and play device we can monitor vehicle performance, tracking, and other safety features. |
| 6 | GSIC-449 | Design and Fabrication of Fire Extinguishing Rover |
| 7 | GSIC-436 | AI based driver alerting system |
| 8 | GSIC-425 | Design and Development of Coconut Harvesting Bot |
| 9 | GSIC-415 | Using VR Box for improving customer experience in building construction industry |
| 10 | GSIC-432 | Design and Testing of squat Analyser for powerlifting Sport |
| 11 | GSIC-534 | Design and Fabrication of Exoskeleton for Assistance in walking |
| 12 | GSIC-319 | Development of Green Composite from Cashew nut shell oil |

# Piezophone™ Piezoelectric Microphone

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Name of Applicant: Anand Richard Lobo
Name of Mentor: Kishore Shah
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Address: H No 1202/2, Murida, Plot 38, Fatorda, Goa 403602
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Contact Email ID: anandrlobo@gmail.com

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Abstract: (in 250 words)
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- a better design of preamplifier circuit.

Project Outcome/result/findings: (in 50 words)
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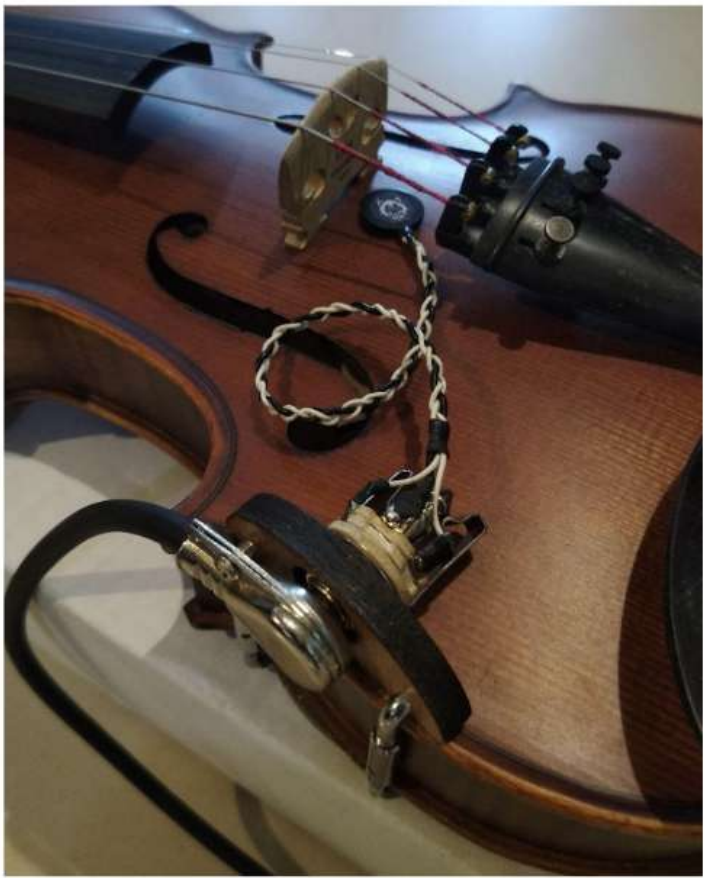
In addition, powering the preamplifier circuit uses an industry standard called 'phantom power' which is available on practically all professional audio equipment. This avoids the need for constantly buying and maintaining batteries, reducing e-waste.

Photograph 5.6: Piezophone™ Piezoelectric Microphone



# Web OR App controlled Tri faced advertisement display-board System

**Unique Registration Number: GSIC-422**

Name of Applicant: Sandip Parab

Project Objective:

The working model is being prepared under the guidance of Shri. Rojan Mechery of Infinity 3D Systems pvt. Ltd. Stationed at Verna Industrial Estate, Verna.

The working model was ready but during testing the supports which were 3D printed broke off due to overloading. Hence it is now decided to make provision for additional motor to reduce load on one motor. The testing will be done after adding motor at suitable location in the model.

Photograph 5.7: Web OR App controlled Tri faced advertisement display-board System

1. The 3D printed parts

2. The display board frame

3. The assembly of Parts on frame

4. The assembly of upper and lower parts

# Smart Broom | Smart HPT | Smart Tumbler | Smart Baby Feed Bottle

**Unique Registration Number: GSIC-495**

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Project Objective:
Development of IoT enabled smart material handling equipment and housekeeping equipment.

Abstract: (in 250 words)
In the present context of typical warehousing, one person moves material around, usually known as loader, while another person constantly moves along with the loader, guiding him what to take, what to put, where to put etc and at the same time updating data to keep track of inventory and storage space availability. This person is usually called a warehouse supervisor or a warehouse executive.

This gives rise to 3 problems:

1. You always need two people for such an operation, when it can be done by just one.
2. The work gives a very menial job feeling (to the loader)
3. Inefficient operation as the turnaround time is high.

This project aims to integrate IoT with material handling equipments such as hand pallet trolley or electric stacker to create a WMS on the go with real time flow of information with regards to physical flow/storage of material inside a warehouse or manufacturing setting.
Parallelly, this system can also be used to track periodic maintenance of the material handling equipment based on usage/running of equipment, something which is not practiced in the industry.

Project Outcome/result/findings: (in 50 words)
Current status: Development of smart MHE requires two-way communication, of which one way has been developed using Arduino platform. This one-way system can be deployed for smart housekeeping equipment. Currently testing it.

# Retrofitting of 3-D printer for ready to serve baked cakes

**Unique Registration Number: GSIC-**459

Name of Applicant/s: Omer Qabeer (Leader)
Seattle Rodrigues
Samuel Rodrigues
Harshad Shet Dessai
Rahul Pawar

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Project Objective:

1. Personalization and designing of food.
2. Time and Energy saving to make food in faster manner.
3. Food waste Reduction.
4. Food reproducibility is possible using a 3-D printer.
5. Meal composition adapted to individual diets.

Abstract: (in 250 words)

The aim of this project is to automate the process of cake making and baking on a single touch with the help of a 3-D printer. The application of 3-D printer in mechanical engineering is mostly in the field of additive manufacturing of parts and components in industries but the use of this printers in food industries is seldom. The problem with traditional method of baking cakes is time consuming and also demands human assistance to make and design the cake. This project work can eliminate these existing problems and can also cater the big markets of cloud kitchen which is the future.

The project work consists of a 3-D printer (Creality Ender 3), pump, hopper, chamber for baking. The hopper is placed on top of the chamber where the user pours the cake batter in it. One can add their custom design via a designing software in the form of G-code or can insert a micro-SD card which has the design in it and start the printer. Once the input is provided the printer bed and the chamber which has heating elements start heating. The printer prints on the bed of the printer, layer by layer while also getting cooked in the process. The provision is also kept to make the printer wireless and not just printing of cakes but pancakes too.

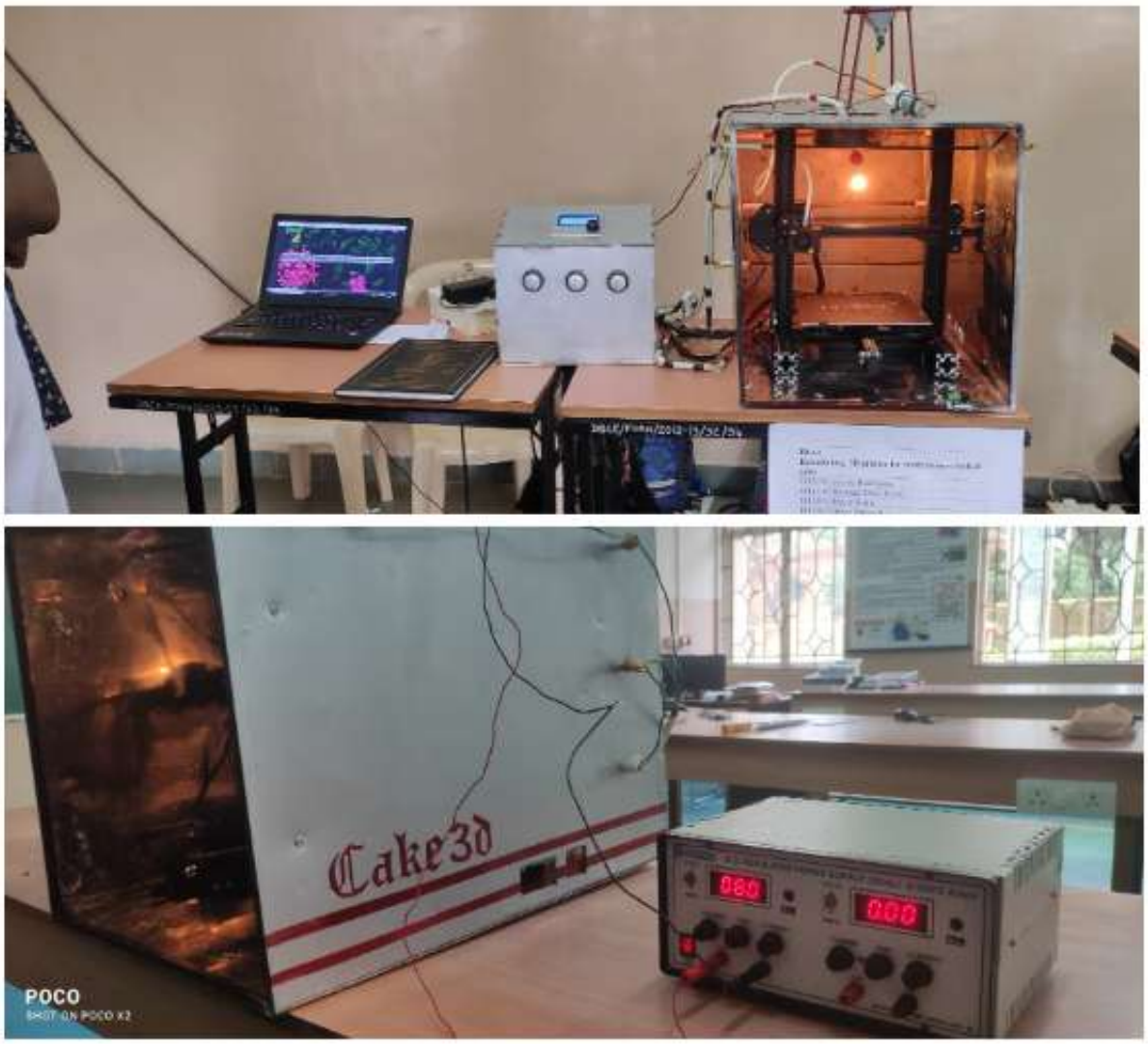
Project Outcome/result/findings: (in 50 words)

- Customization and designing of the foods.
- Repeatability of the same model.
- The shifting of the components inside the cabinet was done successfully to prevent the electronic components from getting damaged by the heat of the chamber and from the spillage of the batter also.
- A higher capacity hopper was made to store more batter.
- Optimum cake batter consistency was achieved from the batter to flow from the pump.

Innovative Approach: (in 50 words)

- Editing the frame.
- Designing and fabrication of food grade chamber with the required insulations.
- Addition of heating element in the chamber
- Disassembly of the electronic parts and Shifting of the components to a new cabin.
- An air blower for distribution of hot air uniformly.
- Insulation of the wires

Photograph 5.8: Retrofitting of 3-D printer for ready to serve baked cakes



Photograph 5.9: Retrofitting of 3-D printer for ready to serve baked cakes

# Using a plug and play device we can monitor vehicle performance, tracking, and other safety features

**Unique Registration Number: GSIC-**459

Name of Applicant/s: Lenn
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Saurav
Leroy
Darren

Name of Mentor/s: Amey Tilve

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Project Objective:

Develop a connected car system utilizing IoT principles, enabling seamless communication between vehicles and various devices for improved safety, security, and navigation.

Implement sensors in cars to collect and share real-time data regarding road conditions, engine status, location access, and other relevant information, contributing to a comprehensive network of connected vehicles.

Utilize the Controller Area Network (CAN) bus protocol over the thread and matter architecture to establish a reliable and efficient communication infrastructure for data exchange among connected cars.

Reduce the frequency and severity of car crashes by leveraging the collected data to identify potential hazards, alert drivers, and implement preventive measures, thereby enhancing overall road safety.

Integrate post-crash measures within the connected car system to facilitate rapid emergency response, such as automatic distress signal transmission, location sharing, and remote vehicle immobilization, enabling prompt assistance to accident victims.

Optimize fuel consumption and promote eco-friendly driving practices by leveraging IoT capabilities to monitor and analyze vehicle performance data, providing personalized feedback and recommendations to drivers for more efficient fuel usage.

Demonstrate the feasibility and effectiveness of the proposed connected car system through rigorous testing and evaluation, considering real-world scenarios and diverse road conditions.

Ensure compatibility and interoperability of the developed system with existing infrastructure, standard protocols, and future advancements in IoT technology, facilitating scalability and widespread adoption of connected car solutions.
Raise awareness and educate drivers, car manufacturers, and regulatory bodies about the benefits and implications of IoT-enabled connected cars, fostering a collaborative effort towards safer and smarter transportation systems.

Continuously improve and enhance the connected car system based on user feedback, technological advancements, and evolving industry standards, aiming to create a sustainable and future-proof solution for the automotive sector.

Abstract: (in 250 words)

The Internet of Things (IoT) is making human life easy in all aspects. IoT is an abstract idea, a notion which interconnects all devices, tools, and gadgets over the Internet to enable these devices to communicate with one another. IoT finds application in various areas, such as intelligent cars and their safety, security,navigation, and efficient fuel consumption. This project puts forth a solution to achieve the desired outcome.

A connected car is one that has its own connection to the Internet, usually via a wireless devices inside and outside the car. In this context, we will propose to develop a system that connects to the sensors in cars. These sensors in cars will collect data about other vehicles and sensors embedded in cars about road conditions, engine status, location access, etc. This will be achieved using Controller Area Network bus protocol over thread and matter architecture. Life without transportation is impossible to imagine; it makes far off places easy to reach and greatly reduces the travel time. But the problems which surface due to the ever-increasing number of vehicles on the road cannot be ignored. The project aims to eradicate a few of the major reasons for car crashes and also aims to integrate post-crash measures.

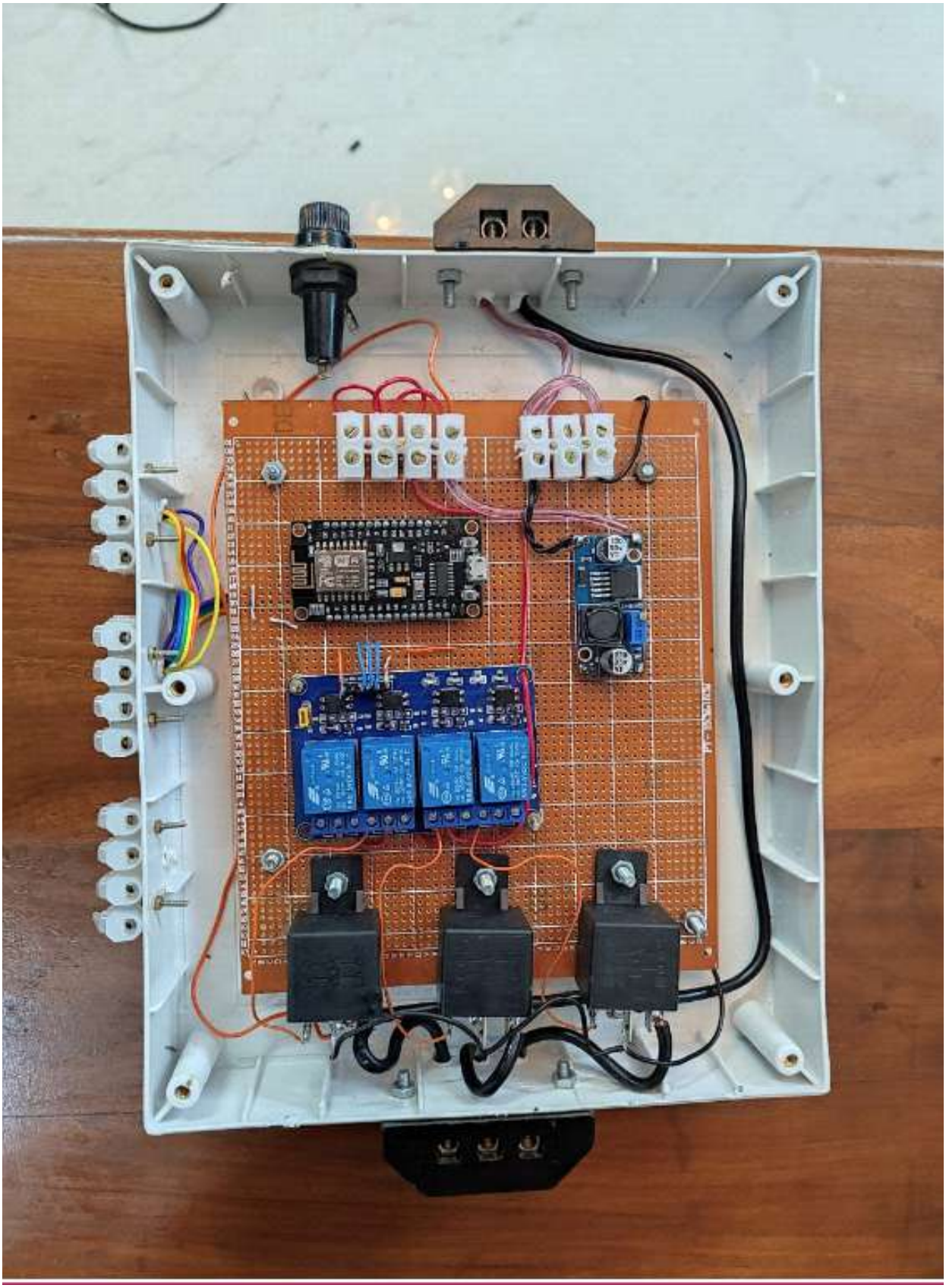
Project Outcome/result/findings: (in 50 words)

We have successfully developed our initial prototype and conducted testing on a Maruti 800 vehicle. The prototype includes features such as accident detection, remote control of car functions via a mobile app, real-time monitoring of location and speed, and maintenance reminders for the vehicle. These advancements provide convenience, safety, and efficient car management accessible worldwide through an Internet connection.

Innovative Approach: (in 50 words)

This project innovatively leverages the Internet of Things (IoT) to connect sensors in cars, enabling real-time data collection on road conditions, vehicle status, and more. Using advanced communication protocols, it aims to enhance car safety, prevent accidents, and integrate post-crash measures, ultimately improving the overall driving experience.

Photograph 5.10: Using a plug and play device we can monitor vehicle performance, tracking, and other safety features



# Design and Fabrication of Fire Extinguishing Rover

**Unique Registration Number: GSIC-**449

Name of Applicant/s: Shane Gomes
Yash Sukhthanker
Lamiha Sayad
Shubham Sutar
Raj Telang
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Project Objective:

Our project is a user-controlled rover which is used to detect fire and extinguish the fire. As we know fire outbreaks are a common disaster which affects our infrastructure, environment and mainly we living beings.

That's the reason why we came up with this idea to make a rover which will help the firemen or people in extinguishing fire that has occurred in places which are too difficult or risky to access. This eliminates the risk of fire fighters endangering their life in order to protect us.

This rover can carry an extinguisher and extinguish the fire with the help of a remote control and a controller behind the remote. There are cameras mounted on the system which will help the controller in operating the rover, there are also heat sensors placed to identify the intensity of the fire.

Currently there are very few technologies that are used in extinguishing the fire.
This rover will eliminate majority of the problems which are faced by firemen in their daily encounter.

Project Outcome:

- To design and fabricate a fire extinguishing rover.
- To develop this rover which is user friendly
- To develop a mechanism that will activate the spray from the extinguisher.
- To conduct calculations and testing of this rover in the real word

Innovative Approach:

As we know fire accidents are a common disaster which increases every year globally, at the same time fire fighters are losing their life as they encounter danger.

This technology will eliminate the risk of fire fighters losing their life. This rover can fit into narrow or unsafe location where the fire men cannot access.

This report contains all the data of how this rover will operate and how it helps in eliminating the risk of losing lives.

This rover can carry an extinguisher and extinguish the fire with the help of a remote control and a controller behind the remote.

There are cameras mounted on the system which will help the controller in operating the rover, there are also heat sensors placed to identify the intensity of the fire.

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This rover will eliminate majority of the problems which are faced by firemen in their daily encounter.

# AI based driver alerting system

**Unique Registration Number: GSIC-**436

Name of Applicant/s: Vaibhav Digambar Giridhar
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Name of Mentor/s: Prof Veena Goankar
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Project Objective:

- Detecting the face, the expressions of the vehicle driver.
- Based on the data, that is the data received from face recognition, decisions are to be made. Decisions include whether it is safe for the driver to continue driving, or to give a warning. After the final warning, there will be an emergency alarm alert so that the driver can halt and acknowledge.
- The driver unaware that he is slowly falling asleep will get notified of the final warning using an alarm.
- Blink rate, nodding of the head, phone usage and other distractions to be detected via the camera. The alarm/buzzer will accordingly alert the driver.

Abstract

Driver drowsiness has been one of the leading causes of car accidents in recent years, resulting in serious physical injuries, fatalities, and considerable financial losses. According to statistics, a reliable driver drowsiness detection system is needed to inform the driver before a disaster occurs. The following measures have been used by researchers to determine driver drowsiness through physiological and cognitive measures. A thorough examination of these measures will shed light on the current systems, their problems, and the improvements that must be made in order to create a reliable system. We went over the three methods employed and evaluated their benefits and drawbacks.

Drowsiness has been experimentally controlled in a variety of methods, which is also described. We have come to the conclusion that one could accurately identify a driver's tiredness level by building a hybrid drowsiness detection system that combines non-intrusive physiological indicators with other metrics. If a warning is delivered to a driver who is deemed drowsy, a number of road accidents may be avoided. Aside from drowsiness detection, the technology will monitor other distractions such as phone usage and provide GPS location information after an accident for immediate support of authorities.

Our technique tries to first determine whether or not a driver is distracted, and if so, the system should be able to identify the sort of distraction. If their eyelids close for a certain period of time

or if they yawn frequently, we'll assume they're starting to doze off and sound an alarm to wake them up. Other distractions, such as using a hand-held phone while driving and looking away from the road for long periods of time, will be recognized using AI/ML processing and notified when the danger threshold is exceeded.

Project Outcome/result/findings: (in 50 words)

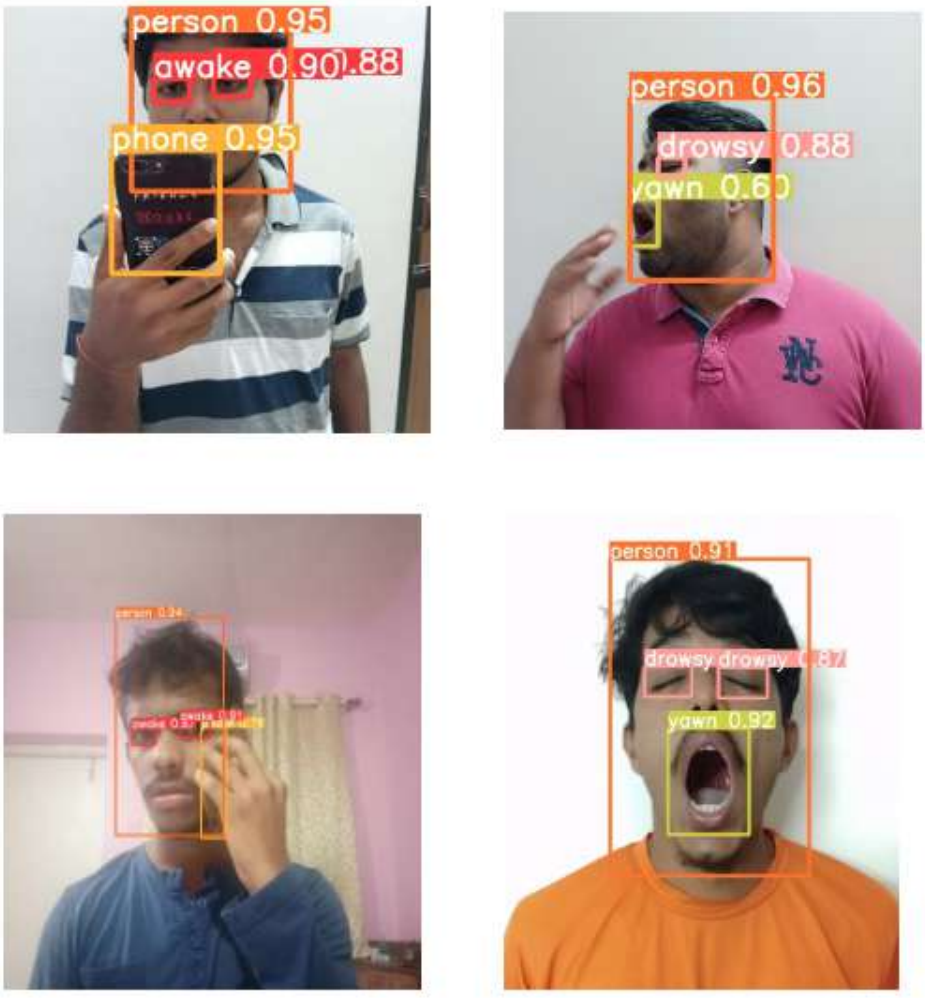
Drowsiness, yawning and other distractions such as using phone while driving is detected. Based on the detection, the system decides and sends an alert to the driver as a buzzer beep.

