

**Vivekanand Education Society's Institute of Technology**  
**Department of Instrumentation Engineering**  
**Academic Year 2021-22 (ODD Sem)**



**Department Report (From 1st July-31st December 2021)**

**1. Faculty Contribution**

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- 1.2 Courses Attended by Faculty
- 1.3 Research Paper Published
- 1.4 Other Achievements
  - 1.4.1 PHD Completion
  - 1.4.2. ATAL FDP On “ Electric Vehicle”

**2. Alumni Interaction (V-Reach)**

**3. Entrepreneurship Initiatives**

**4. Student Achievement**

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- 4.2 Student Participation Workshops /Seminars/ Internship/Training
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**5. Skill Development Activities**

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- 6.1 Graph up with Chart.js Workshop
- 6.2 3D Printing Workshop

6.3 Desktop Applications using Tkinter Workshop

6.4 Embedded Systems Workshop

### **7.ISA Non Technical Events**

7.1 EluciMate 2.0

7.2 BE and Beyond

### **8.Extra-curricular activities**

## 1.Faculty Contribution

### 1.1Orientation Programs

Sr. No.	Conducted By	Course description (Orientation Program)	Organized by	Date	Number of days
1	Sangeetha Prasanna Ram	Online Orientation Program for the course "Analytical Instrumentation"	VESIT on behalf of Board of studies, Mumbai university	10th July 2021	One Day
2	Jayassre Ramakrishnan	Online Orientation Program for the course "Analytical Instrumentation"	VESIT on behalf of Board of studies, Mumbai university	10th July 2021	One Day

### 1.2 Courses Attended by Faculty

Sr. No.	Attended By	Course description	Organized by	Date	Number of days
1	Dr.Nilima Warke	ATAL online FDP on "Implementation of Industry 4.0 and It's challenges"	New Horizon College of Engineering	5th July to 9th July 2021	One week
2	Dr.Nilima Warke	Innovation Ambassador Training (Advanced Level)	Ministry of Education's Innovation cell & AICTE	30th June-30th July 2021	One Month
3	Dr.Nilima Warke	National Level FDP on "Data Science for Instrumentation"	D. Y.Patil College of Engineering, Akurdi	15th July to 17th July 2021	three Days
4	Jayassre Ramakrishnan	ATAL Online FDP on "Electric Vehicles"	VESIT	5th July to 9th July 2021	One week
5	Jayassre Ramakrishnan	Innovation Ambassador Training (Advanced Level)	Ministry of Education's Innovation cell & AICTE	30th June-30th July 2021	One Month (16 sessions of 30 contact hours)

### 1.3 Research Paper Published

Publication - Author List	Publication - Affiliation of Authors	Publication - Date	Publication - National / International	Publication - Journal / Conference	Publication - Name of The Journal / Conference	Publication - Organised By	Publication - Venue	Publication - Publisher	Publication - ISBN Number
Kadambari Sharma	Kadambari Sharma	September, 2021	International	Journal	International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering(IJAREEIE),				doi:10.15662/IJAR EEIE.2021.1009015
Kadambari Sharma	Kadambari Sharma	October, 2021	International	Conference	Proceedings of 3rd International Conference on Advances in Electrical and Computer Technologies 2021.				
Kadambari Sharma	Kadambari Sharma	October, 2021	International	Conference	Proceedings of 3rd International Conference on Communication, Computing and Electronics Systems, ICCCES2021				
Machhindranath Patil, Bijnan Bandyopadhyay, Deepti Khimani, Myat Toe	Machhindranath Patil, Bijnan Bandyopadhyay, Deepti Khimani, Myat Toe	September 2021	International		Robust output tracking for the non-minimum phase over-actuated systems				<a href="https://doi.org/10.1016/j.automata.2021.109726">https://doi.org/10.1016/j.automata.2021.109726</a>

Sangeetha Prasanna Ram	Instrumentation department, VESIT	September 2021	International Journal	Journal	International Research Journal of Engineering and Technology				e-ISSN:2395-0056, p-ISSN:2395-0072
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## 1.4 Other Achievements



### 1.4.1 P.H.D. Completion - Dr. Nilima Warke

Congratulations Dr. Nilima Warke on successfully completing your Ph.D. in Dec 2021 and making us all proud. Your motivation and optimism is an inspiration to many. Stay the same. Keep flying and attaining greater heights!