After a certain number of alert sounds, a long emergency alarm is given for the driver to acknowledge and be cautious about his driving. A manual button is pressed to turn the alarm off.

Innovative Approach: (in 50 words)

In the future, this system may well be expanded to include security features such as allowing only certain individuals to use the vehicle which can be safeguarded information and updated for future users. In the event of theft, the vehicle will not start, and the burglar's alarm may be communicated to the vehicle's owner.

Photograph 5.11: AI based driver alerting system



# Design and Development of Coconut Harvesting Bot

**Unique Registration Number: GSIC-**436

Name of applicant/s: Majaz Shaikh
Aaron Zacharia
Wilander Soares
George Rebello
Saurabh Pawar

Guide-Prof.Swapnil Ramani
Co-Guide-Prof.Gaurish Samant
Contact no.: 8381007039

Project Objective:

The Objective of our project is to create a mobile operated coconut harvester robot operated via Bluetooth. The main objective is to replace the use of joysticks and remote control-based system with Bluetooth technology to control the robot. Our project focuses on a light weight design that is portable, easy to clamp and remove from the tree. The project is based on wireless communication where the data from the mobile application is transmitted to the robot via Bluetooth connection.

Abstract

As per the research, Asia has the largest population of coconut trees. It is one of the most useful tree providing us with food, cosmetics, medicine and building material. Goa has around 25,000 hectares of coconut plantations (1.32 per cent of the total area of the state) and produces over 124 million coconuts per year. The coconut climber, also known as “render”, climbs the coconut trees without any support or protection and harvests the coconuts. He must climb around 50-55 trees a day in a plantation.

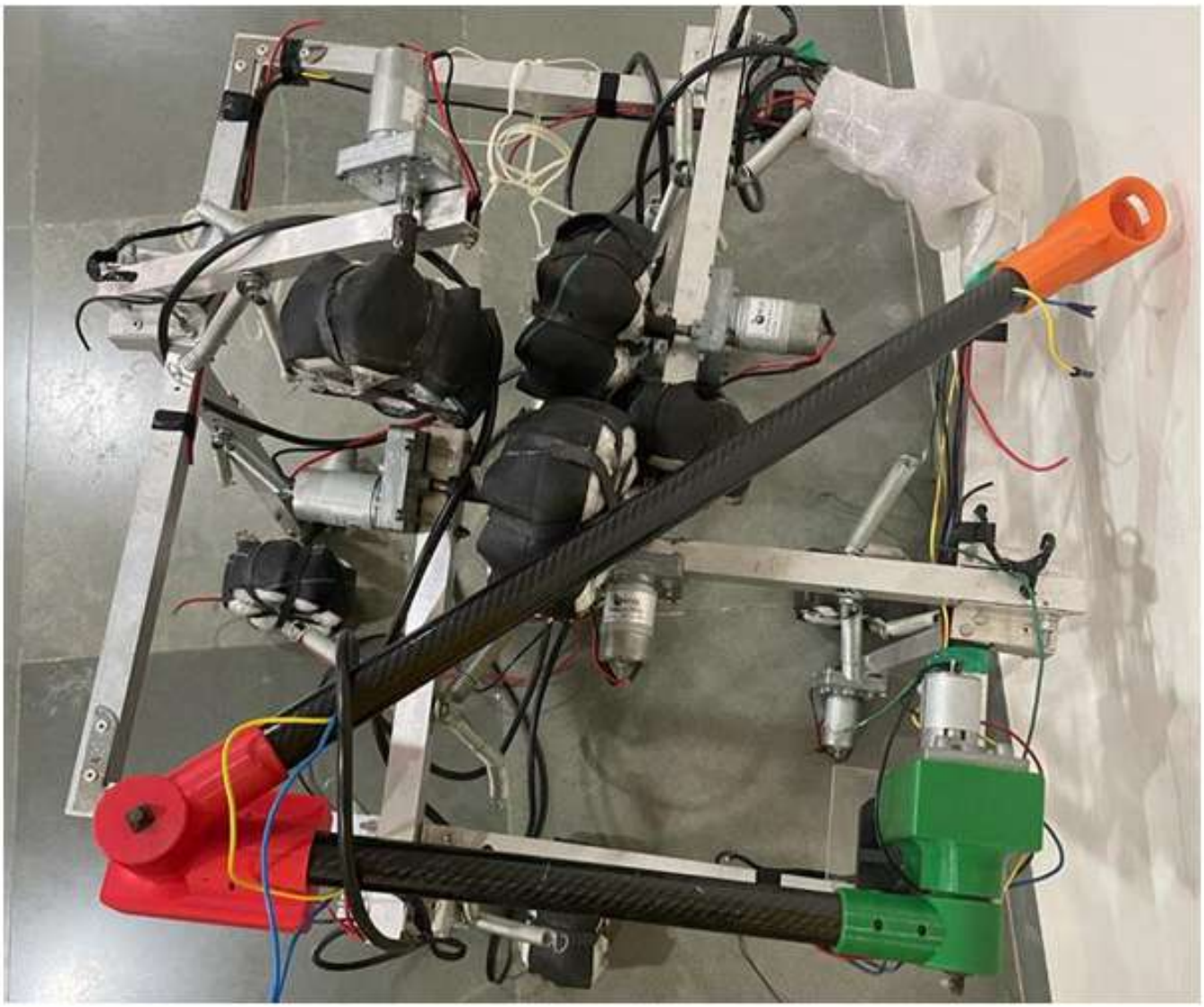
Often, to climb a coconut tree, skilled labor is required. Sometimes, accidents can occur wherein the coconut climbers can slip and fall. During the rainy season, the climbers cannot climb the coconut tree hence coconut trees remain unharvested leading to loss of business to the plantation owner. In this report, we present a mobile app operated coconut tree climber robot made from wood.

The robot consists of two parts that is the robotic arm and a climber mechanism. The climber mechanism is designed with respect to an organ stand. In the design, four springs are used to clamp to the tree. A set of four wheels powered by four Johnson motors are used for up and down movement of the robot across the tree bark. The robotic arm is used to harvest/pluck the coconuts from the tree. It has three degrees of freedom and is driven by two MG996R servo motors. A grinder with 775 dc motor is fitted to the arm.

The arm itself has a 360-degree rotation to it which is provided by a nema17 stepper motor. The arm can also move 360 degrees across the diameter of the tree. Microcontroller esp32 is used as a Bluetooth hub for the robot. Atmega2560 is incorporated to the robot for motor control. The overall body of the arm and the climber is made of wood. Operation of the arm and the robot is done using a mobile application developed by us.

The app features include battery level indicator and buttons to operate the robot. The app is connected to the esp32 via Bluetooth. The robot is powered by lion batteries and it also has a backup power circuit.

Photograph 5.12: Design and Development of Coconut Harvesting Bot



# Using VR Box for improving customer experience in building construction industry

**Unique Registration Number: GSIC-**415

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Project Objective:
To create a virtual environment for Architectural designs

Abstract
As we know that the construction designs are really vast in terms of planning and scheduling, we believe that the use of technology for construction design plays a vital role. In order to avoid the hassles in the construction process in the mega projects and phasing and scheduling them out I'm a systematic manner, we made use of digital platforms for the benefit. As the Project size increases the possibility of creating errors also tend to build up, considering the magnitude of the Project. Hereby, the process becomes challenging to handle manually. Also, in terms of designs, once finalized, cannot be changed post construction. As there is a huge cost involved in a construction Project, the errors need to rectified in the design stage itself. Hereby we made use of VR and 360 camera so that we could see the building designs beforehand.

Project Outcome/result/findings: (in 50 words)
We managed to create a virtual environment using computer design and viewed in VR

Innovative Approach: (in 50 words)
We integrated the VR and 360 images to give a view of architectural designs before the building was being built. It also helped us in planning and phasing in of the building projects.

Photograph 5.13: Using VR Box for improving customer experience
in building construction industry

# Design and Testing of Squat Analyser for Powerlifting Sport

**Unique Registration Number: GSIC-**432

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Contact Number: Mr. Rushabh Karpe [karpe0042@gmail.com, 7083867832]
Contact Email ID: karpe0042@gmail.com

Project Objective:

Our project is to make, device that will help the performer with his sitting stage, and won't allow him to half squat.

Abstract

Powerlifting Squat is a well known exercise for building lower limb muscles in which the body is supported on the feet and the knee are bent so that the buttocks rest on the heel. Powerlifting Squat requires the lifter to squat down until "the top surface of the legs at the hip joint is lower than the top of the knees". In powerlifting, the qualifying weight for a squat must be 90kg or more and the sitting position must be 90 degrees. When a lifter is practicing with 100 kg of weight, it is challenging for him to focus on his sitting position. Our goal is to make sure performer clears his seating stage which is 90 degree or more than that.

Our project was developed with the intention of helping power lifters while performing squats. Our design aims to address these challenges in an innovative and distinctive that is suitable for the user. Since currently there is no device to help the powerlifter during the sitting stage in the market, we set out to develop a low-cost product that is affordable.

Our design aims to address these challenges in an innovative and distinctive manner. To achieve our goal, we have used economical design material so as to achieve a reasonable price for our design while maintaining a high standard of quality. Also economical and readily available manufacturing processes were used so as to reduce complexity in manufacturing the device. The Squat Anal- yser has to be a wearable product which can be comfortably worn by the user. It has adjustable belt to suit the user's need.

This design can go in for further development later on and be improved technologically and ergonomically for the user. It helps in strengthening the muscles in the legs ,including the quadriceps,calves,and hamstrings, strengthening the knee joints.

Project Outcome/result/findings: (in 50 words)

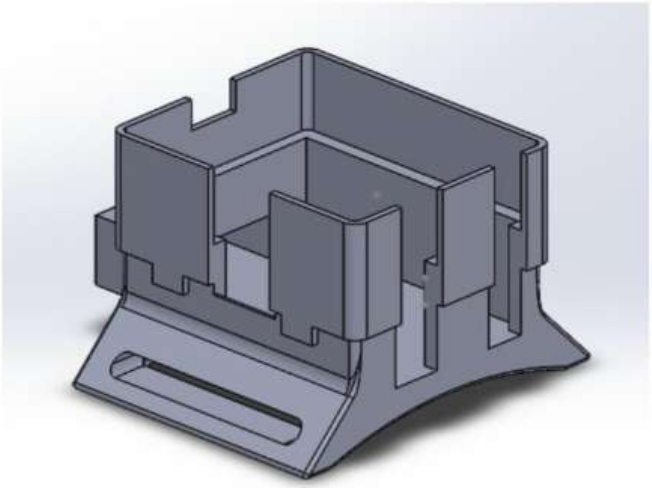
To make sure that the athlete/performer is being practicing the squats accurately and that too in a proper way:

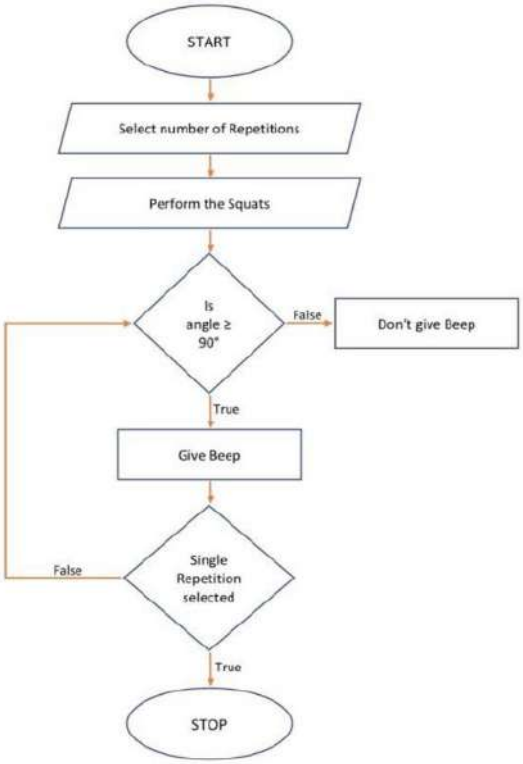
- The device will help him to practice the squats in the way it should be done accordingly which will help him/her to do a perfect squats without any hesitation
- It will make the performer to test whether he/she is able to clear the squat or not and it will definitely help him to improve the level of confidence.
- It will eliminate the nervousness or stress of the performer.

Innovative Approach: (in 50 words)

Squat analyser will fix the seating position of the performer. During overloading of weights performer will be comfortable and relax due to innovative approach provided by device and will not do half squatting.

Photograph 5.14: Design and Testing of Squat Analyser for Powerlifting Sport





# Design and Fabrication of Exoskeleton for Assistance in walking

**Unique Registration Number: GSIC-**432

Name of Applicant/s: Fletcher D'Costa
Milbert Alfonso
Higgens Barreto
Bradley Rodrigues
Tushar Shelke
Name of Mentor: Dr Suraj Ravindra Marathe
Name of School/College/Startup/Organisation: Don Bosco College of Engineering , Fathorda
Address: Don Bosco College of Engineering , Fathorda Goa 403602.
Contact Number: Bradley Rodrigues (9923348061)
Contact Email ID: Bradley.rodrigues05@gmail.co

Project Objective:
Aid people with walking issues like arthritis, abnormal joint, knee injuries

Abstract:
In recent years, the world has seen a shift from conventional rehabilitation methods to robot assisted rehabilitation with the help of exoskeletons. These exoskeletons are unique in their design as they each have a different approach to achieving a common goal.

Exoskeletons were first seen in the 1960's when the US Air Force had Cornell Aeronautics laboratory study feasibility of these models to assist personnel and also at Mihajlo Pupin Institute Serbia where exoskeletons were developed for gait study.

Exoskeletons are not restricted to only rehab, they can also be used to reduced work related to lower limb disorders, reduce muscle fatigue in industries, augment human strength, increase endurance during locomotion, improve coordination and adaptability on human joint movement and in gait rehabilitation to enhance motor function recovery.

Exoskeletons are usually priced very high and cannot be afforded to those in need. Some exoskeletons start at 14 lakhs and can go up to almost 60 lakhs. The reason for these high prices is mainly due to the large research and development costs that go into making them and the technological advancements that drives them.

Project Outcome/result/findings: (in 50 words)
Our design aims:-

- To aid people with walking issues like arthritis, abnormal gait, knee injuries, etc. in walking.
- Reduce the metabolic effort required to walk
- Reduce muscle fatigue
- Used in rehabilitation and physiotherapy
- Reduce cost of exoskeletons

Implementation:

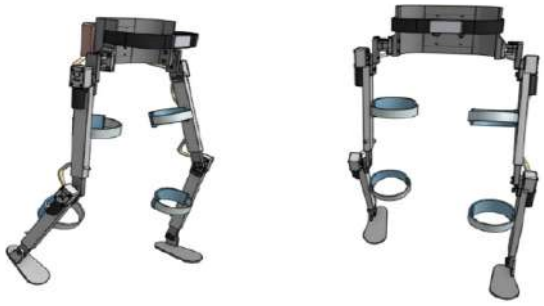
Using DC motors powered by lightweight batteries to assist in walking motion

Providing alternate load path to reduce the weight on the knees and feet by using a lightweight aluminum frame

Innovative Approach:

Modular design: Design will fit the needs of the user to solve any issues they face. More applications: Can be used for health and fitness to track various parameters for athletes. Adding new features: Features like fall detection and prevention and adjustable height for linkages.

Photograph 5.15: Design and Fabrication of Exoskeleton for Assistance in walking



# Development of Green Composite from Cashew nut shell oil

**Unique Registration Number: GSIC-**319

Name of Applicant/s: Nathan Mazarello
Amston Sanches
Ashish Tarale
Chirag Naik
Lemuel De Cunha
Name of Mentor/s: Prof. Gaurish M. Samant
Name of School/College/Startup/Organisation: Don Bosco College of Engineering
Address: Fatorda, Margao, Goa
Contact Number: 7411357170
Contact Email ID: samantgaurish@gmail.com

Project Objective:

- To develop a composite lamina made up of natural fibres and CNSL (Bio-based matrix).
- To test the lamina and obtain its tensile and flexural properties.
- To perform statistical analysis of the results obtained from the tests.
- To carry out analysis for correlating obtained results.

Abstract:
Composites have gained prime importance due to their high strength-to-weight ratios that make them applicable for various useful applications as compared to traditional metals.

However, with certain advantages, these composites are a threat to the environment due to their toxic nature and non-biodegradability.

Hence, a heightened need of the hour is producing green composites made of naturally available fibres and bonding matrix materials.

This project aims to produce green composites of three different natural fibres (Bamboo, Coconut Midrib and Areca leaf sheath), locally available in and around Goa, bonded together by Cardanol resin, a derivative of cashew nut shell oil.

Silicon dioxide nanoparticles, graphene nanoparticles and single walled carbon nanotubes are added to increase its mechanical properties.

Prior to composite manufacturing, the fibres are subjected to chemical treatments such as alkali treatment (NaOH), Silane treatment and Benzoyl peroxide treatment to improve bonding properties between fibre and matrix, thereby increasing mechanical properties.

A total of twenty seven composite samples are produced, where nine are produced by Compression

Moulding, nine by vacuum bagging technique and the rest nine by hand layup process.

All samples are tested to obtain tensile and flexural properties by performing the tensile test and flexural test.

The obtained properties are statistically analysed and compared with properties of already produced green composites.

Project Outcome/result/findings: (in 50 words)

- Obtaining twenty-seven different composites manufactured by varying fibre percentage, nanofillers and manufacturing methods.
- Obtaining tensile and flexural properties by performing mechanical tests.
- Theoretical analysis of composite in software such as MATLAB, Ansys and COMSOL.
- Comparative study of each composite based on the different types of fibres used.

Innovative Approach:

- Use of cardanol based resin which is rarely used in composites.
- Addition of three different nanofillers to enhance properties.
- Use of non-traditional and all-natural fibres and matrix.

Photograph 5.16: Development of Green Composite from Cashew nut shell oil


Photograph 5.17: Development of Green Composite from Cashew nut shell oil

Photograph 5.18: Virtual Innovation Register (VIR) featured in the E coffee table book on best innovations titled 'Cutting-edge Transformations' released by the Hon'ble Prime Minister of India, Shri Narendra Modi at the Civil Services Day held on April 21, 20225. The Chairman presented the E coffee table book to the Hon'ble Minister for Science, Technology & Waste Management, Shri Atanasio Monserrate and Secretary for Science, Technology & Waste Management, and Dr. Tariq Thomas along with the Member Secretary, Shri Levinson Martins.

Photograph 5.19: Virtual Innovation Register (VIR) received the prestigious SKOCH ORDER OF MERIT Award 2022


Photograph 5.20

Shri. Jose Manuel Noronha, Chairman, Goa State Innovation Council presenting the keynote address

Photograph 5.21

Shri. Jose Manuel Noronha, Chairman, Goa State Innovation Council along with Shri. D. S. Prashant, CEO FiiRE (Left) and Shri. Levinson Martins, Director - DST&WM interacting with the beneficiaries of Virtual Innovation Register

Photograph 5.22

Shri. Jose Manuel Noronha, Chairman, Goa State Innovation Council along with Shri. D. S. Prashant, CEO FiiRE (Left) and Shri. Levinson Martins, Director - DST&WM presenting the certificate to the beneficiaries of Virtual Innovation Register

# 06

# RAPID PROTOTYPING LAB

# Chapter 06
# Rapid Prototyping Lab

"Science is a way of thinking much more than
it is a body of knowledge."

- Carl Sagan

## 6.1 Introduction

The Rapid Prototyping Lab at the Goa State Innovation Council (GSInC) is a state-of-the-art facility that provides a platform for innovators, entrepreneurs, and researchers to turn their ideas into tangible prototypes. Equipped with advanced machinery such as 3D printers, laser cutters, CNC machines, and electronics workstations, the lab offers a range of prototyping services to support the development of new products, services, and solutions. The lab is open to anyone with a creative idea and provides access to specialized equipment, tools, and expertise to help bring their concepts to life. The ultimate goal of the Rapid Prototyping Lab is to foster innovation and entrepreneurship in the state of Goa by providing a collaborative space for prototyping and testing new ideas.

The Rapid Prototyping Lab at the Goa State Innovation Council (GSInC) offers several benefits to innovators, entrepreneurs, and researchers, including:

**Faster prototyping:** The lab enables innovators to quickly create prototypes of their ideas, which can be tested and refined more rapidly than traditional prototyping methods.

**Cost-effective:** The use of advanced machinery and shared resources in the lab reduces the cost of prototyping, making it more accessible to a wider range of innovators.

**Access to specialized equipment:** The lab provides access to advanced machinery such as 3D printers, laser cutters, and CNC machines, which can be expensive and difficult to acquire for individual innovators.

**Expert guidance:** The lab offers the expertise of trained professionals who can guide innovators through the prototyping process, providing technical support and advice to ensure the best possible outcome.

**Collaboration and networking:** The lab provides a collaborative space where innovators can share ideas, work together, and build networks that can lead to new partnerships and opportunities.

## 6.2 List of Equipment

| Sr. No. | List Of Equipments | Description | Make / Brand |
|---|---|---|---|
| | | | |
| | | **POWER TOOLS** | |
| 01 | Professional Angle Grinder | Bosch GWS 600 Professional Angle Grinder<br>Disc Diameter 100 mm<br>Grinding Spindle Thread M 10<br>No Load Speed (rpm) 12000 rpm<br>Rated power input 660 W<br>Width (millimeter) 263 mm<br>Height (millimeter) 95 mm<br>Weight (kilograms) 77 mm<br>Weight 1.5 kg | BOSCH |
| | | | |
| 02 | Circular Saw | Bosch GKS 7000 Circular Saw<br>Rated Power Input 1,100 W<br>No-Load Speed 5.200 rpm<br>Weight 3.6 kg<br>Saw Blade Bore Diameter 20 mm<br>Saw Blade Diameter 184 mm<br>Cutting Depth (90°) 65 mm<br>Cutting Depth (45°) 47 mm | BOSCH |
| | | | |
| 03 | Smart Drill Kit | Bosch Impact Drill 1G GSB 13 RE Kit, 600 W ,Voltage: 230v<br>Impact Drill GSB 13 RE Kit<br>Voltage 230v<br>No Load Speed 0 - 2800 rpm<br>Item Weight 1.6 kgs<br>Power Consumption 600 W<br>Minimum Order Quantity 1 Piece | BOSCH |
| | | | |
| | | **ESSENTIAL TOOLS** | |
| | | | |
| 04 | JUNIOR HACKSAW | Size: 6 inch | STANLEY |
| 05 | SCREW DRIVER SET | 4pc Screw Driver set: PH1x450, PH2x450mm, 5x450mm, 6x450mm, chrome vanadium steel shaft, chrome plated<br>Ergonomically designed ABS plastic grip handle | STANLEY |
| 06 | MICRO CHISEL SET | Set of 12 Tools for Wood-Carving. Quantity: 12 Tools; Size: 13.5 x 1 cm each (approx.); Material: Steel Blades with Wooden Handles | STANLEY |
| 07 | PLIER SET | Combination Plier, Needle Nose Plier and Lockin Plier. | STANLEY |
| 08 | HAMMER SET | Mallet Hammer, 1 Claw Hammer and 1 Ball peen Hammer | STANLEY |

| Sr. No. | List Of Equipments | Description | Make / Brand |
|---|---|---|---|
| | | | |
| 09 | C CLAMP | Material: Steel<br>Colour: Red and Silver<br>Dimensions : 4”<br>Package Content: 3 C or G Clamps | STANLEY |
| 10 | C CLAMP | Material: Steel<br>Colour: Red and Silver<br>Dimensions: 8”<br>Package Content: 3 C or G Clamps | STANLEY |
| 11 | HARDENED METRIC ALLEN KEY SET | Hardness: 52 to 56 HRC (Scientifically hardened)<br>The Allen Keys are Precision Drawn for perfect matching of Allen keys with the screw head<br>Black Allen Keys are specially coated and oiled for rust prevention<br>TAPARIA Allen Keys generally Conform to I.S. 3082 2008<br>Set Size: Set of 9 | STANLEY |
| 12 | COMBINATION SPANNER | 12 PCS COMBINATION SPANNER SET 6-22MM. CHROME VANADIUM STEEL<br>COMBINATION SPANNER SET 6-22 MM CONSIST OF 12 Pcs 6-7-8-9-10-11-12-13-14-17-19-22 | STANLEY |
| 13 | 30 PC RACHETING SCREWDRIVER SET | Package Contains: 30 Pcs, ratcheting screw driver set | STANLEY |
| 14 | BABY VICE CLAMP | Size (L x B x H): 15.2 cm x 6 cm x 15 cm, Jaw width 60 mm, Jaw opening 70 mm<br>Portable- Can be taken along and used anywhere<br>Net Weight 1.2 KG. Type 60 Mm | STANLEY |
| 15 | SWASTIK STAINLESS STEEL ADJUSTABLE SPANNER WRENCH (8 INCHES) | Material: Stainless Steel, Colour: Black<br>Item Dimension: 21 cm x 11 cm x 9 cm<br>Precision marked scale indicate correct jaw opening<br>Heat treated adjustable chrome finish spanner<br>Package Contents: 1 Piece Adjustable Spanner | STANLEY |
| 16 | HOT MELT GLUE GUN | power input - 220-240V AC, 50Hz | STANLEY |
| 17 | MEASURING TAPE 5METERS | Material: Plastic and Aluminium<br>Colour: Grey and Blue<br>Size (L x B x H): Tape: 9 cm x 3 cm x 7 cm; Level: 3 cm x 3 cm x 5 cm<br>Included Components: 1 Spirit Level & 1 Measuring Tape | STANLEY |
| 18 | DIGITAL TESTER | Direct Detection: 12V - 220V AC/DC live objects through LCD display. | STANLEY |

| Sr. No. | List Of Equipments | Description | Make / Brand |
|---|---|---|---|
| | | | |
| 19 | DIGITAL MULTIMETER | Jaw Size: 50mm or 2.0 inch<br><br>Tests AC or DC voltage, AC current and resistance<br>Diode check and continuity test ,Data hold<br>Fuse and Diode Protection and Voltage Measurement<br>Includes carry case and 9v battery Multimeter Ammeter tester | STANLEY |
| 20 | 46 IN 1 PCS TOOL KIT<br>& SCREWDRIVER AND SOCKET SET | 4 Inch Socket Combination 46Pcs Set Diy Repair Tool Kit Model:2462 is suitable for<br>professionals, technicians . The multi function drilling machine can be used to make<br>holes on walls, concrete, metal, wood and plastic.<br>Fix your picture frames, paintings,<br>hangers, lightings etc. without any hassles. | STANLEY |
| | | | |
| **3D Printers** | | | |
| | | | |
| 21 | FLASHFORGE ADVENTURER 3 3D PRINTER | Print Technology Fused Filament Fabrication (FFF), Fused<br>Deposition Modeling (FDM)<br>File Format Supported STL<br>Connectivity USB, Wifi, Ethernet<br>Build Size (L*W*H Inches) 150L x 150W x 150H mm<br>Condition New<br>Weight (Kg) 9kg<br>Filament Diameter 1.75mm<br>Resolution 0.1mm-0.3mm (Adjustable)<br>Automatic Grade/Machine Type Automatic<br>Colour White<br>Extruder Quantity 1<br>Layer Thickness 0.1mm-0.3mm (Adjustable)<br>Nozzle Temperature 245 degree celcius<br>Operating System Windows 7/10/Mac OS X,Linux<br>Printing Technology Fused Deposition Modelling<br>Technology Fused Deposition Modelling<br>Color White<br>Brand Flashforge<br>Warranty 1 Year<br>Material Polyamide (PLA), Nylon, ABS, Polypropylene (PP)<br>Print Accuracy 0.1mm-0.3mm (Adjustable)<br>Software Supporting FlashPrint<br>Product Dimension 388 x 380 x 405mm<br>Heated Bed Temperature Upto 100 degree celcius | Flashforge |

| Sr. No. | List Of Equipments | Description | Make / Brand |
|---|---|---|---|
| | | | |
| 22 | ENDER 6 | Build Size - 250 x 250 x 400 mm<br>Technology - FDM<br>Nozzle Diameters - 0.4mm<br>Max. Nozzle Temp - 260°C<br>Max. Print Bed Temp - 110°C<br>Printing Materials - PLA, TPU, ABS,PETG,CF<br>Supported files - STL, OBJ, G-Code<br>Machine size - 495 x 495 x 650 cm | Creality |
| | | | |
| 23 | SERMOON D1 | Printing Size - 280*260*310mm<br>Molding Tech - FDM<br>Slice Thickness - 0.1mm-0.4mm<br>Nozzle Diameter - Standard 0.4mm *7820.4mm<br>Precision - +0.1mm<br>Filament - PLA<br>File Format - STL/OBJ/AMF<br>File Transfer - USB/Storage card<br>Slice Software - Reality Slicer/Cura/Repetier-Host/ Simplify3D<br>Bed Temp - <100°C<br>Nozzle Temp - <260°C<br>Speed - <180mm/s,Normal\|E30-60mm/s | Creality |
| | | | |
| 24 | CREALITY CR10 MAX | Printing Size - 250*250*400mm<br>Molding Tech - FDM<br>Slice Thickness - 0.1mm-0.4mm<br>Nozzle Diameter - Standard<br>Precision - +0.1mm<br>Filament - 1.75mm PLA<br>File Format - STL/OBJ/AMF<br>Slice Software - Reality Slicer/Cura/Repetier-Host/ Simplify3D<br>Bed Temp - <100°C<br>Nozzle Temp - <260°C<br>Printing Speed - 120-150mm/s | Creality |
| | | | |
| 25 | CREALITY ENDER 3 PRO | Build Size - 220*220*250mm<br>Technology - FDM<br>Nozzle Diameters - 0.4mm<br>Max. Nozzle Temp - 255°C<br>Max. Print Bed Temp - 110°C<br>Printing Materials - PLA, TPU, ABS<br>Supported files - STL, OBJ, G-Code<br>Machine size - 440*410*465mm | Creality |
| 26 | CREALITY ENDER 3 PRO | | Creality |

| Sr. No. | List Of Equipments | Description | Make / Brand |
|---|---|---|---|
| | | | |
| 27 | CREALITY ENDER 3 V2 | Products Type - Blister<br>Materials Applicable - HIPS<br>Automation Grade - Semi-Automatic<br>Max Forming Depth - 120-150 mm<br>Max Forming Area - 220 by 220 mm | Creality |
| 28 | CREALITY ENDER 3 V2 | | Creality |
| | CREALITY ENDER 3 V2 | | Creality |
| | | | |
| 29 | ENDER 3 S1 PRO | Build Size - 220 x 220 x 270 mm<br>Technology – FDM<br>Nozzle Diameters - 0.4mm<br>Max. Nozzle Temp - 300 °C<br>Max. Print Bed Temp - 110°C<br>Printing Materials - PLA, TPU90-95, ABS, PA<br>Supported files - STL, OBJ, AMF<br>Machine size - 490 x 455 x 625 mm | Creality |
| | | | |
| 30 | 9060-80W LASER | Laser Type: Hermetic and Detached Co2 Laser Tube<br>Laser Power: 80W<br>Voltage: AC 220V 50Hz<br>Moving System 5 Inch Offline Display, Offline Step-ping<br>Motor System<br>Cutting Area: 900 mm X 600 mm<br>Cutting Table: Honeycomb and Aluminous Strip Panel<br>Double Face Working Table<br>Engraving Speed: 50000 mm/min.<br>Repeating: Location Less than 0.05 mm | |
| | | | |
| **Drone** | | | |
| 31 | DJI TELLO | Dimensions: 98×92.5×41 mm<br>Weight: Approximately 80 g<br>720p Live View<br>Max Flight Distance: 100m<br>Max Speed: 8m/s<br>Max Flight Time: 13min<br>Max Flight Height: 30m<br>Photo: 5MP<br>Format: JPG(Photo),MP4(Video) | DJI |
| | | | |
| | | Soldering station | |
| 32 | SOLDERING STATION | Weight: 1.80kg<br>Dimensions size: 210x125x135mm<br>Power supply voltage: 230V (220-240v) /50Hz<br>Electronic iron power: 48W<br>Regulation range of temperature: 150°C to 450°C | |

## 6.3 Prototypes built at Prototyping Lab

### 01
### CONVERTING PLASTIC WASTE BOTTLES TO 3D PRINTING FILAMENT

Name: Vailan De Souza
Name of School/College/Start-up/Organisation: Prototyping Lab
Address: Fatorda-Goa.
Ph. No.: 9881253391

Project Objective:
A machine for turning PET bottles into printable filament.

Project Abstract:
PETamentor is an innovative solution aimed at addressing the environmental challenges posed by plastic waste while simultaneously promoting sustainable manufacturing practices. This abstract provides an overview of PETamentor, focusing on its ability to convert plastic bottles into 3D printing filaments, thereby contributing to the circular economy and reducing the ecological footprint of plastic waste.

The exponential increase in plastic consumption has led to a significant rise in plastic waste, causing severe environmental pollution and resource depletion. PETamentor seeks to tackle this issue by harnessing the potential of discarded plastic bottles and transforming them into high-quality 3D printing filaments. The process involves collecting plastic bottles and subjecting them to a series of mechanical and chemical treatments to break them down into smaller, recyclable components. The resulting material is then processed into filaments suitable for 3D printing applications. PETamentor incorporates advanced recycling technologies and quality control measures to ensure the production of filaments that meet industry standards and exhibit desirable properties.

By converting plastic bottles into 3D printing filaments, PETamentor offers several advantages. Firstly, it reduces the reliance on virgin plastic materials traditionally used for filament production, thus conserving valuable resources. Secondly, it provides a sustainable alternative to single-use plastic bottles by transforming them into useful products with extended lifespan and functionality. Additionally, PETamentor contributes to waste reduction and promotes a circular economy model by reintroducing plastic waste back into the production cycle.

Photograph 6.1: Converting Plastic Waste Bottles to 3D Printing Filament

## 02
## MULTI-APPLICATION AUTONOMOUS HEXACOPTER DRONE

Name: Raman Teja
Name of School/College/Start-up/Organisation: PCS Labs
Address:  Andra Pradesh
Contact: 9032195562

Project Objective:
Autonomous Flying drone

Project Abstract:
The hexacopter styled drone was built for PCS labs from Andra Pradesh, The drone was built with the purpose of learning and ease of operation and maintenance. The drone has Autonomous capabilities and can complete missions pre-programed in the drone.

Such drones are very useful in surveillance and security.

Photograph 6.2: Multi-Application Autonomous Hexacopter Drone

# 03
# RECYCLING 3D PRINTED WASTE TO FILAMENT

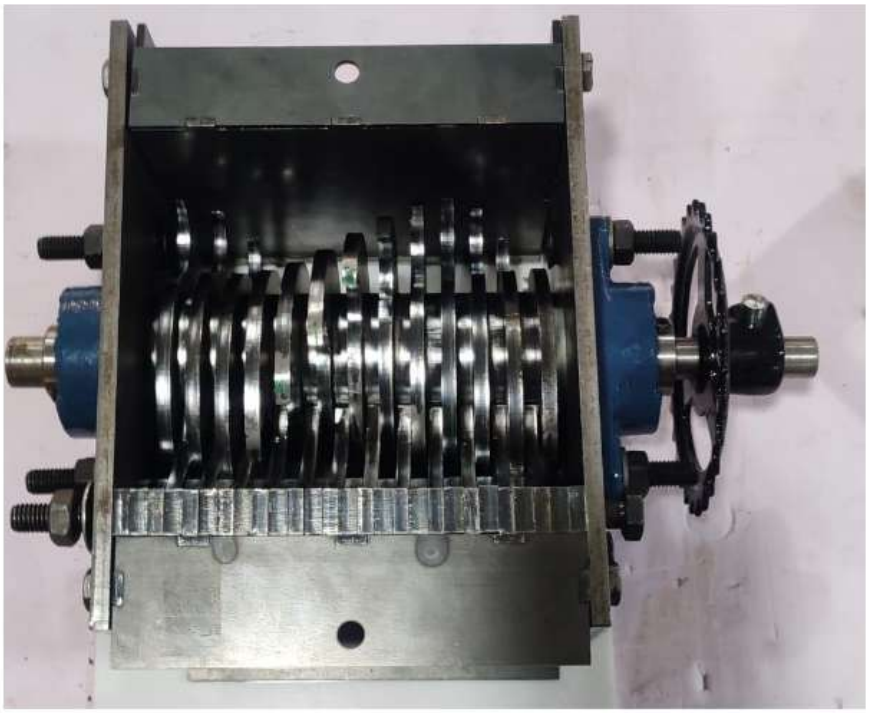
Name: Siddhant Panjikar
Name of School/College/Start-up/Organisation: Makers Studio
Address: Usgao, Ponda-Goa
Contact: 7276347926

Project Objective:
Waste generated from 3D printers is crushed and used again

Project Abstract:
This machine will crush and make the old filament waste in to small granules. These granules will be heated to their melting point and is mixed with some new plastic grenuals. This mixture is then made into filament wires and used again for 3D printing.

This process reduces wastage by 60%.

Photograph 6.3: Recycling 3D printed waste to filament



# 04
# DENTAL MOLD

Name: Dr. Reachel Cos
Name of School/College/Start-up/Organisation: Goa Dental College
Address: Bambolim, Goa
Contact: 9545848398

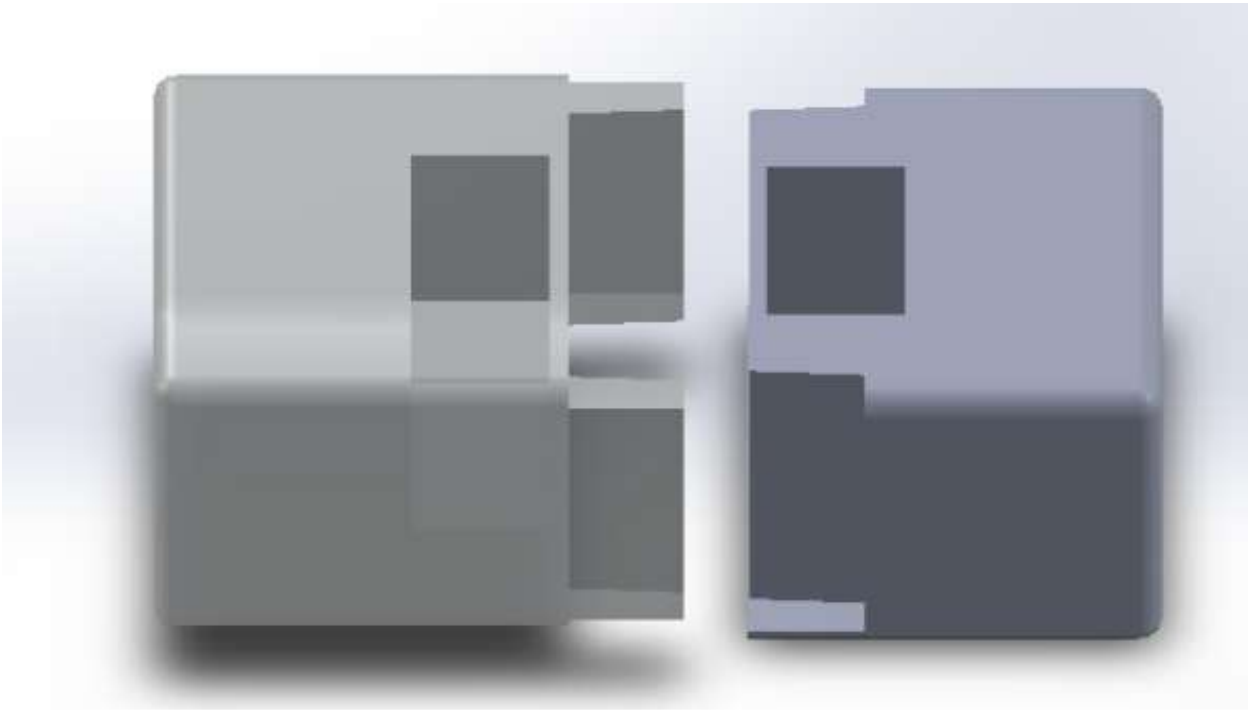
Project Objective:

The mold is used for educational purpose. It is used to demonstrate how the various tooth diseases appear and how to perform operations on it

Project Abstract:

The Dental mold is 3D printed using a transparent material so that the roots of tooth inserted in them are clearly visible. This is to demonstrate the gap between two teeth and what happens in case of cavity.

Photograph 6.4: Dental Mold



## 05
## REPROGRAMMABLE HUMANOID ROBOT

Name of innovator/s: Shivraj Naik
Name of Mentor: Siddhant Panjikar
Name of School/College/Start-up/Organisation: Prototyping Lab
Address: Usgao, Ponda-Goa.
Contact Number: 7058400330
Contact Email ID: shivrajnaik6110@gmail.com

Project Objective:
To build smart robots with sensors to detect obstacles and avoid them

Project Abstract:
The robot build is an Octopus (6 Lags Robot/ Spider Bot). The robot's body is 3D Printed using PLA material and electronics used are Arduino, servo motor driver and Servo motors.

Sensors for detecting obstacles is HCSR04 which is ultrasonic sensors.

Photograph 6.5: Reprogrammable Humanoid Robot

# 06
# AUTONOMOUS ROBOT

Name of innovator/s: Shivraj Naik
Name of Mentor: Siddhant Panjikar
Name of School/College/Start-up/Organisation: Startup
Address: Usgao, Ponda-Goa.
Contact Number: 7058400330
Contact Email ID: shivrajnaik6110@gmail.com

Project Objective:
To build Autonomous Robot

Project Abstract:
The robot is a Humanoid styled robot who's body is made up of 3D printed PLA material, which runs on Arduino, Servo motors and the robot is pre-programmed to do certain operations like; walking, dancing etc.

Photograph 6.6: Autonomous Robot

# 07
# SMART SALINE

Name of innovator/s: Ananya Naik and Swayam Kakodkar
Name of School/College/Start-up/Organisation: Manovikas School
Address: Sonsoddo, Gogol, Fatorda, Margao, Goa 403 602
Contact number: 9850452792

Project Objective:
This device can record the saline intake by patients and send it through mobile app

Project Abstract:
Consumption of saline by patients is record by this device, on the bases of weight reduction. This data is shared to patients relative via mobile app.

Photograph 6.7: Smart Saline

## 08
## 3D PRINTED TOPOGRAPHY MAP OF GOA

Name of School/College/Startup/Organisation: Prototyping lab
Address:- Fatorda, Goa.
Contact Number:

Project Objective:
3d printed topographic map of Goa

Project Abstract:
the map was divided into multiple segments and printed on the same 3d printer to avoid error due to calibration. The map was later assembled and stuck together using adhesive and later multiple spray paint coats were applied.

Photograph 6.8: 3D Printed topography map of Goa

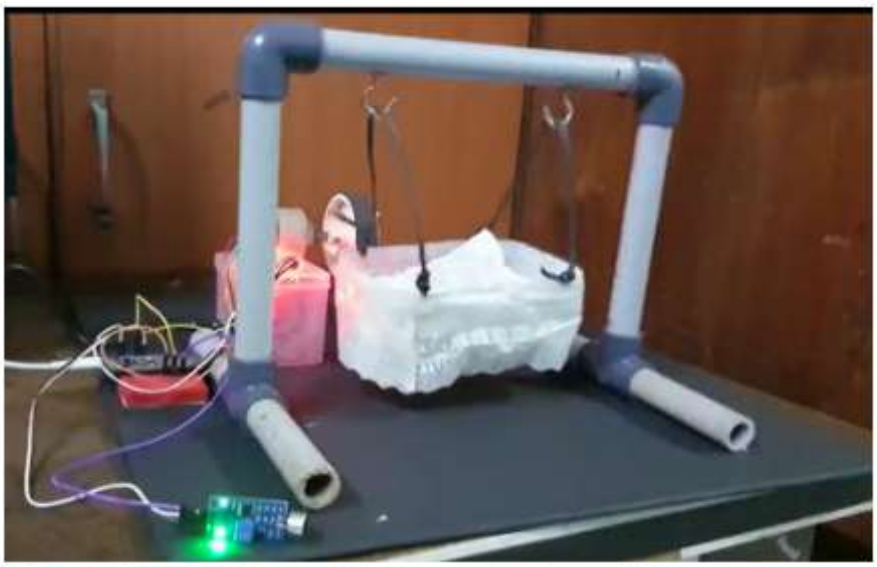
# 09
# BABY MONITORING SYSTEM

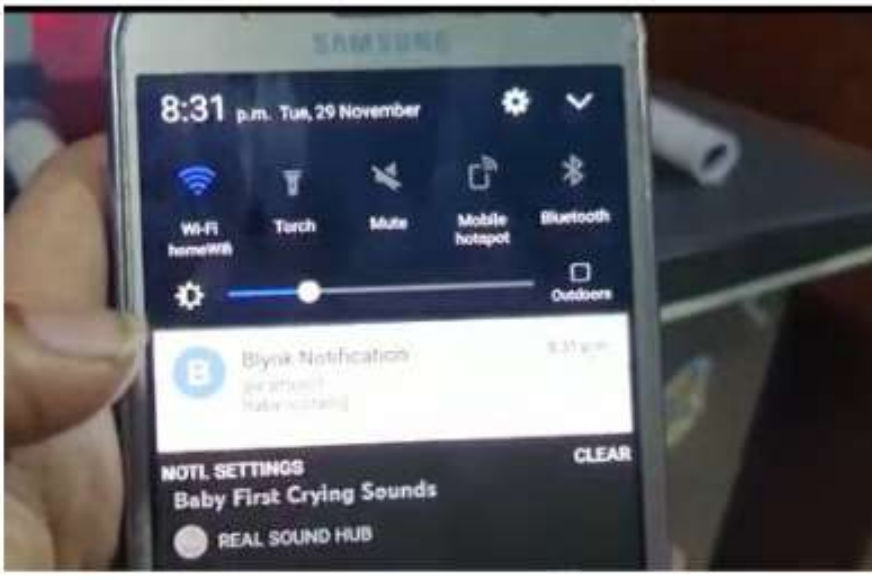
Name: Joyden Dsouza
Name of Mentor: Josten Dsouza
Name of School/College/Startup/Organisation: Entrepreneur
Address:- Rivona Goa.
Contact Number: 7620962667

Project Objective:
To detect baby crying and send notification to parents mobile phone

Project Abstract:
The system detects the baby crying and sends notifications to parents that baby is crying and if the baby has peed in the cradle the notification goes to parents mobile phone. The parent can remotely control the cradle through IOT from their phone.