#### Ph.D Details:

**Topic:** New Hardware Methods for Extraction of Low-Level Differential Signals over Wide Bandwidth with High CMRR and S/N Ratio

**Guide:** Dr. (Mrs.) Jayalekshmi M. Nair and Dr. P.P. Vaidya

The new methods for improvement of dynamic range of instrumentation amplifier have been proposed, designed and tested without affecting CMRR and frequency response to compensate DC offset voltages with constant voltage and current sources, three-stage instrumentation amplifier. These techniques have resulted in improved dynamic range without affecting CMRR and a differential gain over the entire range of frequencies. These methods can be used for blocking DC offset voltages and hence increasing dynamic range in any field. Impedance steering method is also designed which is particularly suitable for PC-based systems and produces a uniform frequency response, even at lower frequencies, which is important for biomedical signal processing. A new Figure of Merit has been proposed for quantitative assessment of improvement in dynamic range as Distortion free Dynamic range Improvement Ratio.

Also, a new method for removal of common mode signal of unknown frequency signals using new balancing technique has been designed and tested which improves the effective CMRR to  $10^8$  to  $10^9$  of the system without degrading frequency response.

The performance of these developed circuits is required to be tested and verified with high accuracy, a computer controlled high resolution (16 bit) hardware research validation system is designed and constructed over wide bandwidth 0-10MHz. The developed system has a component cost that is as small as nearly 10% of the cost of commercially available validation systems. As a result, this hardware validation system is a cost-effective solution for academic institutions.

### **1.4.2 AICTE Training and Learning Academy (ATAL) Sponsored One Week Faculty Development Program on “Electric Vehicles” (5th July to 9th July 2021)**

VESIT Renaissance Cell (In association with Department of EXTC Engineering, Instrumentation Engineering, VESIT-IIC and IQAC) of VESIT, Mumbai, Maharashtra is organizing, AICTE Training and Learning Academy (ATAL) Sponsored One Week Faculty Development Program (online) on “Electric Vehicles” (5th July to 9th July 2021)

#### **ABOUT FDP**

The electric vehicle industry is a growing industry in India. The central and state governments have launched schemes and incentives to promote electric mobility in the country and some regulations and standards are also in place. Electric vehicles are the future of transportation. Electric mobility has become an essential part of the energy transition and will imply significant changes for vehicle manufacturers, governments, companies, and individuals. There are challenges like lack of charging infrastructure, high initial cost, and lack of electricity produced from renewable energy. Still, e-commerce companies, car manufacturers, app-based transportation network companies, and mobility solution providers have entered the sector and are slowly building up electric car capacity and visibility. Also, Electric Vehicles (EV) are one of the growing popular options for people who are conscious about environmental pollution, global warming, and health issues. The global share of Electric vehicles will increase from 2% in 2020 to 22% in 2030. The ability to deliver the technical information of this major area to the right audience at the right time is a valuable skill. This Faculty Development Program (FDP) is designed to enrich and augment the knowledge of the participants and provide a basic platform to carry out research in these fields which will further bolster the development of the country.

#### **PARTICIPANTS DETAILS**

Number of participants Applied	200
Number of approved participants	189
Number of participants joined whatsapp group	175
Number of participants attended workshop	150
Number of participants eligible for certificate	132

Zoom Meeting | You are viewing Dr.M.Sivakumar's screen | View Options

Recording... | View

**Electric Vehicle Configured for HIL**

1. Plot speed of vehicle (see code)
2. Plot motor torque (see code)
3. Set solver: Desktop, Real Time
4. Explore simulation results using sscxplorer
5. Learn more about this example

Scopes & HIL Outputs

Scope

Vehicle Speed (RPM)

Battery Voltage

Motor Temperature (degC)

Scope based: 1x1000

Dr.M.Sivakumar

Zoom Meeting | 123 | Security | Participants | Chat | Share Screen | Pause/Stop Recording | Reactions | Leave

3:34 PM 06/07/2021

Recording... | Vehicle Packaging | You are viewing Yogesh Soman's screen | View Options

Yogesh Soman

- Platform Conversion from Conventional to "The Electric Vehicle"
  - Replacing Conventional engine drivetrain → Electronic box and electric drive train assembly
  - Replacing Fuel tank → Battery box assembly
  - Replacing Mechanical gear shifter → Electric gear shifter (FBRN)
  - All systems are interconnected with wiring harness

Drive Train Assembly

E-Box

PRNDL

B-Box

Interconnection of AC lines from front AC

Zoom Meeting | 105 | Security | Participants | Chat | Share Screen | Pause/Stop Recording | Breakout Rooms | Reactions | Leave

Zoom Meeting    You are viewing Dr.M.Sivakumar's screen    View Options

Recording...    View

Block Parameters Drive Cycle Source

Drive Cycle Source (Fixed) (SISO)