Photograph 6.9: Baby Monitoring System





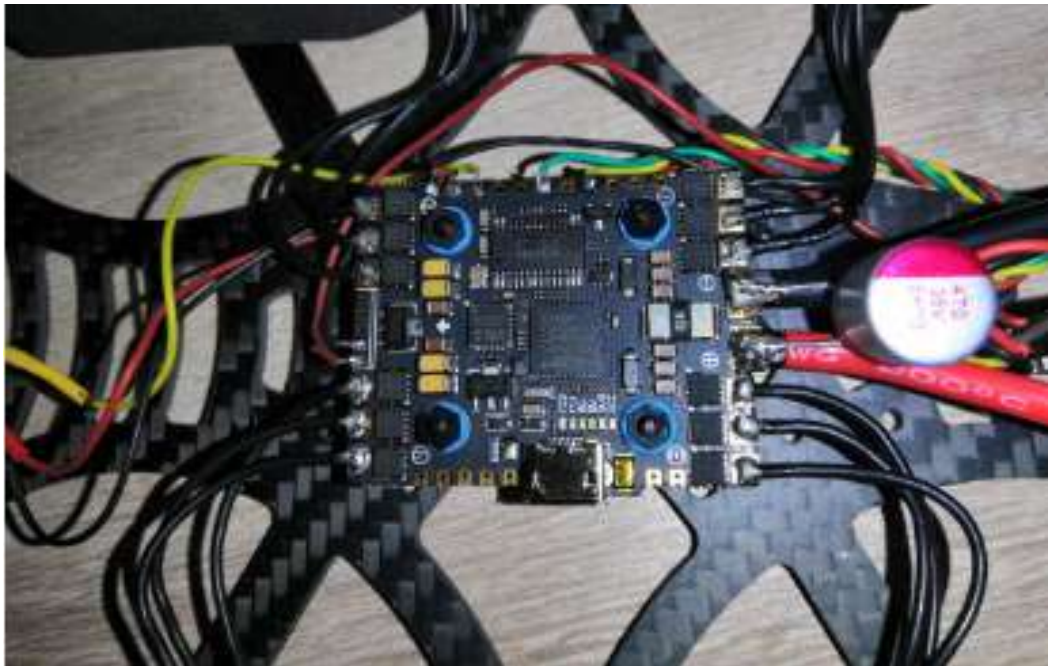
# 10
# FPV CINEWHOOP DRONE

Name: Rajay Naik
Name of Mentor:  Rajdutt Kenkre
Name of School/College/Startup/Organisation:  Off book studios
Address:- Margao Goa
Contact Number: 9405505309

Project Objective:
The drone will be used to do action photography

Project Abstract:
The drone has a 3 inch category frame made of carbon fiber and is capable of achieving 100km/hr speed. The drone is used to get action videos by going through places an average camera men cannot shoot.

Photograph 6.10: FPV Cinewhoop Drone



# 11
# COCONUT HARVESTER ROBOT

Name: Majaz Shaikh, Aaron Zachari, Wilander Soares, George Rebello & Saurabh Pawar
Name of Guide Prof. Swapnil Ramani
Name of Co-Guide: Prof. Gaurish Samant
Contact Number: 9405505309

Project Objective:

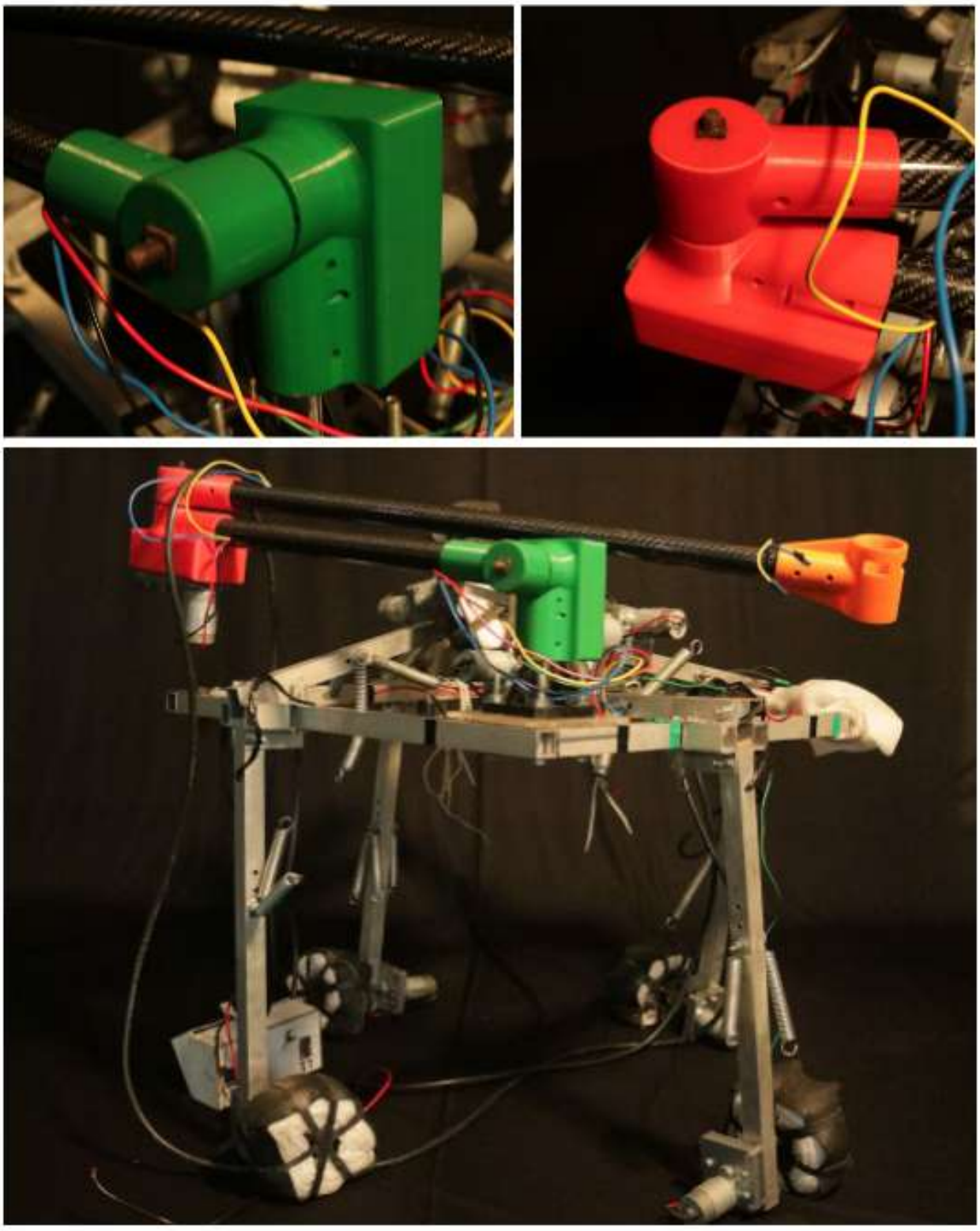
The Objective of our project is to create a mobile operated coconut harvester robot operated via Bluetooth. The main objective is to replace the use of joysticks and remote control-based system with Bluetooth technology to control the robot. Our project focuses on a light weight design that is portable, easy to clamp and remove from the tree. The project is based on wireless communication where the data from the mobile application is transmitted to the robot via Bluetooth connection.

Project Abstract:

As per the research, Asia has the largest population of coconut trees. It is one of the most useful tree providing us with food, cosmetics, medicine and building material. Goa has around 25,000 hectares of coconut plantations (1.32 per cent of the total area of the state) and produces over 124 million coconuts per year. The coconut climber, also known as “render”, climbs the coconut trees without any support or protection and harvests the coconuts. He must climb around 50-55 trees a day in a plantation. Often, to climb a coconut tree, skilled labor is required. Sometimes, accidents can occur wherein the coconut climbers can slip and fall. During the rainy season, the climbers cannot climb the coconut tree hence coconut trees remain unharvested leading to loss of business to the plantation owner. In this report, we present a mobile app operated coconut tree climber robot made from wood. The robot consists of two parts that is the robotic arm and a climber mechanism. The climber mechanism is designed with respect to an organ stand. In the design, four springs are used to clamp to the tree. A set of four wheels powered by four Johnson motors are used for up and down movement of the robot across the tree bark. The robotic arm is used to harvest/pluck the coconuts from the tree. It has three degrees of freedom and is driven by two MG996R servo motors. A grinder with 775 DC motor is fitted to the arm.

The arm itself has a 360-degree rotation to it which is provided by a nema17 stepper motor. The arm can also move 360 degrees across the diameter of the tree. Micro-controller esp32 is used as a Bluetooth hub for the robot. Atmega2560 is incorporated to the robot for motor control. The overall body of the arm and the climber is made of wood. Operation of the arm and the robot is done using a mobile application developed by us. The app features include battery level indicator and buttons to operate the robot. The app is connected to the esp32 via Bluetooth. The robot is powered by lion batteries and it also has a backup power circuit

Photograph 6.11: Coconut Harvester Robot



## 12
## NEW ZUARI BRIDGE SCALED DOWN 3D MODEL

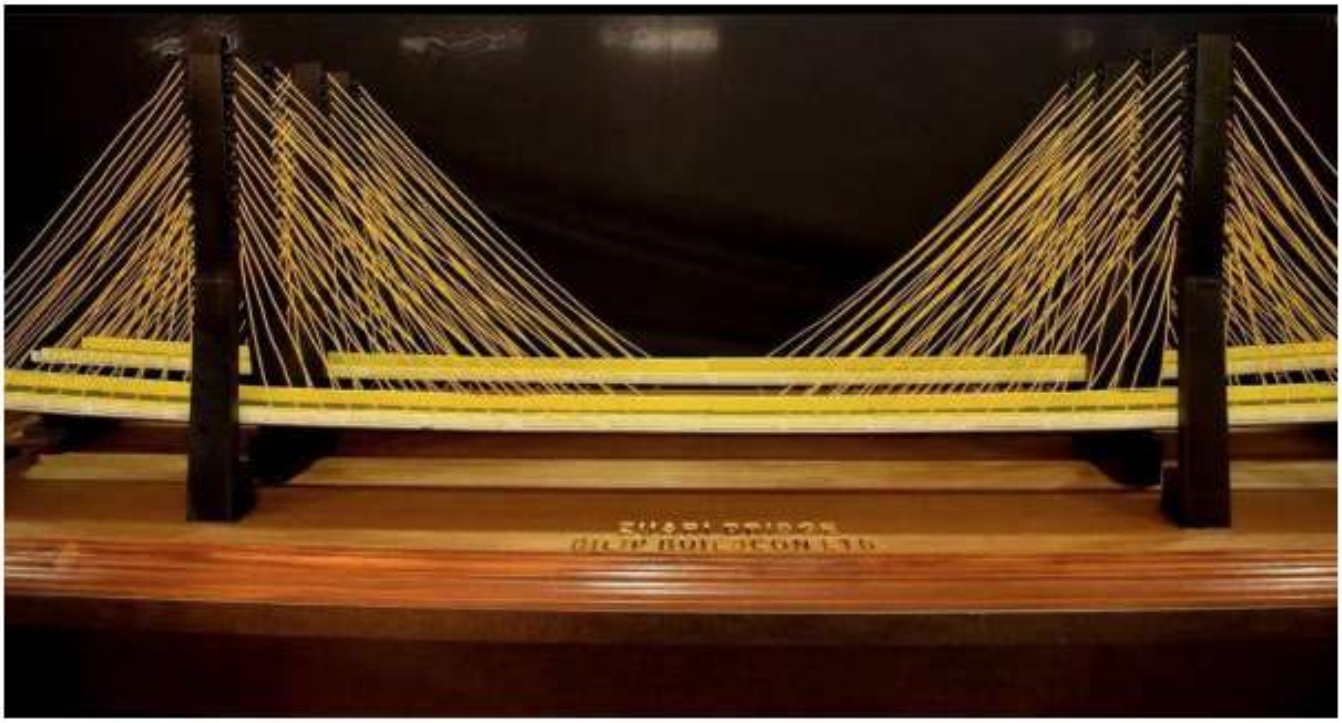
Name: Build for Dilip Buildcon Ltd

Project Objective:

The Zuari Bridge is a bridge between and South Goa, India. It carries the NH66 over the tidal part of the Zuari bridge, between the villages of Agaçaim and Cortalim. It is the 2nd longest and widest cable-stay bridge in India.

The model of the new bridge is made using 3D printing and laser cutting technologies

Photograph 6.12: New Zuari Bridge Scaled Down 3D Model



# 13
# EV TRACTOR PROTOTYPE

Name: Kaushal Singh / Shivraj Naik
Contact Number: 7507477805 / 7058400330

Project Objective:
To build an Electric Robo Tractor

Project Abstract:
The Tractor body is 3D printed and is power by 12v battery that run DC BO motor and is controlled using mobile application using Wi-Fi.

Photograph 6.13: EV Tractor Prototype

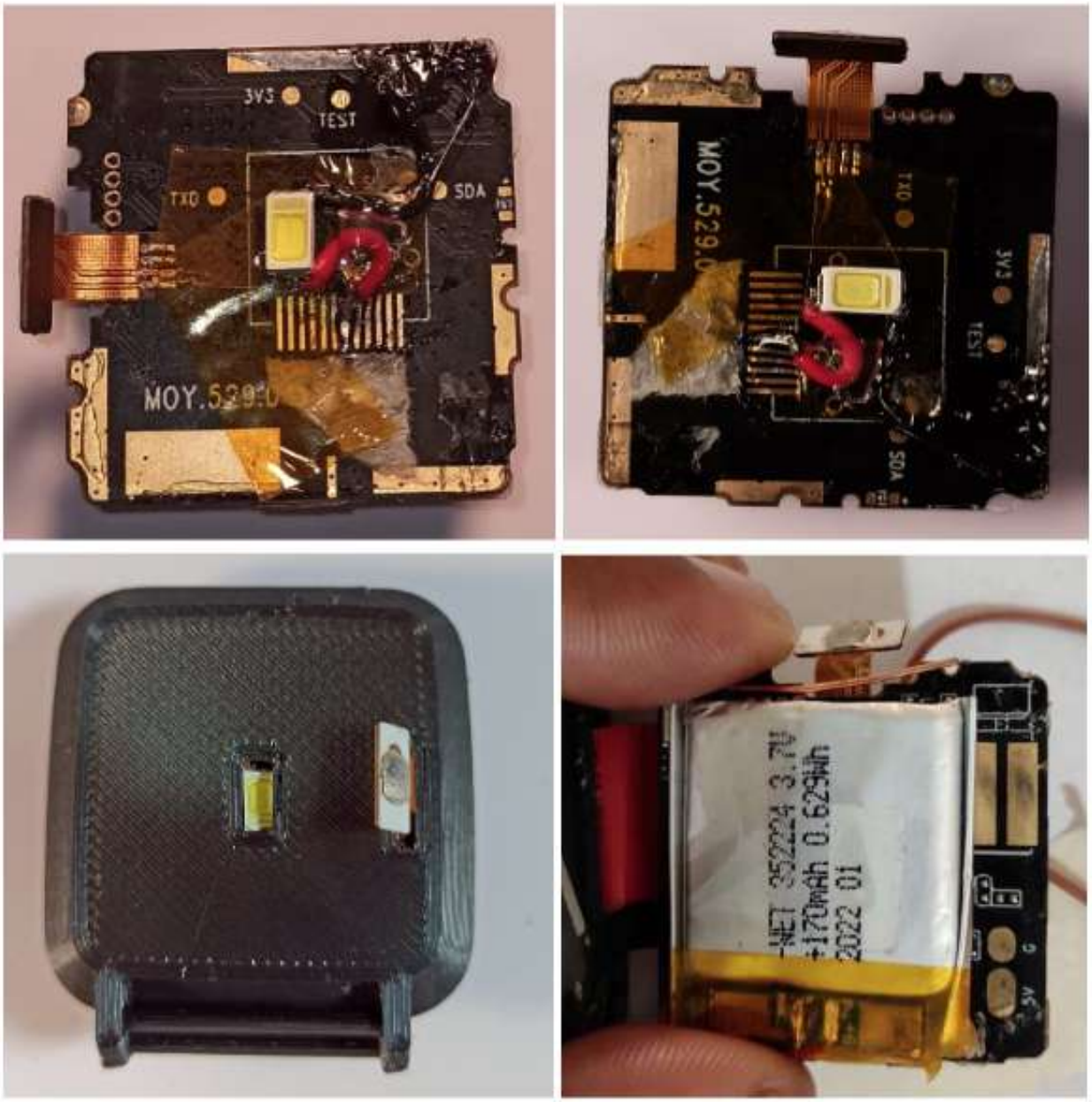
# 14
# FITNESS SMART WATCH

Name: Fitness Connect

Project Objective:
Making a smartwatch to track counts and repetitions of athletes

Project Abstract:
Taken the reference of existing open-source smart watch. Role of watch is to tack the counts and repetition of gym athletes. Replace the LED screen to just one LED, to make it light weight. All the data can be tracked and accessed through an app.

Photograph 6.14: Fitness Smart Watch



# 15
# HUMANOID ROBOT

Name: Siddhant Panjikar
Contact Number: 7276347926

Project Objective:
With the help of this robot, easily and in fun way we can teach robotics to students.

Project Abstract:
This robot is in comes as DIY kit. The body is make with 3D printing process. According to requirement, electric sensors are place inside the bot. This robot can walk just like human, so the name comes as humanoid robot.

Photograph 6.15: Humanoid Robot

## 16

## DESIGN AND FABRICATION OF EXOSKELETON FOR ASSISTANCE IN WALKING

Name: Fletcher D'Costa
Milbert Alfonso
Higgens Barreto
Bradley Rodrigues
Tushar Shelke

Name of Mentor: Dr Suraj Ravindra Marathe

Name of School/College/Startup/Organisation: Don Bosco College of Engineering , Fatorda

Project Objective:

Aid people with walking issues like arthritis, abnormal joint, knee injuries

Project Abstract:

In recent years, the world has seen a shift from conventional rehabilitation methods to robot assisted rehabilitation with the help of exoskeletons. These exoskeletons are unique in their design as they each have a different approach to achieving a common goal. Exoskeletons were first seen in the 1960's when the US Air Force had Cornell Aeronautics laboratory study feasibility of these models to assist personnel and also at Mihajlo Pupin Institute Serbia where exoskeletons were developed for gait study.

Exoskeletons are not restricted to only rehab, they can also be used to reduced work related to lower limb disorders, reduce muscle fatigue in industries, augment human strength, increase endurance during locomotion, improve coordination and adaptability on human joint movement and in gait rehabilitation to enhance motor function recovery.

Exoskeletons are usually priced very high and cannot be afforded to those in need. Some exoskeletons start at 14 lakhs and can go up to almost 60 lakhs. The reason for these high prices is mainly due to the large research and development costs that go into making them and the technological advancements that drives them.

Photograph 6.16: Design and fabrication of Exoskeleton for assistance in walking

17

# DESIGN AND DEVELOPMENT OF UAV FOR THE HARVESTING OF COCONUT

Name: Josten D'souza
Samarth Savalkar
Clive Rodrigues
Artika Vernekar
Delton Fernande
Name of Mentor: Prof. Gaurish Samant

Project Objective:
Design and Development of UAV for the harvesting of coconut using conatct type and non-contact mechanisms.

Project Abstract:
Precision agriculture has seen numerous advancements in recent times, including the use of unmanned aerial vehicles (UAVs) or drones. Drones are aircraft that operate without human pilots and can be remotely controlled or programmed to fly autonomously using embedded systems and onboard sensors such as GPS. In agriculture, drones have many applications, including precision farming, monitoring crop variability, and even harvesting coconuts.

Manual coconut harvesting is a dangerous and labour-intensive task, with a high risk of injury to the climbers. Furthermore, there is a shortage of skilled coconut tree climbers, making it challenging to harvest coconuts. To address these challenges we have designed and developed a drone-mounted cutting mechanism, including a chainsaw or angle grinder cutter, and water jet cutting mechanism a quadcopter configuration frame, suitable landing gear, brushless direct current motors with propellers producing 28 kg thrust, and a lithium-polymer battery with a capacity of 10000 mAh. A First-Person View (FPV) camera and transmitter are also installed to monitor the cutting process, reducing the number of laborers required and the risk of injury.

The quadcopter frame is made of carbon fibre, with a base plate and landing gear, allowing for precise harvesting of coconuts from high-raised trees. The drone's dome-shaped covering prevents electromagnetic field interactions and protects the electronic components from damage.

The drone can lift a payload of up to 29 kg and has a flight time estimated at 17 minutes. The harvesting mechanism for non-contact type contains a nozzle attached to a harvesting arm through which pressurized water is jetted to lop off the coconut, a hydra-cell pump of 200 bar is used on ground level to supply water from the tank to the drone for harvesting of coconuts.

The contact type mechanism makes use of a grinder blade. In conclusion, the drone-mounted coconut harvesting mechanism has several advantages over manual coconut harvesting, including improved safety, reduced labour, and increased precision. This technology has the potential to revolutionize the coconut industry and can be adapted for other agricultural applications, making

it an exciting development in precision agriculture. Moreover, this drone can be used for other purposes such as spraying pesticides and firefighting by replacing the cutting mechanism with the desired system

**How prototyping lab contributed to the project**

Facilities of prototypig lab were used to build the UAV and cutting mechanims. A working space was provided with access to prototying resources. Access to 3d printing and laser cutting mechanism for protyping and making casings for the drone. Support was also provided from people working in the prototyping lab.

Photograph 6.17: Design and Development of UAV for the harvesting of coconut

## 18
## DESIGN AND TESTING OF SQUAT ANALYSER FOR POWERLIFTING SPORT

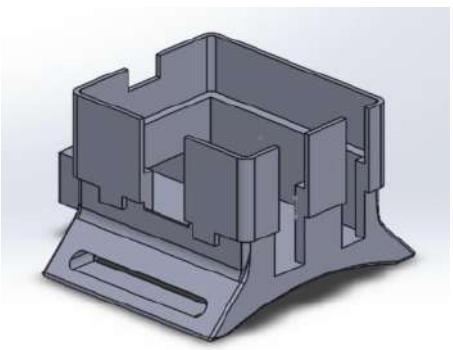
Name: Rushabh Karpe, Chaitany Gosawi, Sujay Jalmi, Atharv Gosavi &
Krishnakumar Gaonkar
Name of Mentor: Dr Suraj Ravindra Marathe
Name of School/College/Startup/Organisation: Don Bosco College of Engineering , Fathorda

Project Objective:
Our project is to make, device that will help the performer with his sitting stage, and won't allow him to half squat.

Project Abstract:
Powerlifting Squat is a well known exercise for building lower limb muscles in which the body is supported on the feet and the knee are bent so that the buttocks rest on the heel. Powerlifting Squat requires the lifter to squat down until "the top surface of the legs at the hip joint is lower than the top of the knees". In powerlifting, the qualifying weight for a squat must be 90kg or more and the sitting position must be 90 degrees. When a lifter is practicing with 100 kg of weight, it is challenging for him to focus on his sitting position. Our goal is to make sure performer clears his seating stage which is 90 degree or more than that. Our project was developed with the intention of helping power lifters while performing squats. Our design aims to address these challenges in an innovative and distinctive that is suitable for the user. Since currently there is no device to help the powerlifter during the sitting stage in the market, we set out to develop a low-cost product that is affordable.

Our design aims to address these challenges in an innovative and distinctive manner. To achieve our goal, we have used economical design material so as to achieve a reasonable price for our design while maintaining a high standard of quality. Also economical and readily available manufacturing processes were used so as to reduce complexity in manufacturing the device. The Squat Analyser has to be a wearable product which can be comfortably worn by the user. It has adjustable belt to suit the user's need. This design can go in for further development later on and be improved technologically and ergonomically for the user. It helps in strengthening the muscles in the legs ,including the quadriceps,calves,and hamstrings & strengthening the knee joints.

Photograph 6.18: Design and Testing of Squat Analyser for Powerlifting Sport



# 19
# NEURAL KISSAN

Name: Sai Rane
Pranav Naik
Rhys Rodrigues
Kapil Patil
Name of Mentor: Prof.Amey K.Shet Tilve
Name of School/College/Start-up/Organisation: Don Bosco College of Engineering

Project Objective:
Autonomous Flying drone

Project Abstract:
The project objective of "Neural Kissan" is to facilitate plant growth in controlled environments, such as indoor or greenhouse setups. By utilizing neural network algorithms and AI technologies, the project aims to simplify the process of cultivating plants in contained environments, making it more convenient and efficient for growers.

"Neural Kissan" is an innovative project that leverages artificial intelligence (AI) and neural network algorithms to revolutionize plant cultivation in contained environments. The objective of this project is to create a system that simplifies and optimizes the process of growing plants indoors or in greenhouse setups.

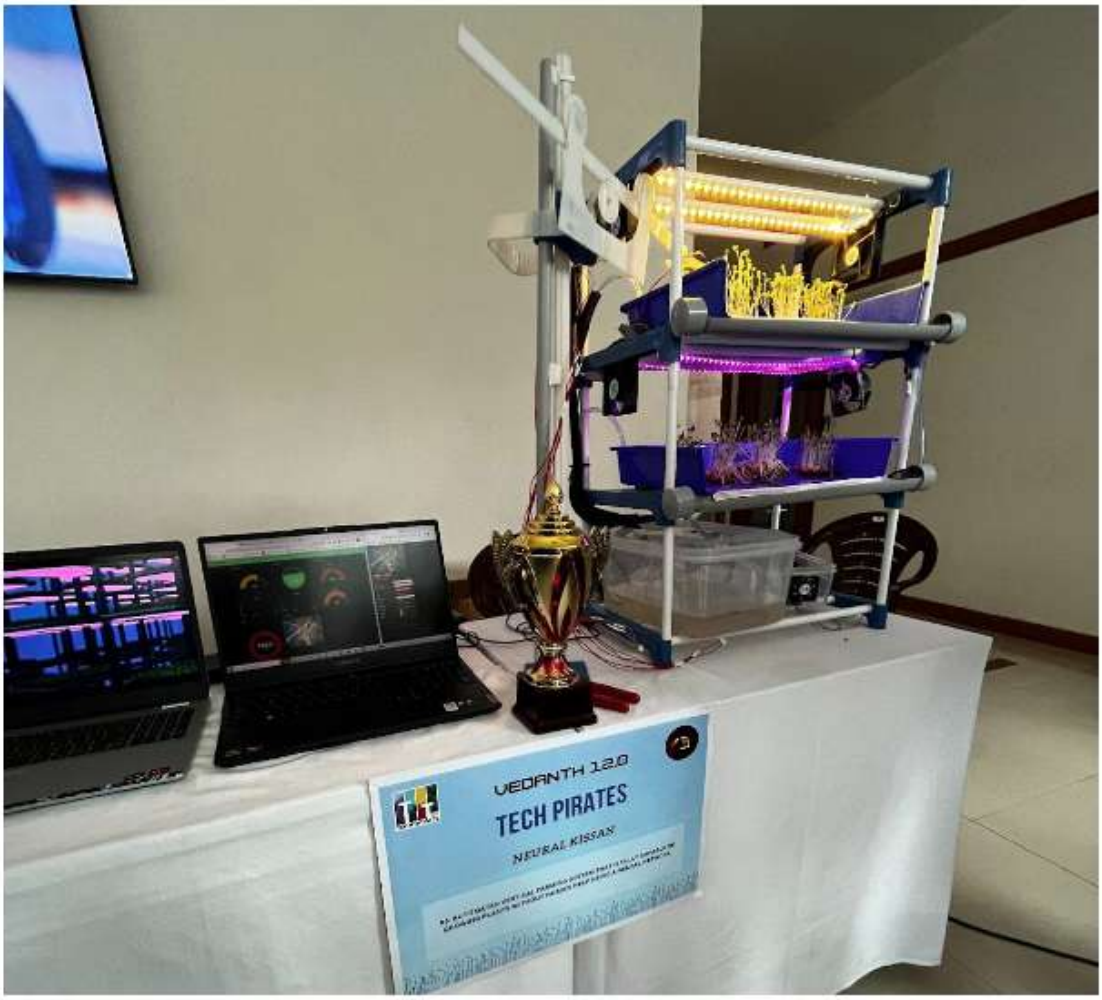
By harnessing the power of AI, Neural Kissan aims to address the challenges faced by growers in controlled environments. The system utilizes neural network algorithms to analyze various factors affecting plant growth, such as temperature, humidity, lighting conditions, and nutrient levels. Through continuous monitoring and data analysis, Neural Kissan can provide real-time insights and recommendations to optimize plant growth and ensure optimal resource utilization.

The key focus of Neural Kissan is to enhance the overall efficiency and productivity of plant cultivation in contained environments. By automating and optimizing key aspects of the growing process, such as irrigation, lighting schedules, and nutrient delivery, Neural Kissan aims to make plant cultivation more accessible, efficient, and yield-focused.

Furthermore, Neural Kissan incorporates machine learning techniques to adapt and improve its recommendations over time. By continuously learning from data patterns and user feedback, the system can refine its algorithms and provide personalized guidance tailored to specific plant species and environmental conditions.

The Neural Kissan project holds great promise for the agriculture industry, offering a novel approach to plant cultivation that reduces reliance on traditional farming methods and enables year-round production. By leveraging AI and neural networks, Neural Kissan aims to empower growers with advanced tools and insights, ultimately leading to higher crop yields, resource efficiency, and sustainability in contained plant cultivation.

Photograph 6.19: Neutral Kissan



# 20
# PIEZOPHONE™ PIEZOELECTRIC MICROPHONE

Name: Anand Richard Lobo
Name of Mentor: Kishore Shah
Name of School/College/Start-up/Organisation: Lobo Projects
Address: H No 1202/2, Murida, Plot 38, Fatorda, Goa 403602

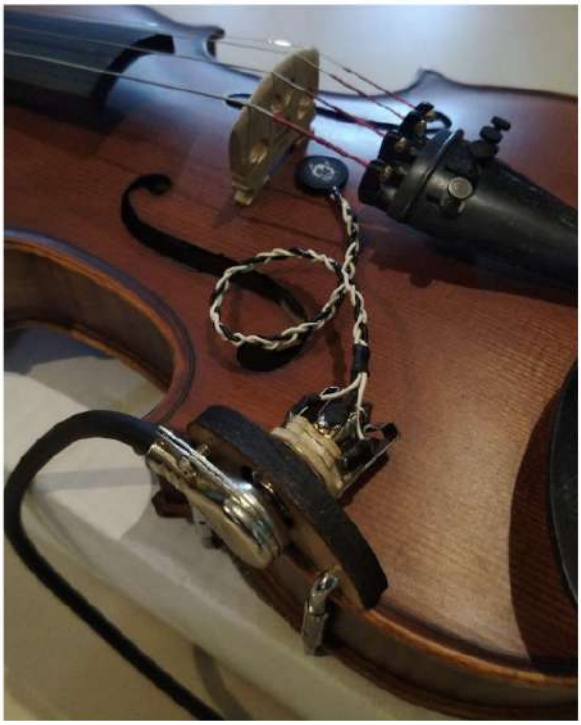
Project Objective:
To build a better piezoelectric microphone / preamplifier for string instruments and other recording applications.

Project Abstract:
Piezoelectric microphones (Piezo pickups) are generally frowned upon in the professional audio industry because they are known to sound 'tinny'; generally associated with a sharp, high-pitched audio signal with no 'body' or 'warmth' i.e. almost no low-frequency content.

Even so, many brand-name manufacturers still create many varieties of piezoelectric microphone, and while cheaper ones do nothing to help matters, even expensive, branded piezo pickups have some of the same problems, despite seemingly different designs.

This piezoelectric microphone is designed to be a significant improvement over existing products, thanks to:
- Different design of the piezoelectric element, and
- A better design of preamplifier circuit.

Photograph 6.20: Piezophone™ Piezoelectric Microphone



# 21
# RETROFITTING OF 3-D PRINTER FOR READY TO SERVE BAKED CAKES

Name: Omer Qabeer, Seattle Rodrigues, Samuel Rodrigues, Harshad Shet Dessai & Rahul Pawar
Name of Mentor: Prof. Chetan Gaonkar
Name of School/College/Start-up/Organisation: Don Bosco College of Engineering
Address: Fatorda, Margao, Goa. 403602
Contact Number: 9284206586

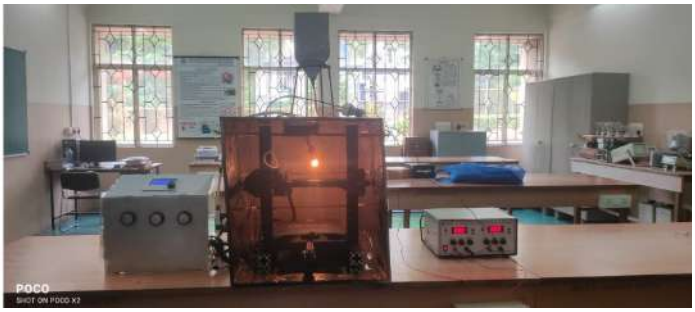
Project Objective:

- Personalization and designing of food.
- Time and Energy saving to make food in faster manner.
- Food waste Reduction.
- Food reproducibility is possible using a 3-D printer.
- Meal composition adapted to individual diets.

Project Abstract:
The aim of this project is to automate the process of cake making and baking on a single touch with the help of a 3-D printer. The application of 3-D printer in mechanical engineering is mostly in the field of additive manufacturing of parts and components in industries but the use of this printers in food industries is seldom. The problem with traditional method of baking cakes is time consuming and also demands human assistance to make and design the cake. This project work can eliminate these existing problems and can also cater the big markets of cloud kitchen which is the future.

The project work consists of a 3-D printer (Creality Ender 3), pump, hopper, chamber for baking. The hopper is placed on top of the chamber where the user pours the cake batter in it. One can add their custom design via a designing software in the form of G-code or can insert a micro-SD card which has the design in it and start the printer. Once the input is provided the printer bed and the chamber which has heating elements start heating. The printer prints on the bed of the printer, layer by layer while also getting cooked in the process. The provision is also kept to make the printer wireless and not just printing of cakes but pancakes too.

Photograph 6.21: Retrofitting of 3-D Printer for ready to serve baked cakes



# 22
# GERM SENSE

Name: Dr. Roshan Naik
Name of School/College/Start-up/Organisation: Researcher
Address: Panjim, Goa. 403602
Contact Number: 9503152848

Project Objective:
Detect static electricity on surfaces

Project Abstract:

The static electricity detecting device is a research project focused on detecting static electricity and determining the charge polarity. This project addresses the concept that static charges attract dust particles, which can lead to surface contamination. The objective was to develop a device capable of identifying the presence of static electricity and determining whether the charge is positive or negative. Extensive research was conducted to explore different detection methods, as well as techniques for determining charge polarity.

Multiple circuit designs were created and tested, leading to the selection of the most effective design. A prototype device was developed, allowing for simple testing and validation. The final concept achieved the goal of detecting both low and high levels of static electricity, while accurately determining the polarity. This device holds potential applications in diverse industries, particularly in healthcare settings where the presence of static charge can attract bacteria-laden dust particles.

Photograph 6.22: Germ Sense

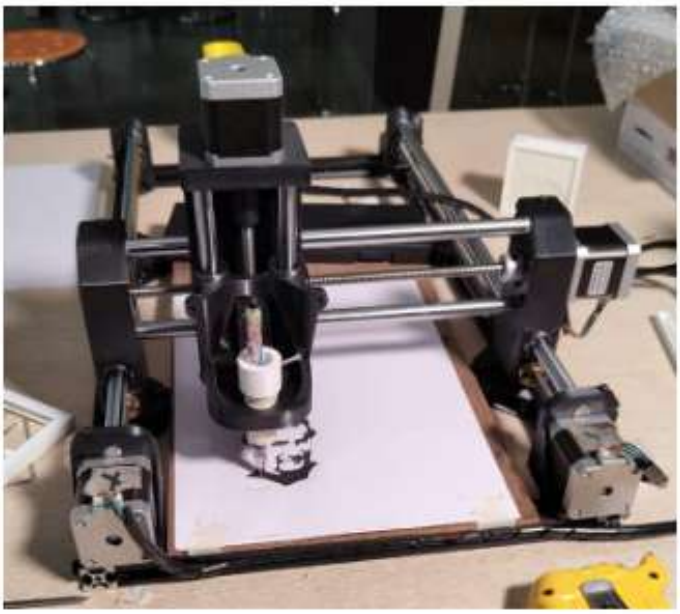
# 23
# PORTABLE DESKTOP CNC

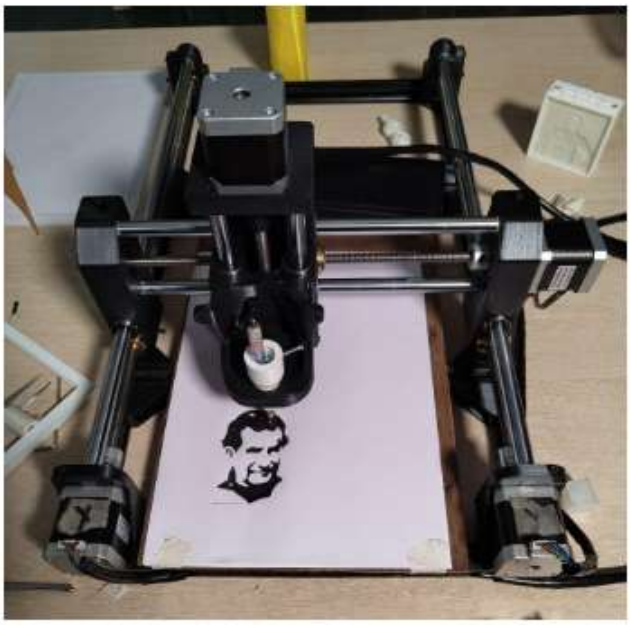
Name: Joel Pacheco
Name of School/College/Start-up/Organisation: Researcher
Address: Fatorda, Goa. 403602
Contact Number: 9359764857

Project Objective:
To make CNC available to people at affordable price enabling to start business.

Project Abstract:
The machine designed for use in small-scale manufacturing or hobbyist applications. These machines combine the precision and versatility of traditional CNC technology with a smaller footprint and ease of use, making them suitable for home workshops, small businesses, and educational settings.

Photograph 6.22: Portable Desktop CNC

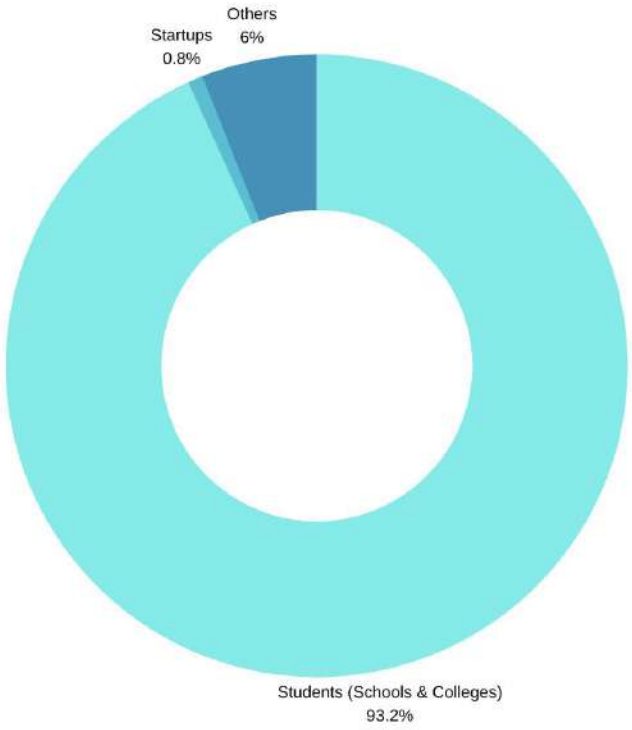




## 6.4 Status Report

### PROTOTYPING LAB VISITOR DATA

| | |
|---|---|
| STUDENTS (SCHOOLS & COLLEGES) | 2568 |
| STARTUPS | 22 |
| OTHERS (FACULTY, TRAINING, VISIT, STUDY, ETC) | 167 |
| **TOTAL** | **2757** |




In the FY 2022-23, the Rapid Prototyping Lab has been visited by a wide range of people, demonstrating its appeal and efficacy as an innovation hub.

With a total of 2,568 visitors from schools and colleges, the lab has seen a substantial influx of students. This demonstrates a great interest in experiential learning and practical innovation among the younger generation. In addition, 22 startup teams have used the lab's resources and skills to enhance their product concepts and prototypes, recognising the significance of the lab in driving their entrepreneurial enterprises. In addition, the lab has hosted 167 guests from a variety of backgrounds, including faculty, training participants, and others looking for insights and inspiration.

The lab's capacity to draw a diverse range of visitors demonstrates its success in cultivating a collaborative and dynamic ecology for creativity.

**EQUIPMENT UTILIZED**

3D Printing

**56%**

Laser Machine Cutting

**44%**

**Think, Design & Prototype Session**

Sessions Conducted

**64**

Total Participants

**2568**

The Think, Design & Prototype sessions at the Rapid Prototyping Lab, organized by the Goa State Innovation Council, have been highly successful.

With a total of 64 sessions conducted, we have engaged 2,568 participants from diverse backgrounds. These sessions have provided a structured framework for ideation, design thinking, and prototyping, covering a wide range of topics.

Supported by experienced mentors and state-of-the-art resources, participants have developed innovative solutions and prototypes, enhancing their design thinking skills.

The outcomes have been remarkable, with participants expressing interest in pursuing entrepreneurial ventures. We plan to continue and expand these sessions, fostering a culture of innovation and prototyping in the region.

**Visitors at Rapid Prototyping Lab**

Photograph 6.23: Students of Matoshree Indirabhai Baburau Khandeparkar High School, Ponda visited on 04-04-2022

Photograph 6.24: Students of Bhatikar Model High School, Margao visited on 5-04-2022



Photograph 6.25: Don Bosco College of Engineering F.E. Mech. 3D Printing session on 7-4-2022

Photograph 6.24: Students of Bhatikar Model High School, Margao visited on 5-04-2022


Photograph 6.25: Sunshine Worldwide School visited in lab on 17-6-2022



Photograph 6.26: Govt High School, Morpila, Quepeem visited in lab On 20-06-2022

Photograph 6.25: St. Thereza's Convent High School visited in lab on 21-06-2022

Photograph 6.26: St. Micheal Convent School, Vagator visited in lab On 23-06-2022


Photograph 6.27: St. Micheal Convent School, Vagator visited in lab On 24-06-2022

Photograph 6.28: Shushuvikas High School,  visited in Lab on 30-6-2022


Photograph 6.29: Training for Teachers on 3D Printing Seminar 1-7-2022


Photograph 6.30: Damodar High School visited in lab On 12-07-2022


Photograph 6.31: St. Rock High School, Velim visited in lab On 18-07-2022


Photograph 6.32: St. Alloysius High School, Colva visited in lab on 20-7-22


Photograph 6.33: Kings International School visited in lab on 21-7-2022

Photograph 6.34: Bloomz International School, Nuvem visited in lab on 22-7-2022


Photograph 6.35: Vidhya Vikas (FiiRE Session) on 27 -7-2022


Photograph 6.36: Vidhya Vikas (FiiRE Session) On 28-07-2022

Photograph 6.37: Regina Martym High School, Betul on 29-07-2022


Photograph 6.38: Our Lady of Carmel High School On 05-08-2022


Photograph 6.39: Saviour of the world high School visited on 16-08-2022

Photograph 6.40: Infant Jesus High School, Colva visited On 19-08-2022

Photograph 6.41: St Mary's High School, Chinchinim visited in lab On 22-08-2022

Photograph 6.41: St Mary's High School, Chinchinim On 23-08-2022


Photograph 6.41: On 24 August 2022

Photograph 6.42: Govt Higher Secondary, Valpoi visited in lab On 15-09-2022

Photograph 6.43: Panel discussion on 21-09-2022

Photograph 6.44: Chubby Cheeks High School, Porvorim on 03-10-2022

Photograph 6.45: Govt. Higher Secondary School, Khandola visited in lab on 18-10-22


Photograph 6.46: 9-11-2022


Photograph 6.47: Govt. Multipurpose School, Borda visited in lab on 10-11-2022

Photograph 6.45: 26 nov 2022

Photograph 6.46: Govt College Khandola on 08-12-2022

Photograph 6.44: 12-12-2022


Photograph 6.45: ITI, Margao 23-01-23


Photograph 6.45: Dnyanprassarak Mandal, Assagao 30-01-2023


Photograph 6.46: Govt.High School, Dabem, Sattari workshop on 3d printing on 06-02-2023


Photograph 6.47: Dempo college of Commerce and Economics, Panaji

Photograph 6.48: Workshop on 3D printing to Dr.K.B Hedgewar High School, Cujir, Bambolim On 14-02-2023

Photograph 6.49: Workshop on 3D printing to Our Lady of Rosary High School, Fatorda-Goa on 15-02-2023

Photograph 6.50: Workshop on 3D printing to L.H.B.D Govt. High School, Thane, Sattari -Goa on 17-02-2023

Photograph 6.51: Workshop on Drones to Govt. High School, Vasco - Goa on 23-02-2023

Photograph 6.52: Camilo Pererira Memorial Govt. High School, Baina on 23-02-2023

Photograph 6.53: Workshop on Robotics to Madras FC Club. On 25-02-2023


Photograph 6.54: Workshop on Robotics to Govt. High School, Pissurlem Sattari, Goa. On 27-02-2023

Photograph 6.55:PES College of Arts & Science, Ponda on 28-02-2023

Photograph 6.56: Don Bosco College of Engineering 2nd year student came to learn 3D Designing and Printing 13-3-2023

Photograph 6.57: Govt College of Art & Commerce and Science, Marcel visited in lab on 21-03-2023

07

# COMPETITION FOR GOA'S YOUNG INNOVATOR'S AWARD

# Chapter 07
# Competition for Goa's Young Innovator's Award

"Learning without thought is labour lost;
thought without learning is perilous."

- Confucius

## 7.1 Introduction

Goa's Young Innovator Award, an initiative of Goa State Innovation Council, is a platform where you can present your revolutionary ideas and innovative solutions. So, don your thinking caps and start giving shape to your unique idea that has the potential to change the world. Goa's Young Innovator Award is an initiative to foster innovation and entrepreneurship among the students of Goa from an early age. Open to all schools across the state, the young innovator award gives the students an opportunity to come up with creative and original ideas and inventions having the potential to solve social, environmental and other pertinent problems. The project is judged on the originality and practical applicability of the innovation.

The competition is open in two categories:

- Category 1: Students studying in classes VIII to X
- Category 2: Students studying in classes V to VII

Launch of GYIA at Sanskruthi Bhavan

The 2022-23 edition of the Goa Young Innovator Award was inaugurated by the Goa Chairman of the Goa Public Service Commission & Goa State Innovation Council – Shri Jose Manuel Noronha, in the presence of the Director of the Department of Science, Technology & Waste Management – Shri Levinson Martins, & CEO of FiiRE & member of GSInC – Shri D S Prashant.

The selection process for the Goa's Young Innovator Award 2022-23 edition was held on 21st Jun 2022, and a total of 12 ideas were granted with the prototyping Grant.

Photograph 7.1

Brochure of Competiton for Goa's Young Innovator's Award 2022-23

## WHAT IS PROJECT TIMELINE?

01 **January**
**Competition**
Announcement of competition

02 **February**
**Competition**
Submission of Ideas and Pre-assessment

03 **March**
**Competition**
Assessment and Announcement of winners

04 **April**
**Training**
Train the winners of the competition and connecting to mentors, etc.

Scan to register

## WHAT IS THE AWARD?

(IN EACH CATEGORY)

| | |
|---|---|
| First Prize | ₹ 20,000 |
| Second Prize | ₹ 10,000 |
| Third Prize | ₹ 5,000 |

In addition to the awards in each category, the winner will be provided with the following:

a) Mentoring support
b) Training in appropriate field
c) Support in prototyping
d) Incubation

## WHAT IS THE PROCESS OF PROJECT SUBMISSION?

- Ideas should be submitted from the school in the prescribed format.
  - Project Type: Product/Process
  - Description about the project with technology used
  - Student and School contact details
  - Share photos, videos, sketches of the project if available
- Submit proposals online to *https://goastateinnovationcouncil.com/initiatives/GYIA*


**GOA STATE INNOVATION COUNCIL**
Department of Science & Technology
Secretariat
Don Bosco College of Engineering, Fatorda-Margao, Goa - 403602
0832 2744007 | admin@gsic.in
www.goastateinnovationcouncil.com


Goa State Innovation Council

# COMPETITION FOR GOA'S YOUNG INNOVATOR'S AWARD 2022-23

**Goa's Young Innovator's Award 2018-19**

## WHAT IS INNOVATION?

Innovation can simply be described as a new idea, device or method which is useful and scalable to appropriate levels. It should have certain distinctiveness over existing similar products / devices / methods and which helps to improve output or efficiency, enables multi functionality and reduces drudgery.