Generates a standard or user-specified longitudinal drive cycle. The block output is the vehicle longitudinal speed. You can import drive cycles from:

- Traditional source
- Workspace variables, including arrays and time series objects (read, xls, csv, or txt files)

Drive cycle source: FTP75

Specify variable:    Select file

Repeat cyclically     Output acceleration

Units and sample period

Output velocity units (e.g., m/s, km/h, mph):

Output sample period (0 for continuous, dt [s]): 0

Update simulation time    Plot drive cycle

OK    Cancel    Help    Apply

Drive Cycle Source

FTP75 (2474 seconds)

Analyze Power and Energy

Copyright 2015-2019 The MathWorks, Inc.

Windows taskbar: Type here to search, Start Video, Security, Participants (125), Chat, Share Screen, Pause/Stop Recording, Reactions, Leave, 31°C, 3:27 PM, 06/07/2021

Dr.M.Sivakumar

Zoom Meeting    You are viewing Yogesh Soman's screen    View Options

Recording...    View

# ELECTRIC VEHICLE SAFETY

All Tools Used On Electrical System Should Have Non-conductive (Insulated) Coatings To Prevent Accidental Contacts

Yogesh Soman

Windows taskbar: Audio, Start Video, Security, Participants (108), Chat, Share Screen, Pause/Stop Recording, Breakout Rooms, Reactions, Leave, 3:27 PM, 06/07/2021



Zoom Meeting

Recording...

## E-Motor Test Bed Set Up

E-Motor Test System – Application Training 2013

Public / 31

Rakesh Tyagi | 05 July 2021 | AVL

Participants (114)

Find a participant

- LS Vishwakarma (Co-host, me)
- Akash Koyalkar (Host)
- TYAGIRAK (Co-host)
- Dr. Monali Chaudhari (Co-host)
- Mooponar Paramesh... (Co-host)
- Abhilash Ghosh
- Amol Chaudhari
- AMOL SUTAR
- amudha
- ANUP ASHOK PATIL
- Aparajita Bera
- Archana Deshpande TCET
- Arti Sawant
- ASHOK KUMAR

Type here to search

31°C ENG 10:54 AM 05/07/2021

Zoom Meeting

Recording...

## Future Emissions LAB

Soak Area      Emission Chassis Dyno      Real Driving Emissions

ICE Vehicles

Plug-In Hybrids

Battery E-Vehicles

Fuel Cell E-Vehicles

Charge energy flow data

Charge energy flow data

RDE

RDE

Electrification extends the emission testing to the Soak area, which is part of the measurement and these data will influence the result

E-Vehicles must also run the regular emission test cycle, for Energy consumption and driving range measurement

RDE extend the emission testing to real driving conditions, with all its randomness

Public / 32

Rakesh Tyagi | 05 July 2021 | AVL

Participants (116)

Find a participant

- LS Vishwakarma (Co-host, me)
- A... (Host) [Ask to Unmute](#) [More >](#)
- TYAGIRAK (Co-host)
- Dr. Monali Chaudhari (Co-host)
- Mooponar Paramesh... (Co-host)
- Abhilash Ghosh
- Amol Chaudhari
- AMOL SUTAR
- amudha
- ANUP ASHOK PATIL
- Anush P
- Aparajita Bera
- Archana Deshpande TCET
- Arti Sawant

Type here to search

31°C ENG 10:57 AM 05/07/2021

Zoom Meeting

Recording... [Pause]

FURQAN QU... Dr. Paresh J... j m nair Dr. Monali C... amudha

# TYAGIRAK

Participants (111)

Find a participant

- L.S Vishwakarma (Co-host, me)
- Akash Koyalkar (Host)
- TYAGIRAK (Co-host)
- Dr. Monali Chaudhari (Co-host)
- Mooponar Paramesh... (Co-host)
- Abhilash Ghosh
- Amol Chaudhari
- AMOL SUTAR
- amudha
- Ankush Gund
- ANUP ASHOK PATIL
- Anush P
- Aparajita Bera
- Archana Deshpande TCET

Audio Start Video Security Participants 111 Chat Share Screen Pause/Stop Recording Reactions More Leave

Type here to search

31°C ENG 11:04 AM 05/07/2021

Recording... [Pause]

Speaker View  
 Gallery View  
 Fullscreen

Kanchan Attarde Christie Fernandez L.S.Vishwakarma Sukanya R

Pavan Patil FURQAN QURESH DHANASHREE Dr. Kamal Kr Sha...