### WHY IS INNOVATION NECESSARY?

Innovation is necessary not only to maintain competitive advantage but growth and development of institutions, industries and countries in a global world.

It improves products, processes and services and thereby, the quality of life of people.

### WHY ARE WE PROMOTING CREATIVITY AND INNOVATION IN CHILDREN?

Creativity among children is almost in-born. Every child is creative. The spirit of originality, creativity and innovation among our children has to be promoted. This will be helpful when they become leaders of our society in future, ensuring an imaginative, inclusive future for the country fuelled by innovation. Inclusive development of our society needs opportunities for children so as to ensure an aversion to inertia and a reverence for innovative ways of solving problems. Creative, impatient and imaginative children are one of the most precious assets of the nation.

## ABOUT GSInC

Creating an innovation movement with the involvement and commitment of people at all levels which is critical for solving challenges of inclusion in our society and to set India on the path of inclusive growth and sustainable development.

### OBJECTIVES

- Drive the innovation agenda in the State and harness the core competencies, local talent, resources and capabilities to create new opportunities.
- Support the State Government to promote innovation in the State.
- Encourage young talent in local universities, colleges, medium and small scale industries (MSME) and R&D institutes.
- Map opportunities for innovation in the State. Identify and reward talent in innovation and disseminate success stories.
- Organise seminars, lectures, workshops on innovation.
- Create the State innovation portal to educate and drive awareness on innovation.
- Provide input into the Innovation Roadmap for the State.

**WHO CAN PARTICIPATE?**
Students between the age group of 10-15 years and studying in standard V-X will be eligible for participation.

CATEGORY 1 - Students studying from standard VIII to X
CATEGORY 2 - Students studying from standard V to VII

**IS THERE ANY LIMIT TO THE NUMBER OF PROJECTS SUBMITTED BY A SCHOOL?**
No, the schools are encouraged to submit as many projects as they wish.

**CAN STUDENTS OF ALL EDUCATIONAL BOARDS PARTICIPATE?**
Yes, all the students studying in schools in Goa, irrespective of the Board to which their School is affiliated may participate.

**WHAT KIND OF SUBMISSIONS ARE ENCOURAGED?**
Children should be encouraged to come up with creative ideas on their own. Parents and teachers may propose a problem to the child to identify a possible solution and then help converting the idea into a prototype/model. Teachers are to ensure that a project submitted to the competition is an original Idea so that the competition maintains a high standard.

## 7.2 Status Report

**Table of List of Winners**

**CATEGORY 01**

| | Sr. No. | Project Title | School Name | Student Name | Prize Money |
|---|---|---|---|---|---|
| Encouragement Prize | 1 | Turtle Safety bag | Vidhya Vruddhi School | Avani Gandhi Kasturi Chaudhari | Rs. 5,000/- |
| Encouragement Prize | 2 | Driver drowsiness detection and alerting system | Our lady of Rosary high school, Fatorda | Dhiresh Umesh Pagi Joel Aliston DaCruz Leitao | Rs. 5,000/- |
| Encouragement Prize | 3 | To reduce use of paper and cutting trees for packaging items by using pomegranate fibre as the raw material. | St. Mary's Convent High School, Mapusa | Avani Vernekar | Rs. 5,000/- |
| Encouragement Prize | 4 | Easy and light weight Bending broom | Mae dos Pobres High school, Nuvem | Sumit Sharma | Rs. 5,000/- |
| Encouragement Prize | 5 | Flowmeters to calculate the total volume of water used | G.S. Amonkar Vidya Mandir | Sriganesh Savant | Rs. 5,000/- |
| Runner Up | | Conversion of sound energy to Electrical Energy | GHS Mangor Hill, Vasco | Aditi Yadav Herma Chalwadi | Rs. 10,000/- |
| **Winner** | | **Smart Saline** | **Manovikas English Medium School** | **Ananya Naik Swayam Kakodkar** | **Rs. 20,000/-** |

**CATEGORY 02**

| | Sr. No. | Project Title | School Name | Student Name | Prize Money |
|---|---|---|---|---|---|
| Encouragement Prize | 1 | Smiling Soil | Manovikas English Medium School | Noah Fernandes | Rs. 5,000/- |
| Encouragement Prize | 2 | U- Turn Safety Project | GVM's M.I.B.K. High School | Kinshuk Pravin Morajkar | Rs. 5,000/- |
| Encouragement Prize | 3 | Automatic House Which Opens windows When LPG Gas Leaks in the House | Holy Cross Institute | Aditya Deepak Kalekar | Rs. 5,000/- |
| Encouragement Prize | 4 | Automatic Water Sprinkler | People's High School | Nandan D. Pai Kuchelkar | Rs. 5,000/- |
| Encouragement Prize | 5 | Fire Fighter Crab | Mae dos Pobres High School, Nuvem | Russel Abel Colaco | Rs. 5,000/- |
| Runner Up | | Oil Spills | Manovikas English Medium School | Daksh Kharangate<br>Arsh Khan<br>Dhruuva Pai<br>Shantanu Rege | Rs. 10,000/- |
| **Winner** | | **3D Printed Braille** | **Mae dos Pobres High School Nuvem** | **Atharv Surlekar** | **Rs. 20,000/-** |

Photograph 7.2: Shri. Jose Manuel Noronha, Chairman, Goa State Innovation Council addressing the participants


Photograph 7.3: Experts judging the entries of
Goa's Young Innovator's Award


Photograph 7.3: Shri. Jose Manuel Noronha, Chairman, Goa State Innovation Council, Fr. Kinley D'Cruz, Director & Dr. Neena Panandikar, Principal of Don Bosco College of Engineering awarding the winners


Photograph 7.4: Shri. Jose Manuel Noronha, Chairman, Goa State Innovation Council, Fr. Kinley D'Cruz, Director & Dr. Neena Panandikar, Principal of Don Bosco College of Engineering awarding the winners


Photograph 7.5: Shri. Jose Manuel Noronha, Chairman, Goa State Innovation Council, Fr. Kinley D'Cruz, Director & Dr. Neena Panandikar, Principal of Don Bosco College of Engineering awarding the winners


Photograph 7.6: Shri. Jose Manuel Noronha, Chairman, Goa State Innovation Council, Fr. Kinley D'Cruz, Director & Dr. Neena Panandikar, Principal of Don Bosco College of Engineering awarding the winners


Photograph 7.7: Winners of Goa's Young Innovator's Award

# 08

# BOOTCAMPS ON INNOVATION,CREATIVITY & STARTUPS IN COLLEGES

# Chapter 08
# Bootcamps on Innovation, Creativity & Startups in Colleges

"The man of action has the present,
but the thinker controls the future."

- Oliver Wendell Holmes Jr.

## 8.1 Introduction

Goa State Innovation Council conducted several innovation, creativity, and startup bootcamps across colleges in Goa with the aim of fostering a culture of innovation and entrepreneurship among the students. The bootcamps are designed to provide students with hands-on experience in innovation and entrepreneurship and equip them with the skills and knowledge required to develop and launch successful startups.

The bootcamps cover a range of topics, including ideation, business model development, customer discovery, marketing, and pitching. Students work in teams to develop their own startup ideas and receive guidance and mentorship from experienced entrepreneurs and innovators. Through these bootcamps, students gain practical experience in building a startup, learn from the experiences of successful entrepreneurs, and develop valuable skills in creativity, problem-solving, and teamwork. The ultimate goal is to inspire and empower the next generation of innovators and entrepreneurs in Goa and beyond.

The GSInC bootcamps provide an excellent opportunity for college students to explore their entrepreneurial potential, learn new skills, and develop the confidence and knowledge required to succeed in the startup world. Under the guidance of both lecturers and industry experts, the students receive mentoring to develop their skills as tech-entrepreneurs. They gain hands-on experience in the challenges of launching and expanding a startup. In addition to the focus on innovation and entrepreneurship, the bootcamps provide education on the role of GSInC in encouraging the startup culture in Goa, as well as the various state government-based programs available to aspiring entrepreneurs in Goa.

Schedule:

Table: 8.1: Schedule of Bootcamps on Innovation, Creativity & Startups in Colleges

| Sr. No. | Topic | Duration |
|---|---|---|
| 1 | Introduction of Goa State Innovation Council & Bootcamp | 30 MINS |
| 2 | How to be a Tech Startup Entrepreneur? | 45 MINS |
| 3 | Process of setting up an Enterprise, Ideation, Planning, execution, etc. | 45 MINS |
| 4 | Various Government Funds and Schemes assistance for starting up | 45 MINS |
| 5 | Q & A | 15 MINS |

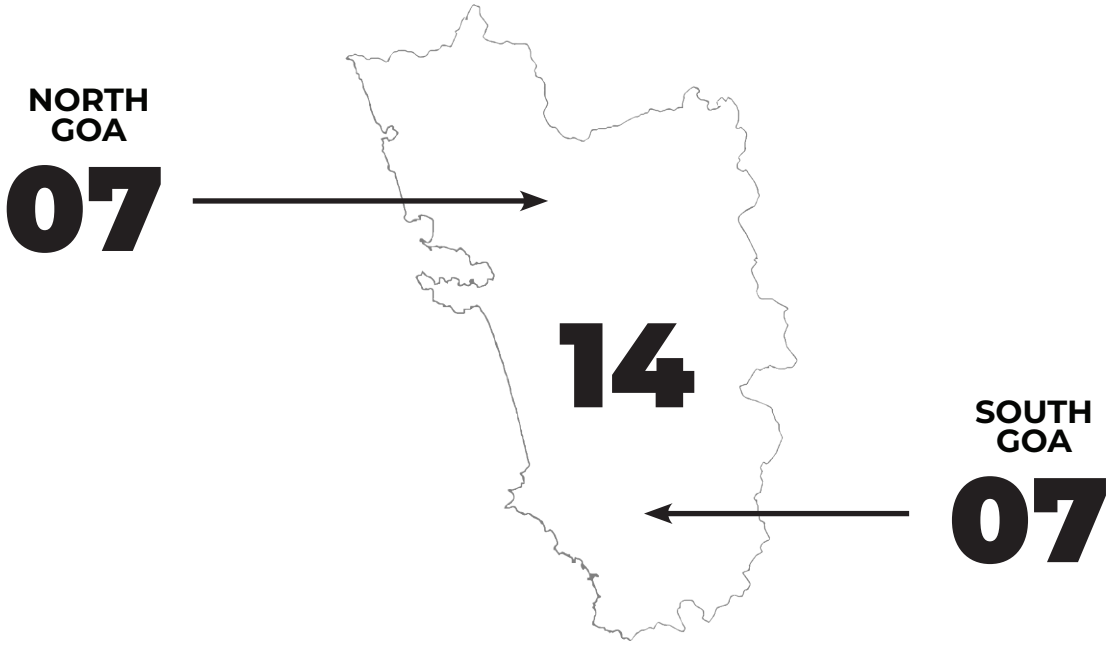
Sessions Conducted

**14**

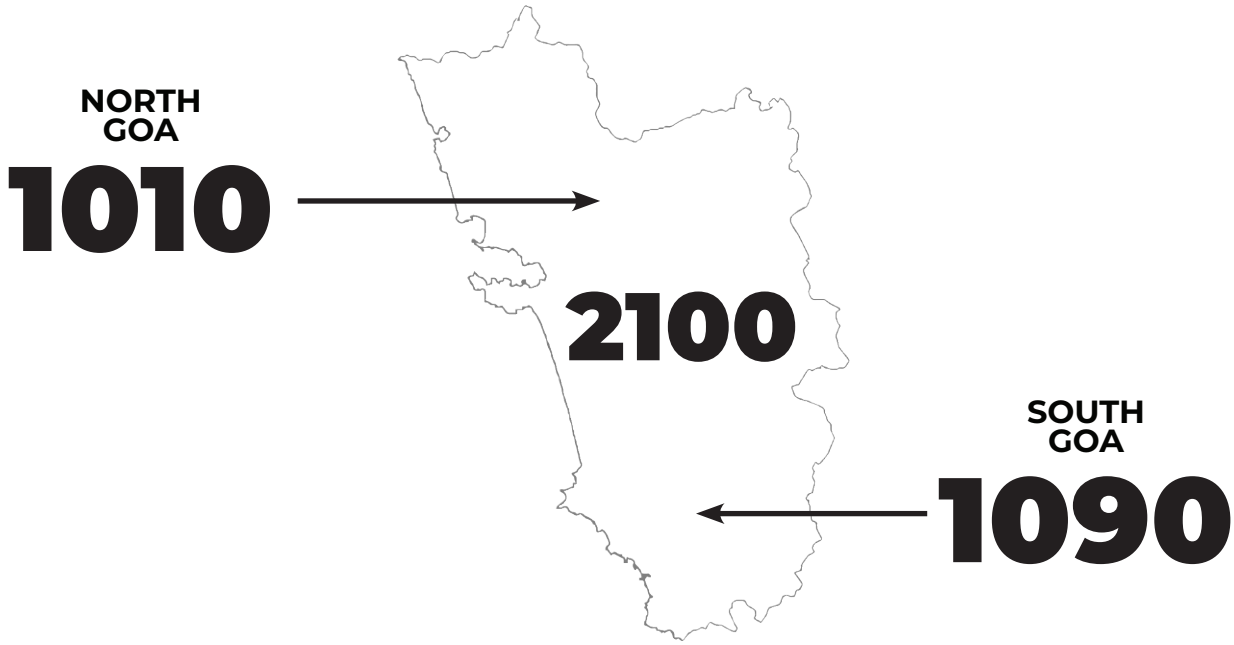
Total Students

**2100**

No. of Bootcamps




No. of Participants



The Goa State Innovation Council team has successfully organized 14 bootcamps on innovation across various institutes in North Goa and South Goa districts, including prestigious organizations like Goa Institute of Management, Parvatibai Chowgule College Arts And Science, Goa College of Engineering, among others.

These bootcamps have been instrumental in grooming young students and equipping them with the necessary skills to pursue their entrepreneurial dreams.

A total of 2,100 students attended these bootcamps, where they were taught to harness the power of innovation and encouraged to shape their ideas into successful startups. The bootcamps, which lasted for 2 to 3 hours, ensured maximum student participation and engagement through various activities.

*Post-program feedback revealed that 840 students expressed interest in launching their own startups.*

This widespread reach-out program has significantly contributed to spreading awareness about transforming technology-led innovations into successful business enterprises of the future.

In terms of participation,

- North Goa had 1,010 participants
- South Goa had 1,090 participants
- Making a total of 2,100 participants across both districts.

List of Sessions:

| Sr. No. | Date | Name of the School | Time |
|---|---|---|---|
| 1 | 12/04/2022 | Shree Rayeshwar Institute of Engineering & Information Technology | 10.00 am to 12.00 pm |
| 2 | 10/05/2022 | Padre Conceisao College of Engineering, Verna | 10.30 am to 12.30 pm |
| 3 | 25/05/2022 | Goa College of Engineering | 10.00 to 11.30 am |
| 4 | 24/06/2022 | Rosary College of Commerce & Arts, Navelim | 10.00 am to 11.30 am |
| 5 | 24/06/2022 | Dhempe College of Arts & Science, Miramar | 02.00 pm to 03.30 pm |
| 6 | 30/06/2022 | Parvatibai Chowgule College Arts And Science, Margao | 02.00 pm to 03.00 pm |
| 7 | 04/08/2022 | Governement College, Pernem | 10.00 am to 12.00 pm |
| 8 | 06/08/2022 | Governemnt College of Arts Science and Commerce, Sanquelim | 09.45 am to 11.15 am |
| 9 | 12/08/2022 | Parvatibai Chowgule College Arts And Science, Margao | 02.00 pm to 05.00 pm |
| 10 | 13/08/2022 | Govt College of Arts Science and Commerce, Pernem | 10.00 pm to 01.00 pm |
| 11 | 18/08/2022 | GIM | 02.00 pm to 05.00 pm |
| 12 | 23/08/2022 | Multi - Faculty College, Dharbandora | 02.00 pm to 04.00 pm |
| 13 | 12/09/2022 | Govt College of Commerce, Borda | 09.45 am to 12.45 pm |
| 14 | 30/09/2022 | Govt Multipurpose Higher Secondary School, Borda | 09.45 am to 12.45 pm |

Photograph 8.1: Bootcamps on Innovation, Creativity & Startups in Colleges

Photograph 8.2: Bootcamps on Innovation, Creativity & Startups in Colleges


Photograph 8.3: Bootcamps on Innovation, Creativity & Startups in Colleges

# 09

# INTELLECTUAL PROPERTY RIGHTS

# Chapter 09
# Intellectual Property Rights

"Modest doubt is call'd the beacon of the wise."

- William Shakespeare

## 9.1 Introduction

GSInC conducts IPR sessions to raise awareness and educate individuals about safeguarding their innovations. These cover patents, trademarks, copyrights, and trade secrets, with the aim of promoting development and protection of intellectual property in Goa. Led by legal experts and industry practitioners, the sessions provide practical tips on protection, infringement, and dispute management. Entrepreneurs, innovators, and researchers can gain valuable insights and benefits such as competitive advantage and revenue streams. GSInC's IPR workshops offer an excellent opportunity to learn about the legal and practical aspects of intellectual property.

## 9.2 Intellectual Property Rights Sessions

Topic

### Session on Importance of Innovation, Incubation and IPR

Date: 31.10.2022

GSInC Intellectual Property Rights Session for MSME Officials

The Goa State Innovation Council (GSInC) conducted an Intellectual Property Rights (IPR) session during the 2022-23 period, focusing on the "Importance of Innovation, Incubation, and IPR." The session targeted MSME officials and aimed to raise awareness about safeguarding intellectual property to foster innovation and support MSME growth.

A total of 45 participants actively engaged in the session, exchanging valuable insights and knowledge. Through in-depth discussions, participants gained a comprehensive understanding of the significance of innovation, incubation, and effective IPR protection.

The session equipped MSME officials with strategies and best practices for leveraging and safeguarding their intellectual property assets. By fostering a culture of innovation and providing guidance on IPR, GSInC has played a pivotal role in empowering MSMEs to enhance their competitiveness and drive sustained growth. The session proved highly beneficial, equipping participants with valuable tools to navigate the complexities of intellectual property rights.

GSInC's efforts have successfully built a strong foundation for protecting and leveraging intellectual property assets within the MSME sector, contributing to economic growth and fostering innovation in Goa.

## 9.3. Status Report

Program Conducted

**01**

Total Participants

**45**

MSME Officials

Photograph 9.1

Shri. Jose Manuel Noronha, Chairman, addressing the officials of MSME

**Photograph 9.2**

Shri. Jose Manuel Noronha, Chairman, addressing the officials of MSME


**Photograph 9.3**

Shri. Jose Manuel Noronha, Chairman, addressing the officials of MSME

# 10

# FACULTY DEVELOPMENT PROGRAM

# Chapter 10
# Faculty Development Program

"Correct thinking is a learnable skill that can be developed, honed, and mastered over time."

- Dr. Lucas D. Shallua

## 10.1 Introduction

In order to foster a culture of entrepreneurship and innovation, it is essential to have a team of skilled teachers who can impart entrepreneurial knowledge to the younger generation. Recognizing this need, GSInC has launched the Faculty Development Programme (FDP) to train faculties in entrepreneurship development.

The objective of this program is to equip the teachers with the necessary skills and knowledge to mentor and guide students in the fields of science and technology, thereby contributing towards the vision of a self-reliant India. These training sessions are conducted at various educational institutions, including Science and Engineering Colleges, Polytechnic Institutes, and Industrial Training Centers.

The FDP covers a wide range of topics such as entrepreneurship development, communication and interpersonal skills, creativity, problem-solving, motivation training, and industry readiness. The training methodology used includes hands-on workshops, case studies analysis, team exercises, and interactions with renowned personalities, entrepreneurs, and industry experts.

By participating in this program, faculties can enhance their skills and knowledge, which can be passed on to students, enabling them to become successful entrepreneurs and innovators.

Schedule:

| Date | Start Time | End Time | Topics | |
|---|---|---|---|---|
| | | | | |
| 9th March (Thursday) | 10:00 AM | 10:30 AM | Inaugural Session | |
| | 10:30 AM | 11:30 AM | Introduction to Goa State Innovation Council's (GSInC) Virtual Innovation Register (VIR) & support schemes for students | Shri Sudip Faldesai |
| | 11:30 AM | 1:00 PM | Activity Based Session on Creativity and Problem Solving | Sushant Surlekar |
| | 1:00 PM | 2:00 PM | Lunch break | |

| Date | Start Time | End Time | Topics | |
|---|---|---|---|---|
| | | | | |
| | 2:00 PM | 3:30 PM | How to convert an Student Idea into an Startup? | Smt. Poonam Shirsat |
| | 3:30 PM | 4:30 PM | Process of Student Project Incubation | Shri Kiraan Mehta |
| | | | | |
| | | | | |
| | | | | |
| 10th March (Friday) | 10:00 AM | 12:00 PM | How to support creative student ideas | Shri Pravin Sabnis |
| | 12:00 PM | 1:00 PM | Patenting Student Projects | Dr. Vivek Jog |
| | 1:00 PM | 2:00 PM | Lunch Break | |
| | 2:00 PM | 4:00 PM | Think Design Prototype Workshop | Rapid Prototyping Lab |
| | 4:00 PM | 4:30 PM | Valedictory Session | |
| | | | | |

## 10.2 Status Report

Program Conducted

**01**

Total Participants

**27**

The Faculty Development Program organized by the Goa State Innovation Council was held on 9th and 10th March. The two-day FDP was attended by 27 participants.

The program started with an inaugural session at 10:00 AM on the first day. The session was followed by an introduction to the Virtual Innovation Register (VIR) and support schemes for students presented by Shri Sudip Faldesai. Sushant Surlekar conducted an activity-based session on creativity and problem-solving, which was followed by a lunch break.

In the afternoon, Poonam Shirsat spoke on how to convert a student idea into a startup, and Shri Kiraan Mehta explained the process of student project incubation. The program continued on the second day, with Shri Praveen Sabnis presenting a session on 'How to support creative student ideas', from 10:00 AM to 12:00 PM, followed by Dr. Vivek Jog's speech on 'Patenting Student Projects.'

After a lunch break, a Think Design Prototype Workshop was conducted by the Rapid Prototyping Lab from 2:00 PM to 4:00 PM. The program concluded with a valedictory session at 4:00 PM. The faculty development program received a great response from the attendees and was considered a success.

## 10.03 List Of Participants

Table No. 10: List of participants for Faculty Development Program (FDP)

| Sr No | Name of the faculty | College & Dept name |
|---|---|---|
| 1 | Mrs.Sithal Fal Dessai | Government Polytechnic Curchorem |
| 2 | Gautam M. Agastipurkar | Government Polytechnic Curchorem |
| 3 | Dr. Miskil Naik | DCT's Dhempe College of Arts & Science |
| 4 | Ms. Sendra Pereira | DCT's Dhempe College of Arts & Science |
| 5 | Dr Sanjay D. Gaikwad | Chowgule College |
| 6 | Ms. Trupti U. Fal Dessai | Chowgule College |
| 7 | Mrs Manjusha Sanke | Shree Rayeshwar Institute of Engineering and Information Technology |
| 8 | Ms. Sanjana S. Naik | Dnyanprassarak Mandal's College & Research Centre |
| 9 | Rajalaxmi Metri | Rosary College |
| 10 | Dr Adarsh Handa | Padre Conceicao College of Engineering |
| 11 | Ms Raksha Singbal | Padre Conceicao College of Engineering |
| 12 | Mr Dattaprakash Vernekar | Padre Conceicao College of Engineering |
| 13 | Raghuvir Chary Nachinolkar | Government Polytechnic Panaji |
| 14 | Ramkrishna M. Kambli | Government Polytechnic Panaji |
| 15 | Sunil T. Sheyte | Government Polytechnic Panaji |
| 16 | Vishal Kurtikar | Government Polytechnic Panaji |
| 17 | Anisha M. Cotta | Don Bosco College of Engineering |
| 18 | Johann Rodrigues | Government Polytechnic Curchorem |
| 19 | Dr Vaibhav M. Naik | P.E.S. Ponda |
| 20 | Prashant Bhonsle | Govt. College of Arts, Commerce & Science Sanquelim |
| 21 | Dr. Maria F. De Souza | Govt. College of Commerce & Economics Borda |
| 22 | Lily F. Endro | Govt. College of Commerce & Economics Borda |
| 23 | Raymond Pereira | Nirmala Institute of Edu. Panjim |
| 24 | Sthrigdhara N. Naik | Government Polytechnic Bicholim |
| 25 | Saurabh Raikar | Don Bosco College of Engineering |
| 26 | Sachitanand Haldonkar | Nirmala Institute of Edu. Panjim |
| 27 | Milind Anadan | Nirmala Institute of Edu. Panjim |

Photograph 10.1

Experts interacting with the participants at Faculty Development Program

# 11

# SENSITISATION WORKSHOPS ON INNOVATION, CREATIVITY & PROTOTYPING IN SCHOOLS

# Chapter 11
# Sensitization Workshop on Innovation, Creativity & Innovation in Schools

"No problem can withstand
the assault of sustained thinking."

- Voltaire

## 11.1 Introduction

STEM innovations are revolutionizing our daily lives, from how we produce food to how we cure diseases, connect with loved ones, and comprehend the world around us. Recognizing the value of STEM education in primary and secondary schools, the Goa State Innovation Council has taken steps to promote it. The council aims to cultivate skills such as creativity, collaboration, communication, critical thinking, problem-solving, and curiosity in students, which are applicable to a wide range of situations they may encounter in the future. GSInC collaborates with schools and relevant organizations, such as Incubators and Tinkering labs, to provide quality learning experiences to students.

The Sensitisation Workshops on Innovation in Schools, organized by the Goa State Innovation Council, aim to inculcate a spirit of innovation and creativity among the youth of Goa. These workshops are designed to provide students with an opportunity to learn about the latest technologies and tools, and how to use them to turn their ideas into reality. Through these workshops, the Council hopes to inspire young minds to think outside the box, innovate and create solutions to real-world problems. In the year 2022-23, the council has reached out to several schools of various sizes and types across Goa, encouraging school authorities to envision and embrace a technology-driven future. The GSInC's efforts to promote STEM education in Goa's schools has been a roaring success.

Schedule:

1. Introduction to Session & Virtual Innovation Register
2. Introduction to Innovation, Creativity & Ideation
3. Activity Session on Innovation, Creativity & Prototyping
4. Q&A

## 11.2 Status Report

Workshops Conducted

**35**

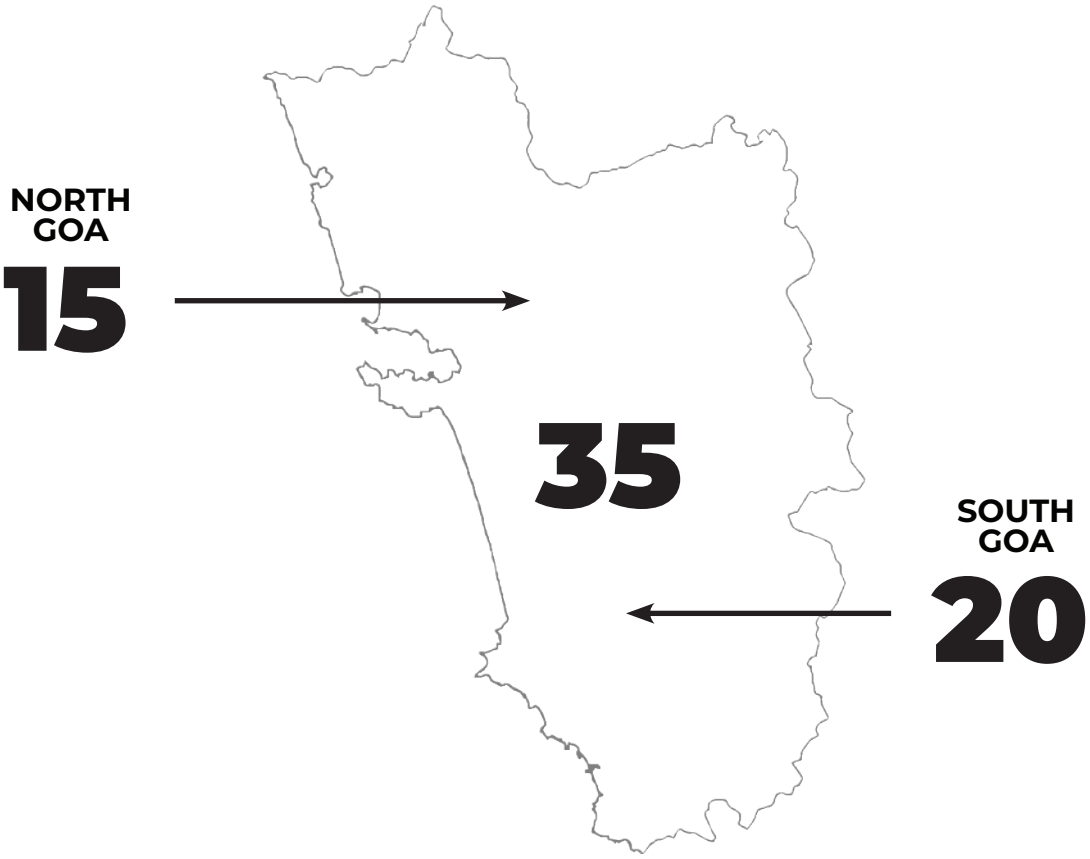
Total Participants

**4150**

Emerging technologies worldwide are driving STEM education popularity. To take advantage of future technology, pupils must learn it early.

The Goa State Innovation Council believes that children should understand science and technology through explorations and practicals. Towards this goal, GSInC hosts seminars to assist and educate schools in implementing STEM curriculum and build STEM infrastructure.

The Goa State Innovation Council team has reached over 4,000 students across 35 schools in Goa with STEM sensitization sessions in the year 2022-23. Like last year, the Goa State Innovation Council identified schools in Ponda, Margao, Mapusa, Panjim, and Valpoi, Cujira, Guirim, Aquem, and Sirigao to ensure consistency and reach. This activity ensures state-wide equality and inclusive growth.



List of Schools

| Sr. No. | Date | Name of the School/ College/ Institute | Time | No. of Student Visited |
|---|---|---|---|---|
| 1 | 28/07/2022 | Sacred Heart High School, Parra | 9.30 am to 10.30 am | 120 |
| 2 | 29/07/2022 | Dona Leonor Memorial School, Alto Betim, Bardez | 11.30 am to 12.30 pm | 35 |
| 3 | 02/08/2022 | Our Lady of Rosary High School, Dona Paula | 11.30 am to 12.30 pm | 123 |
| 4 | 05/08/2022 | Dnyanprassarak Vidyalaya School, Mapusa | 9.00 am to 10.00 am | 220 |
| 5 | 05/08/2022 | Ideal High School, Piligao, Bicholim | 11.30 am to 12.30 pm | 150 |
| 6 | 05/08/2022 | Ideal High School, Piligao, Bicholim | 12.30 pm to 1.30 pm | 150 |
| 7 | 06/08/2022 | vidhya Vikas Academy | 9.30 am to 10.30 am | 100 |
| 8 | 06/08/2022 | vidhya Vikas Academy | 10.30 am to 11.30 am | 100 |
| 9 | 12/08/2022 | Mount Litera Zee School, Zuarinagar, Vasco | 9.30 am to 10.30 am | 180 |
| 10 | 16/08/2022 | Governement High School, Sadar Ponda | 9.30am to 10.30 am | 120 |
| 11 | 16/08/2022 | Governement High School, Bethoda Ponda | 11:30 am to 12:30 pm | 120 |
| 12 | 17/08/2022 | Manovikas English School | 10.00 am to 11.00 am | 120 |
| 13 | 18/08/2022 | St Anthony High School, Monte-de- Guirim | 9.30 am to 10.30 am | 150 |
| 14 | 17/08/2022 | Manovikas English School, Margao | 9.30 am to 10.30 am | 75 |
| 15 | 20/08/2022 | Government High School, Gaval Khol | 11.30 am to 12.30 pm | 80 |
| 16 | 22/08/2022 | Adarsha V.V. High School, Margao | 9.30 am to 10.30 am | 240 |
| 17 | 22/08/2022 | Infant Jesus High School, Colva | 11.30 am to 12.30 pm | 150 |
| 18 | 24/08/2022 | Our Lady of Fatima School, Rivorna | 10.15 am to 11.15 am | 100 |
| 19 | 24/08/2022 | Govt High School, Ambaulim, Qupeem | 12.00 pm to 1.00 pm | 120 |
| 20 | 25/08/2022 | Marina English High School, Verna | 10.00 am to 11.00 am | 80 |
| 21 | 25/08/2022 | Perpetual Succour Convent High School, Navelim | 8.30 am to 9.30 am | 250 |
| 22 | 26/08/2022 | Mae Dos Pobres High School, Nuvem | 9.00 am to 10.00 am | 54 |
| 23 | 26/08/2022 | Govt High School, Merculem, Bicholim | 11.30 am to 12.30 pm | 100 |
| 24 | 07/09/2022 | Fr. Agnel M High School, Verna | 9.30 am to 10.30 am | 240 |
| 25 | 07/09/2022 | Shri. Sharda Vidyalaya, Govt. High School, Cumbarjua | 11.30 am to 12.30 pm | 90 |
| 26 | 08/09/2022 | V D & S V Wagle High School, Mangeshi, Mardol | 11.30 am to 12.30 pm | 100 |
| 27 | 09/09/2022 | Vivekanand Dyan Mandir High School, Keri | 11.30 am to 12.30 pm | 130 |
| 28 | 15/09/2022 | K. B. Hegewar High School, Ponda | 11.30 am to 12.30 pm | 46 |
| 29 | 17/09/2022 | Chubby Chicks School, Porvorim | 11.30 am to 12.30 pm | 150 |
| 30 | 7/12/2022 | St Anthony High School, Majorda | 9.30 am to 10.30 am | 60 |

| Sr. No. | Date | Name of the School/ College/ Institute | Time | No. of Student Visited |
|---|---|---|---|---|
| 31 | 9/12/2022 | Infant Jesus High School, Cuncolim | 9.15 am to 10.15 am | 55 |
| 32 | 10/12/2022 | Govt High School, Davorlim, Navelim | 12.00 pm to 1.00 pm | 70 |
| 33 | 14/12/2022 | St Mary High School, Ponda | 9.30 am to 10.30 am | 57 |
| 34 | 14/12/2022 | Saviour of the World High School, Loutolim | 12.00 pm to 1.00 pm | 80 |
| 35 | 17/01/2023 | St. Joseph High School, Aquem | 9.30 am to 10.30 am | 135 |
| | | **TOTAL** | | **4150** |

Photograph 11.1
Experts interacting with the participants at Sensitization Workshops on Innovation, Creativity & Innovation


Photograph 11.2
Experts interacting with the participants at Sensitization Workshops on Innovation, Creativity & Innovation in Schools

Photograph 11.3
Experts interacting with the participants at Sensitization Workshops on Innovation, Creativity & Innovation

# 12

# STEM – THINK DESIGN PROTOTYPING WORKSHOPS

# Chapter 12
# STEM - Think Design Prototyping Workshops

"Clear thinking requires courage
rather than intelligence."

- Thomas Szasz

## 12.1 Introduction

STEM - Think Prototyping Workshops are designed to help innovators create low-cost or no-cost representations of their products, services or programs, in order to gain valuable feedback from end-users and investors. Prototyping is a powerful approach that involves creating early and scaled-down versions of a design, program, or product to reveal any potential problems with the current design. By bringing ideas to life, it enables innovators to test their practicality and gain insight into the user experience.

The process of prototyping is both a science and an art, and requires meticulous training. The Think Design Prototyping Workshops organized by GSInC provide the necessary infrastructure to transform ideas into tangible prototypes. These workshops are conducted at the Prototyping Lab, established by the Goa State Innovation Council at Don Bosco College of Engineering, Fatorda.

Through these workshops, innovators from all walks of life can gain knowledge of the latest technology and tools, such as the advanced 3D printer and powerful laser cutting machine available at GSInC's prototyping lab. The workshops enable participants to refine their ideas to the point of idealization by freely tinkering around with them.

GSInC organizes these workshops in schools and colleges across Goa to encourage students to innovate, conceptualize, and scientifically shape their ideas. With the Think Prototyping Workshops, innovators and students can bring their ideas to life and gain valuable feedback to improve their designs, products, and services.

## 12.2 List of Workshops

In the fiscal year 2022-23, GSInC conducted a total of 64 prototyping workshops with an overall participation of 2563 students.

The council is committed to nurturing the youth of Goa by fostering the spirit of innovation and providing them with direction. In line with this mission, GSInC has constructed a state-of-the-art Prototyping lab, which is the first of its kind in the state.

The workshops were aimed at familiarizing students with the facilities available in the lab and included informative and hands-on sessions on Robot Building, Laser Engraving, 3D-Printing, among others.

The sessions were held for schools across different regions of Goa, allowing students to experiment freely and refine their ideas using the equipment in the lab. The workshops were well-received by the students, who gained valuable insights into bridging the gap between ideation and implementation.

*Total number of sessions conducted:*

**64**

*Total Number of participants:*

**2563**

| Sr. No. | Date | Name of the School/ College/ Institute | No of Student Visited |
|---|---|---|---|
| 1 | 01/04/2022 | Don Bosco College of Engineering | 35 |
| 2 | 04/04/2022 | Matoshree Indirabhai Baburau Khandeparkar High School, Ponda | 30 |
| 3 | 05/04/2022 | Bhatikar Model High School, Margao | 37 |
| 4 | 07/04/2022 | Don Bosco College of Engineering F.E. Mech. 3D Printing session | 56 |
| 5 | 08/04/2022 | Adarsh V. V. High School, Margao | 35 |
| 6 | 21/04/2022 | Don Bosco college of Engineering F.E Mech | 42 |
| 7 | 28/04/2022 | Gurukul Academy School | 39 |
| 8 | 02/05/2022 | Govt College Kandola | 37 |
| 9 | 05/05/2022 | Govt Polytechnic Bicholim, S Y Mech. Engg | 50 |
| 10 | 06/05/2022 | Agnel Polytechnic, Verna | 60 |
| 11 | 16/05/2022 | Dempo College, Industrial Visit | 60 |
| 12 | 13/06/2022 | Perpetual Succour Convent High School | 22 |
| 13 | 16/06/2022 | Fr. Agnel Polytechnic Verna | 32 |
| 14 | 17/06/2022 | Sunshine Worldwide School | 38 |
| 15 | 20/06/2022 | Govt High School, Morpila, Quepeem | 43 |
| 16 | 21/06/2022 | St. THereza's Convent High School | 48 |
| 17 | 23/08/2022 | St. Micheal Convent School, Vagator | 35 |
| 18 | 24/06/2022 | Multipurpose High School, Borda | 43 |
| 19 | 30/04/2022 | Shushuvikas High School, | 40 |
| 20 | 01/07/2022 | Training for Teachers on 3D Printing Seminar | 22 |
| 21 | 12/07/2022 | Damodar High School | 28 |
| 22 | 18/07/2022 | St Rock High School, Velim | 45 |

| Sr. No. | Date | Name of the School/ College/ Institute | No of Student Visited |
|---|---|---|---|
| 23 | 20/07/2022 | St. Alloysius High School, colva | 41 |
| 24 | 21/07/2022 | Kings International School | 46 |
| 25 | 22/07/2022 | Bloomz International School, Nuvem | 63 |
| 26 | 26/07/2022 | Don Bosco High School, Panjim | 48 |
| 27 | 27/07/2022 | Vidhya Vikas (FiiRE Session) | 37 |
| 28 | 28//07/2022 | Vidhya Vikas (FiiRE Session) | 42 |
| 29 | 29/07/2022 | Regina Martym High School, Betul | 34 |
| 30 | 05/08/2022 | Our Lady of Carmel High School | 34 |
| 31 | 12/08/2022 | Vidhya Vikas School | 25 |
| 32 | 16/08/2022 | Saviour of the world high School | 41 |
| 33 | 19/08/2022 | Infant Jesus High School | 36 |
| 34 | 22/08/2022 | St Mary's High School, Chinchinim | 34 |
| 35 | 23/08/2022 | St Mary's High School, Chinchinim | 39 |
| 36 | 26/08/2022 | St Anthony High School, Veroda | 36 |
| 37 | 10/09/2022 | Don Bosco College of Engineering, Comp 2nd year | 30 |
| 38 | 15/09/2022 | Govt Higher Secondary, Valpoi | 45 |
| 39 | 30/09/2022 | Multi- faculty College, Dharbandora | 35 |
| 40 | 3/10/2022 | Chubby Cheeks High School, Porvorim | 30 |
| 41 | 18/10/2022 | Govt. Higher Secondary School, Khandola | 35 |
| 42 | 24/10/2022 | Our Lady of Lourdes Higher Secondary, Valpoi | 35 |
| 43 | 10/11/2022 | Govt. Multipurpose School, Borda | 35 |
| 44 | 8/12/2022 | Govt College Khandola | 37 |
| 45 | 23/01/2023 | ITI, Margao | 32 |
| 46 | 30/01/2023 | Dnyanprassarak Mandal, Assagao | 30 |
| 47 | 01/02/2023 | Govt. High School, Vidhyanagar | 40 |
| 48 | 04/02/2023 | Carmel College, Nuvem | 40 |
| 49 | 06/02/2023 | Govt. High School, Dabem, Sattari | 36 |
| 50 | 09/02/2023 | Dempo college of Commerce and Economics, Panaji | 45 |
| 51 | 10/02/2023 | Dempo college of Commerce and Economics, Panaji | 45 |
| 52 | 14/02/2023 | Dr. Hedgewar High School, Cujira | 36 |
| 53 | 15/02/2023 | Our Lady of Rosary High School, Fatorda | 50 |
| 54 | 17/02/2023 | Govt high Sachool, Thane, Sattari | 40 |
| 55 | 20/02/2023 | Govt. High School, Sadar, Ponda | 50 |
| 56 | 23/02/2023 | Govt HIgh School, Vasco Main | 43 |
| 57 | 24/02/2023 | Govt High School, Paddi, Barcem, Qupeem | 40 |
| 58 | 24/02/2023 | Smt. Chandrabhaga Tukoba Naik Higher Secondary School, Curchorem | 25 |
| 59 | 25/02/2023 | Madras Football Team, Chennai | 50 |
| 60 | 27/02/2023 | Govt. High School, Pissurlem | 46 |
| 61 | 28/02/2023 | PES College of Arts & Science, Ponda | 25 |
| 62 | 28/02/2023 | St. Mary of Angel High School, Chinchinnim | 90 |
| 63 | 01/03/2023 | Govt High School, Sadolxem, Canacona | 40 |
| 64 | 21/03/2023 | Govt College of Art & Commerce and Science, Marcel | 45 |
| | | **Total** | **2563** |

## 12.3 Status Report

In all, 64 Think Design Prototyping Workshops were held during the FY 2022-23, witnessing participation from 2,563 students from various schools, including premiere institutions such as, Dr. K B Hedgewar School, Cujira, Manovikas English Medium School, Margao, St. Micheal Convent School, Vagator, and Vidya Vihar High School, Cortalim. The workshops were created around pertinent technological areas, such as building drones and robots, as well as 3D Printing and Laser engraving, among others.

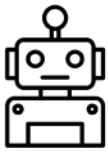
Total participation:

**2563**

Some of the major schools that participated:

1. St. Mary of Angel High School, Chinchinnim
2. Dr. K B Hedgewar School, Cujira
3. St. Micheal Convent School, Vagator
4. Kings International School, Margao
5. Vidya Vihar High School, Cortalim
6. Manovikas English Medium School, Margao

The topics included:



Robot Building

Laser Cutting

Laser Engraving

Drone Building

3D Printing

These sessions were designed to empower students with the latest technologies and facilities for prototyping their ideas. The goal is to encourage students to explore the possibilities of their imagination by providing them with the tools they need to bring their ideas to life. With the knowledge and skills gained from these sessions, students can unleash their creativity and work independently in the Prototyping lab, bringing their ideas to fruition and refining them into successful market-ready models.

The sessions not only teach the students how to use the equipment but also inspire them to push the boundaries of their creativity and innovation.

Photograph 12.1

School students attending STEM - Think Design and Prototyping workshop at Rapid Prototyping Lab




Photograph 12.2

School students attending STEM - Think Design and Prototyping workshop at Rapid Prototyping Lab


# 13

# INDUSTRY INSTITUTE INTERACTION

# Chapter 13
# Industry Institute Interaction

"Most of the mistakes in thinking are inadequacies of perception rather than mistakes of logic."

- Edward de Bono

## 13.1 Introduction

The Industry Institute Interaction sessions organized by the Goa State Innovation Council aim to bridge the gap between academia and industry by providing students with opportunities to gain exposure to the latest developments in their field of study. The sessions bring together industry experts and academia to engage in discussions and exchange ideas, offering students valuable insights that will help them prepare for successful careers.

With access to state-of-the-art facilities and experienced staff, the sessions offer a stimulating and interactive learning environment that equips students with the knowledge and skills they need to thrive in their chosen field. The Industry Institute Interaction sessions are a unique initiative that prepares students to meet the challenges of the industry and fosters a culture of innovation and entrepreneurship.

In the Financial Year 2022-23, GSInC organized two impactful Industry-Institute sessions.

## 13.2 Status report

### Industry Institute Interaction

Venue: Don Bosco College of Engineering
Prototyping Lab, DBCE
Date: 3/03/2023

Total number of participants:

24 students

Schedule

Panel Discussion participants

- Suraj Marathe
- Kiraan Mehta
- Haroon Sayed
- Sudip Faldesai

On 3/03/2023, the Don Bosco College of Engineering hosted an Industry Institute Interaction event at the Prototyping Lab. The event was attended by 24 students and featured a panel discussion with industry experts.

The panel discussion included Suraj Marathe, Kiraan Mehta, and Haroon Sayed, who provided valuable insights and advice on various topics, helping students better understand industry expectations and opportunity areas. The discussion covered a range of issues, including emerging technologies, market trends, and career opportunities.

The event was well-organized and provided an excellent opportunity for the students to interact with industry experts and gain exposure to the latest trends and developments in the field. The students were able to engage in meaningful discussions and exchange ideas with the panelists.

The Industry Institute Interaction event at the Don Bosco College of Engineering was a successful initiative that proved to be a positive step towards bridging the gap between academia and industry and preparing students for successful careers in their chosen fields.

# Industry Institute Interaction

Venue: Don Bosco College of Engineering
Prototyping Lab, DBCE
Date: 13/03/2023

Total number of participants:

11 civil engineering students

On the 13th March, 2023, the Don Bosco College of Engineering organized an Industry Institute Interaction event for Civil Engineering students at the Prototyping Lab. The event was attended by 11 students and aimed to provide them with exposure to the industry and its latest developments.

The event featured discussions and presentations from industry experts, who provided insights into the latest trends and innovations in the field. The students were able to engage in discussions and ask questions to gain a better understanding of the industry and its practices. The venue at the Prototyping Lab provided an ideal setting for the event, with state-of-the-art equipment and facilities available for the students to use. The lab's staff was also on hand to provide technical support and guidance throughout the event.

Photograph 13.1

Panel Discussion on Industry Institute Interaction at the Rapid Prototyping Lab


# 14

# RISK CAPITAL SESSION

# Chapter 14
# Risk Capital Session

"Thought is the blossom; language the bud;
action the fruit behind it."

- Ralph Waldo Emerson

## 13.1 Introduction

Playing an instrumental role in building a robust startup ecosystem in Goa, GSInC organizes one of its kind event where innovators, entrepreneurs and investors come on the same platform with an intent to nurture and scale pathbreaking inventions into successful businesses of tomorrow. Bridging the gap between ingenuity and resources, GSInC enables promising innovators to showcase their inventions to venture capitalists, angel investors, and other interested parties.