Dr Mrunal Desh... amudha SHIJU SAMUEL Pravin Dere Subhasis Nanda

Gautami Pujare Shoba Krishnan Manisha Joshi Prem Joshi Yogesh Pandit

Prashant Ahire Siuli das Dr. Paresh J. Shah Rajashree Patil Smita Khandagale

Participants (130)

Find a participant

- L.S.Vishwakarma (Co-host, me)
- Mooponar Parameshwari (Host)
- Kanchan Attarde
- Christie Fernandez (Co-host)
- Akash Koyalkar (Co-host)
- Dr. Monali Chaudhari (Co-host)
- Sukanya R (Co-host)
- Abhilash Ghosh
- Amol Chaudhari
- AMOL SUTAR
- amudha
- Anand Bharadwaj
- ANUP ASHOK PATIL

Audio Start Video Security Participants 130 Chat 4 Share Screen Pause/Stop Recording Reactions Leave

Type here to search

32°C ENG 12:59 PM 05/07/2021

## 2.Alumni Interaction (V-Reach)

INST Department is proud of its robust alumni base which has grown immensely and reached global heights. It wholeheartedly acknowledges their role as stakeholders in leveraging the VESIT brand, to foster this relationship further VESIT-Internal Quality Assurance Cell (IQAC) in association with Institution's Innovation Council (IIC), has unlocked the teaching-learning process, especially during these unprecedented times of COVID-19, through **VESIT's Alumni Engagement Initiative: "V-REACH"**

### Objectives of V-REACH:

- To provide a forum for a series of webinars covering various domains of learning and support outcome-based education.
- To enable knowledge and expertise sharing of alumni for professional development of students.
- To actively engage the stakeholders to expand VESIT's outreach.
- To foster our relationship with our alumni effectively and employ their flair, ardor, knack, and contributions to constructive ends for VESIT and its students.

Four alumni from the Instrumentation Department communicated with the students of second year, third year and final year and guided them for the future through V-Reach sessions, details of which are:

Sr. No.	Name of The Speaker	Designation	Topic Covered By	Date	Batch
1	Mr.Vikram Gupta	Manager central procurement organization Mumbai	Digitization in Refineries	03/08/2021	INST 2008
2	Mr. Arca Mitra	Senior manager (I & C design), Nuclear Power Corporation of India Limited	Opportunities for engineer in PSU/Govt sector	11/08/2021	INST 2009
3	Ms. Mrugakshi Bole	Sr.Instrumentation Engineer Black & Veatech Pvt.Ltd	Technical and Soft skills required for engineering students	12/08/21	INST 2014