**Risk Capital session - Khoj Event (Venture Catalyst)**

**23/07/2022**

95 Beneficiaries of Prototyping Grant


DBCE, Seminar Hall II
Fatorda

On 23 July 2022, the Goa State Innovation Council organized the Risk Capital Session: Khoj Event (Venture Catalyst) at the Don Bosco College of Engineering, Seminar Hall II. The event was attended by the beneficiaries of the Prototype Grant, who had the opportunity to showcase their innovative prototypes to potential investors.

The event aimed to bridge the gap between innovative ideas and funding by connecting startups with risk capital investors. It also provided an opportunity for the beneficiaries of the Prototype Grant to network and gain exposure to the venture capital industry.

The event was well-organized and attended by a diverse group of participants, including entrepreneurs, investors, and industry experts. The attendees were able to engage in meaningful discussions and exchange ideas on the challenges and opportunities faced by startups in Goa.

**Risk Capital session - Startup Innovation Acceleration Workshop**

**22/10/2022**

22 Startups

GSInC Prototyping Lab

On 22/10/2022, the GSInC Prototyping Lab organized a Startup Innovation Acceleration Workshop, which was attended by 22 startups. The workshop aimed to provide startups with the necessary tools and resources to accelerate their innovation and growth. The participants were able to engage in hands-on activities, interactive discussions, and one-on-one mentorship sessions with industry experts. The workshop covered various topics, including product development, market research, fundraising, and pitching. The GSInC Prototyping Lab provided an ideal venue for the workshop, offering startups access to state-of-the-art prototyping equipment and facilities. The lab's staff was also on hand to provide technical support and guidance throughout the workshop.

The participants found the workshop to be highly informative and valuable, with many expressing their appreciation for the opportunity to connect with other startups and industry experts. The workshop was a positive step towards fostering a culture of innovation and entrepreneurship in the region.

Photograph 14.1: Participants at Risk Capital Session




# 15

# WOMEN CENTRIC WORKSHOP

# Chapter 15
# Women Centric Workshop

"A man is but the product of his thoughts
what he thinks, he becomes."

- Mahatma Gandhi

## 15.1 Introduction

To empower women in Goa to chase their entrepreneurial dreams, GSInC has been organizing regular workshops and seminars. Through these programs, women can scale up their business ideas and learn about government funding opportunities. The workshops offer hands-on training, mentoring, and informative seminars. GSInC's focus is on women and marginalized communities, and they believe that innovation is the key to bringing them into the mainstream. Since its launch, the council has hosted various seminars to promote the importance of start-ups and innovation among women from all walks of life, while also helping them convert their ideas into successful businesses. At GSInC, it is our constant endeavour to foster entrepreneurship among the women of Goa, giving diversity and depth to the innovation horizon of the state.

| SR. NO. | TOPIC | DURATION |
|---|---|---|
| 01 | Introduction of Goa State Innovation Council & VIR | 30 mins |
| 02 | Ideation with a focus on Problem-solving, Creativity, Innovation | 30 mins |
| 03 | How to convert an Idea into an Enterprise? | 30 mins |
| 04 | Various Government Funds and Schemes assistance for starting up | 30 mins |

## 15.2 Status Report

Workshops conducted

**02**

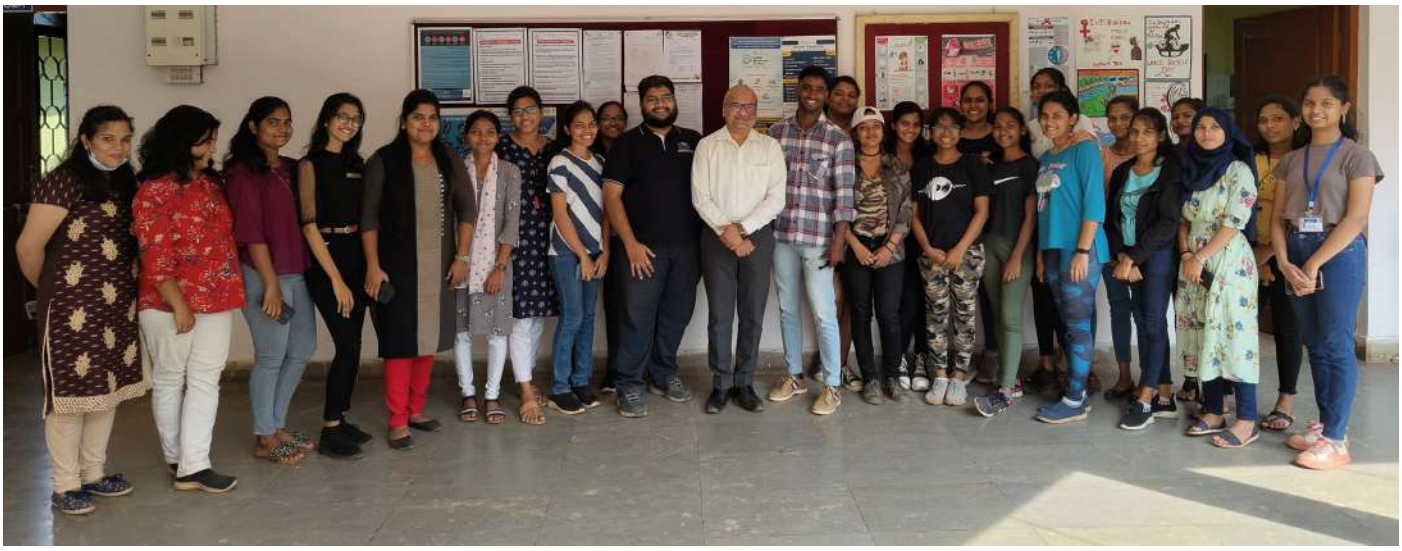
Total Participants

**160**

In the Financial Year 2022-23, GSInC conducted two significant women centric workshops. A total of 160 participants benefitted from comprehensive workshops that guided them through the entire cycle of entrepreneurship – from validating an innovative idea to protecting and building upon it to launching finished products or services in the market to finally scaling up business operations. The Women Centric workshops also helped participants understand the startup ecosystem of Goa, along with information on key government schemes and grants for entrepreneurs.

| Sr. No. | Date | Name of the College | Time |
|---|---|---|---|
| 1 | 07/02/2023 | Goa College of Home Science, Campal, Panaji | 02.00 pm to 04.00 pm |
| 2 | 15/02/2023 | Carmel College, Nuvem | 11.00 am to 02.00 pm |

Photograph 15.1: Participants at Woman Centric Workshop




Photograph 15.2: Experts interacting at Woman Centric Workshop


Photograph 15.3: Participants at Woman Centric Workshop

# 16

# INDIA INTERNATIONAL INNOVATION & INVENTION EXPO (INEX)

# Chapter 16
# India International Innovation & Invention Expo (INEX)

"Every great and deep difficulty bears in itself its own solution.
It forces us to change our thinking in order to find it."

- Niels Bohr

## 16.1 Introduction

The Goa State Innovation Council is established by the Department of Science, Technology & Waste Management, Government of Goa. Goa State Innovation Council engages in organizing various programs and events to spread the awareness about innovation and entrepreneurship among the people of Goa, handhold budding start-ups and innovators in scaling their business ideas and identifying potential ideas and innovations through events.

India International Innovation & Invention Expo (INEX) 2022 will focuses on National & International start-ups, industrial technologies, technology transfer and promotion in the Global markets. INEX 2022 will include the association of the Department of Science, Technology & Waste Management - Government of Goa, Industry associations, Educational Institutions and India's leading research and development institutes.

The sixth edition of India International Innovation & Invention Expo 2021 was held in Hyderabad from 13th to 16th December 2021 in Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering &Technology, Hyderabad, Telangana, India under International Federation of Inventors' Associations (IFIA) & World Invention Intellectual Property Associations (WIIPA) patronage. INEX 2021 was supported by the State Government of Telangana and various Ministries, Industry associations and premier Indian R&D Institutes. The INEX 2021 Brochure is attached in the note.

The seventh edition of INEX is proposed to be organized at Ravindra Bhavan, Fatorda from 16th to 17th November 2022, under the patronage of some of the world's largest associations promoting innovation. The proposed INEX 2021 Brochure is attached in the note.

## 16.2 About INEX Awards

Every innovation and invention has a tremendous effort behind it. Every innovator and inventor spends time, effort and energy for bringing the innovation to life. The prestigious INEX Awards are a token of recognition for all the efforts made by the innovators and inventors across the globe in order to achieve the impossible.

INEX is organized by the Indian Innovators Association in partnership with the Polish company IBS Global, a global organization engaged in the international commercialization of innovation, strengthening industry and trade with an emphasis on products, services based on innovation and new technologies.

The INEX 2022 will provide an opportunity to present the scientific solutions and innovations to establish great business contacts and collaboration with prospective collaborators.

The main goal of the INEX is international promotion and transfer of innovation. As part of the knowledge exchange among the innovator community, the top 100 Innovations will be exhibited and published during the expo. Innovations from the State of Goa will be provided with the platform to present during the event.

The INEX 2022 will award the best Innovations with the prizes of Gold, Silver and Bronze Awards during the exhibition. 50 Innovations by Students, Startups & Researchers supported by the Goa State Innovation Council will be highlighted during the event. Hence providing a unique platform to present their innovations to the National and Global Ecosystem.

## 16.3 INEX 2022 Innovation Features

- Jury presentation and shortlisting of Scalable Innovations
- Transfer of technologies through collaborators and partners. Proof of Concept from Innovators
- Global Market outreach - Products from global partners, grassroot Innovators, New Products launched by Startups from Goa
- Top Innovations & Startups from the State of Goa will be promoted during the Event

**VENUE:**

Open Ground, Ravindra Bhavan, Fatorda, Goa

## 16.4 INEX 2022 Schedule

| Sr. No. | Day & Date | Venue | Time | Details |
|---|---|---|---|---|
| 01 | Day 01 17-11-2022 | Exhibition | 08:30 AM to 10:00 AM | Stall Setup |
| | | | 10:00 AM to 11:00 AM | INEX 2022 Inauguration |
| | | | 11:00 AM to 4:30 PM | Jury evaluation for all innovations |
| | | | 11:00 AM to 5:00 PM | Expo visiting hours |
| | | | | |
| | | Conference Hall | 12:00 PM to 01:00 PM | Seminar 1 |
| | | | 01:00 PM to 01:30 PM | Indian Innovators Association Book Launch |
| | | | 01:30 PM to 02:00 PM | MoU Signing between IIA, IBS and GSInC |
| | | | 02:00 PM to 03:00 PM | Panel Discussion |
| | | | | |
| 02 | Day 02 18-11-2022 | Exhibition | 10:00 AM to 01:00 PM | Jury evaluation for all innovations |
| | | | 10:00 AM to 03:00 PM | Expo visiting hours |
| | | | | |
| | | Conference Hall | 11:00 AM to 12:00 PM | Seminar 2 |
| | | | 03:00 PM to 04:00 PM | Result consolidation |
| | | | 04:00 PM to 05:00 PM | Award Announcement |

Photograph 16.1: Launch of INEX 2022

Photograph 16.2: Students interacting with the exhibitors at INEX 2022

Photograph 16.3: Students interacting with the exhibitors at INEX 2022




Photograph 16.4: Students interacting with the exhibitors at INEX 2022


Photograph 16.5: INEX 2022 Valedictory Function

Photograph 16.6: INEX 2022 Valedictory Function





# 17

# OTHER ACTIVITIES

# Chapter 17
# Other Activities

"If you spend too much time thinking about a thing,
you'll never get it done."

- Bruce Lee

## 17.1: IDEX - Indian Navy

Goa State Innovation Council organized an outreach and promotional event to spread awareness about the DISC-7 (SPRINT) & iDEX Prime (Sprint), the 7th edition of Defence India Start-up Challenge (DISC).

Prime Minister Shri Narendra Modi unveiled 'SPRINT Challenges' launched with 69 Problem Statements (PS) from Indian Navy. In a bid to achieve 'Aatmanirbharta' in defence and as part of 'Azadi ka Amrit Mahotsav', NIIO, in conjunction with the Defence Innovation Organisation (DIO), aims to induct at least 75 new indigenous technologies/products into the Indian Navy.

This collaborative project is named SPRINT {Supporting Pole-Vaulting in R&D through Innovations for Defence Excellence (iDEX), NIIO and Technology Development Acceleration Cell (TDAC)}, and is aimed at giving a boost to the usage of indigenous technology in Indian Navy, during Naval Innovation and Indigenisation Organisation (NIIO) seminar 'Swavlamban' in New Delhi on July 18, 2022.

Photograph 17.1: IDEX - Indian Navy

## 17.2: Manohar Parrikar Vidnyan Mahotsav at DBCE

The Department of Science, Technology and Waste Management organized the 4th edition of the Manohar Parrikar Vidnyan Mahotsav on December 13, 2022 to commemorate the birth anniversary of late Manohar Parrikar, former chief minister of Goa and ex-defence minister of the country. Lectures by eminent scientists of international acclaim were organized at 8 different venues, where students were physically present to listen to the lectures. The Directorate of Education had asked all schools in Goa to depute students and teachers to participate in the festival. The event was held at the National Institute of Oceanography at Dona Paula and lecture seminars and interactive sessions were held at four different locations across the State on the 13th of December. Scientists from across the globe addressed students at the Manohar Parrikar Vidnyan Mahotsav in Goa.

Tessy Thomas, director general, Aeronautical Systems, DRDO, delivered a lecture on “Advances in Aerospace Technologies”. Portugal-based Christopher Brett, Professor, University of Coimbra, Andrea Colaco, Ashish Lele, National Chemical Laboratory, Pune, B S Janagoudar, former vice chancellor, University of Agricultural Sciences, Dharwad, Karnataka, and Anil Bharadwaj, director, Physical Research Laboratory, Ahmadabad, spoke on “Indian Planetary and Space Missions”. Students from various schools and colleges attended the one-day programme.

Photograph 17.2: Manohar Parrikar Vidnyan Mahotsav at DBCE

### 17.3: Startup Innovation Acceleration Workshop

Goa State Innovation Council organized a Startup Innovation Acceleration Workshop on the 22nd October, 2022 at the Rapid Protoyping Lab, Don Bosco College of Engineering, Fatorda, Goa, India.
The objective of the session was to upscale startups and innovators with the skills and knowledge about various Innovation aspects such as:

1. Design thinking approach
2. Detailed Startup/innovation Analysis
3. Pitch preparation
4. Individual Startup consultation
5. Preparing for private funding

Organized in partnership with IBS GLOBAL Innovative Business Solutions, the workshop's highlight was a highly impactful session conducted by Shri Raman Teja Venigalla, CTO of IBS Global.

Photograph 17.3: Startup Innovation Acceleration Workshop




### 17. 4: Goa Drone Policy Launch Event

The Goa government launched the Drone Policy 2022, which aims to promote the use of unmanned aerial vehicles for efficient and effective governance. Chief Minister Pramod Sawant unraveled the new policy, while sharing the government's plans to engage with technical institutes and academia to design drone-related courses for use in sectors like agriculture, horticulture, forestry, healthcare, and mining. Under the new policy, the government encourages the setting up of centres of excellence within higher academic institutions to promote research and development.

The policy also aims to create a network of certified drone pilots and instructors in the state, and also position Goa as a key state in India's drone ecosystem, by harnessing opportunities to promote manufacturing, innovation, generate employment and provide value-added services in the state. Moreover, the Department of Information Technology, Electronics and Communications has in its policy said the state government shall extend the benefits under the Goa Start-Up Policy 2021 and the Goa IT Policy 2018 to drone as well as drone component manufacturers and service providers.

Photograph 17.4: Hon. Chief Minister of Goa, Dr. Pramod Sawant addressing during the launch of Goa Drone Policy Launch

Photograph 17.5: Hon. Minister for IT, Rohan A Khaunte addressing during Goa Drone Policy Launch Event


Photograph 17.6: Dignitaries at Goa State Innovation Council's stall at Goa Drone Policy Launch Event

## 17. 5: NoMoZo Porvorim

NoMoZo 4.0 (short for No Motor Zone) was by far the biggest and most exciting event that witnessed participation from hundreds of Goans, tourists, performers, and small business owners. The event aimed to get Goans and tourists interested in living sustainably while also supporting people, communities, and society as a whole to meet in healthy ways.

A one of its kind annual event, NoMoZo offers a safe place for people to play and meet up with family and friends while promoting fitness, sports, culture, heritage, local art, and craft. The NoMoZo 4.0 was an event for all ages, with activities catering to children, teens, adults, and older people.

The event featured a variety of activities, including food and drinks, handicrafts, artefacts, and health checks. There were also children's programs and educational events, as well as IT demonstrations to showcase the latest technology.

Fitness demonstrations, dance, martial arts, and self-defense practices were organized for those interested in physical activities, while cultural performances highlighted the local arts and crafts. In addition, local groups such as SHGs, NGOs, and 'Swayampoorna Goem' were given a platform to showcase their work. Also, cycling was encouraged to promote sustainable transportation.

Photograph 17.7: Dignitaries at Goa State Innovation Council's stall at NoMoZo

Photograph 17.8: Dignitaries at Goa State Innovation Council's stall at NoMoZo

## 17. 6: Visit by Indian Army

In 2022, Indian Army officials visited the Rapid Prototyping Lab at Don Bosco Engineering College in Goa. The visit was aimed at exploring the lab's capabilities and potential for supporting the Army's research and development activities.

During the visit, the Army officials were given a tour of the lab, which showcased the cutting-edge equipment and technologies available for rapid prototyping. The lab's staff also demonstrated the process of rapid prototyping and explained how it could be used for the development of new products and systems. The Army officials were impressed by the lab's capabilities and expressed their interest in working with the college to explore potential collaborations. They also discussed possible projects and research areas where the lab could be of help to the Army. The visit demonstrated the importance of academic-industry partnerships in advancing research and development for a militarily safe and more progressive India.

Photograph 17.9: Shri Jose Manuel Norona, Chairman, Goa State Innovation Council was presented with a special momento from Brigadier A S Sawhney, Commander HQ2, Signal Training during Indian Army's visit to Goa State Innovation Council's Prototyping Lab

Photograph: Shri Jose Manuel Norona, Chairman, Goa State Innovation Council demonstrating the prototyping tools to Brigadier A S Sawhney, Commander HQ2, Signal Training during Indian Army's visit to Goa State Innovation Council's Prototyping Lab


## 17.7: NTSD 2022

The International Conference on Natural Science and Green Technologies for Sustainable Development (NTSD-2022) was jointly organised by School of Biological Sciences and Biotechnology, Goa University with National Environmental Science Academy, New Delhi & Goa State Innovation Council.

The conference aimed to bring together researchers, scientists, engineers, and other professionals from academia and industry to share their latest research and ideas on natural sciences and green technologies. The conference provided a platform for participants to discuss the challenges and opportunities in the field of sustainable development, and to explore innovative solutions that could contribute to a more sustainable future. Topics covered at the conference included but were not limited to, renewable energy sources, sustainable agriculture and forestry, environmental management and policy, green chemistry and materials science, and sustainable transportation.

NTSD-2022 featured keynote speeches, plenary sessions, oral and poster presentations, and workshops. Participants had the opportunity to network with peers, exchange ideas and collaborate on future research projects. The conference also published a collection of high-quality research papers in a conference proceedings publication.

Photograph 17.10: Shri Jose Manuel Norona, Chairman, Goa State Innovation Council at The International Conference on Natural Science and Green Technologies for Sustainable Development

**17. 8: Visit by Maker's Asylum**

The officials from Maker's Asylum visited the Secretariat of Goa State Innovation Council followed by the visit to the Rapid Prototyping Lab.

During the meeting, various collaborations on student and startup innovative projects were discussed.

Photograph 17.11: Visit by Maker's Asylum


# 18

# FINANCE & ACCOUNTS

# Chapter 18
# Finance & Accounts

Great things happen to those who don't stop believing,
trying, learning, and being grateful.

- Roy T. Bennett

Table 18.1: Grants and Funding Account of the Council

| Sr. No. | Date | Amount | Order No. |
|---|---|---|---|
| 1 | 9/06/2022 | Rs. 7,50,000.00 | No. 3-191-2011/14-15/STE-DIR/GSInC/Part/247 |
| 2 | 5/08/2022 | Rs. 20,00,000.00 | No. 3-191-2011/14-15/STE-DIR/GSInC/Part/522 |
| 3 | 24/11/2022 | Rs. 15,00,000.00 | No. 3-191-2011/14-15/STE-DIR/GSInC/Part/971 |
| 4 | 24/11/2022 | Rs. 7,50,000.00 | No. 3-191-2011/14-15/STE-DIR/GSInC/Part/972 |

Table 18.2: Utilization Certificate of the Grant

| Sr. No. | Receipt No | Amount | Order No. |
|---|---|---|---|
| 1 | 096 | Rs. 20,00,000.00 | No. 3-191-2011/14-15/STE-DIR/GSInC/ Part/522 |
| 2 | 018 | Rs. 7,50,000.00 | No. 3-191-2011/14-15/STE-DIR/GSInC/ Part/247 |
| 3 | | Rs. 15,00,000.00 | No. 3-191-2011/14-15/STE-DIR/GSInC/ Part/971 |
| 4 | | Rs. 7,50,000.00 | In utilisation |

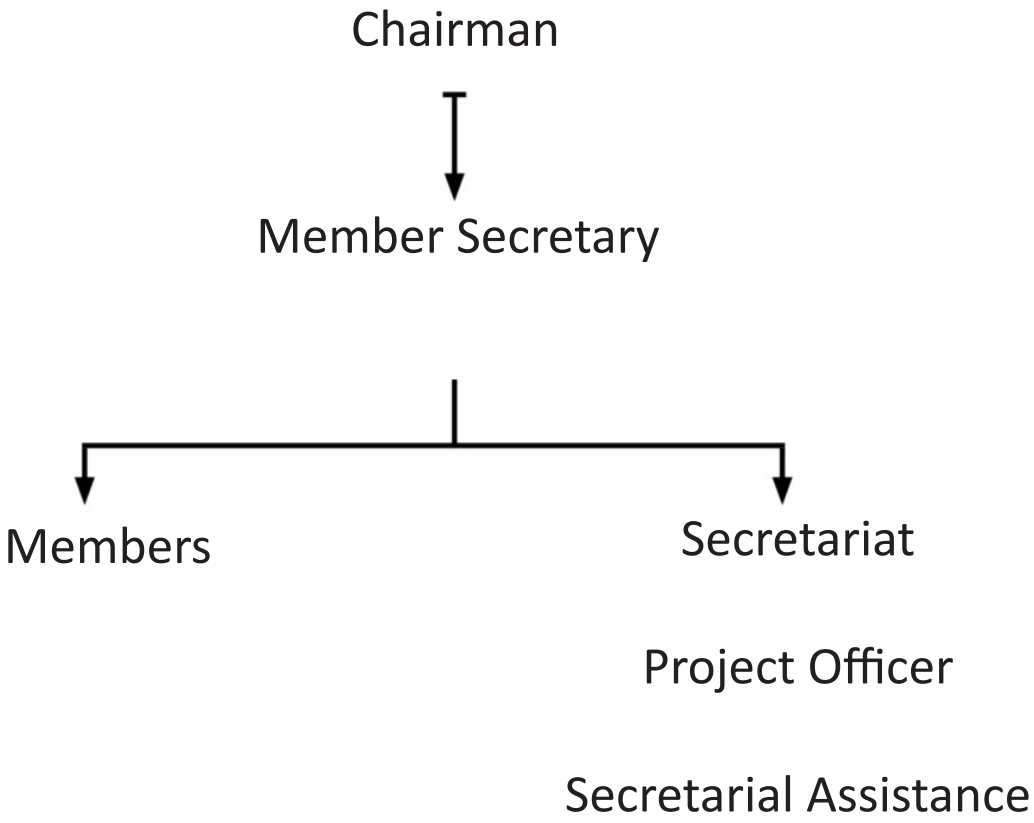
# 19

# ANNEXURE

# Chapter 18
# Annexure

"What we think, we become."

- Buddha

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