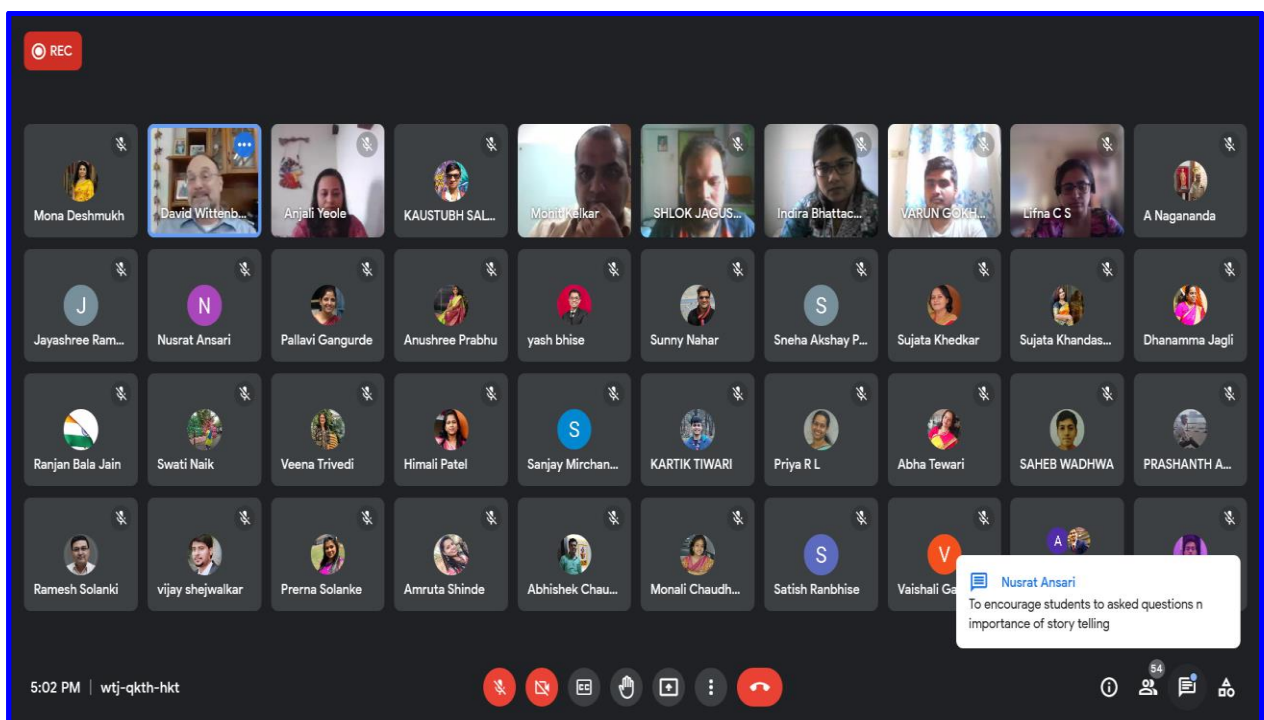
4	Mr. Rahul Ghogle	Process Automation Division Business Development professional for DCS, Siemens Ltd.	Industrial Automation for Process Industry	23/08/21	INST 2011
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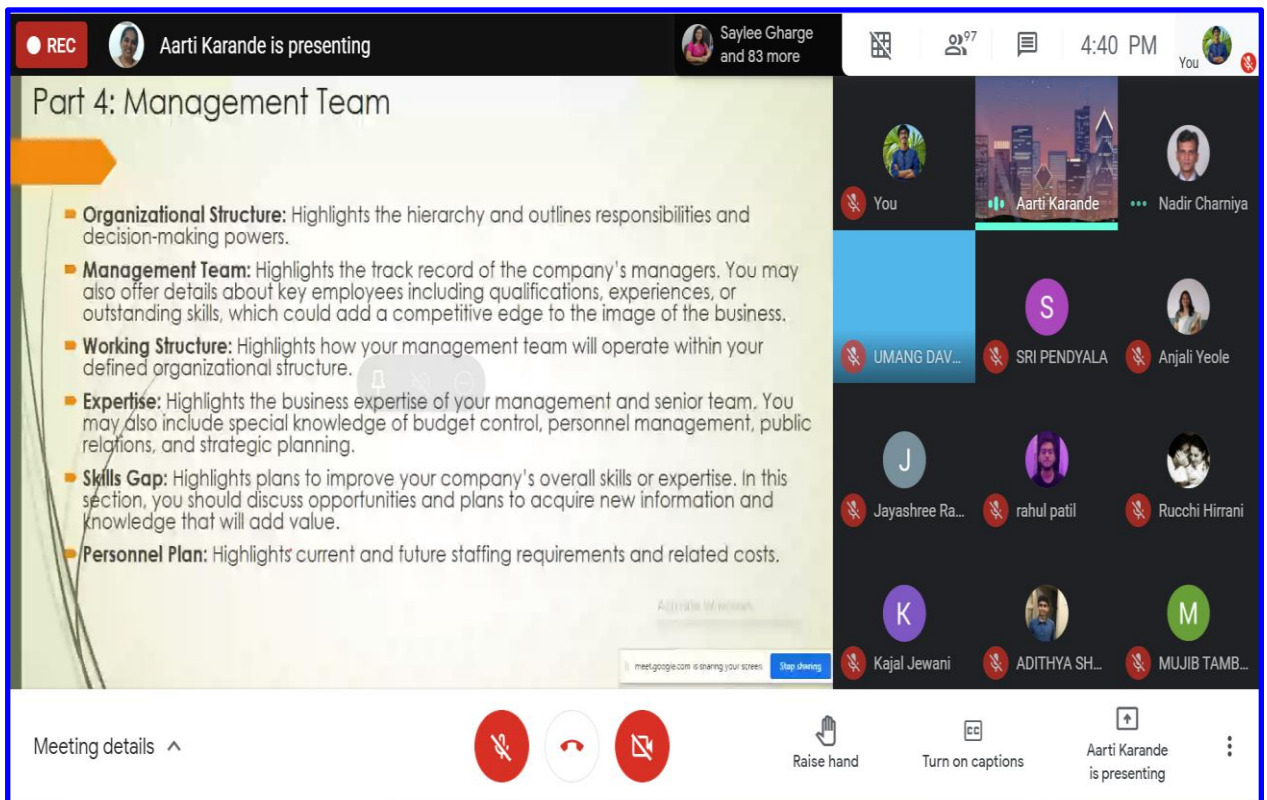
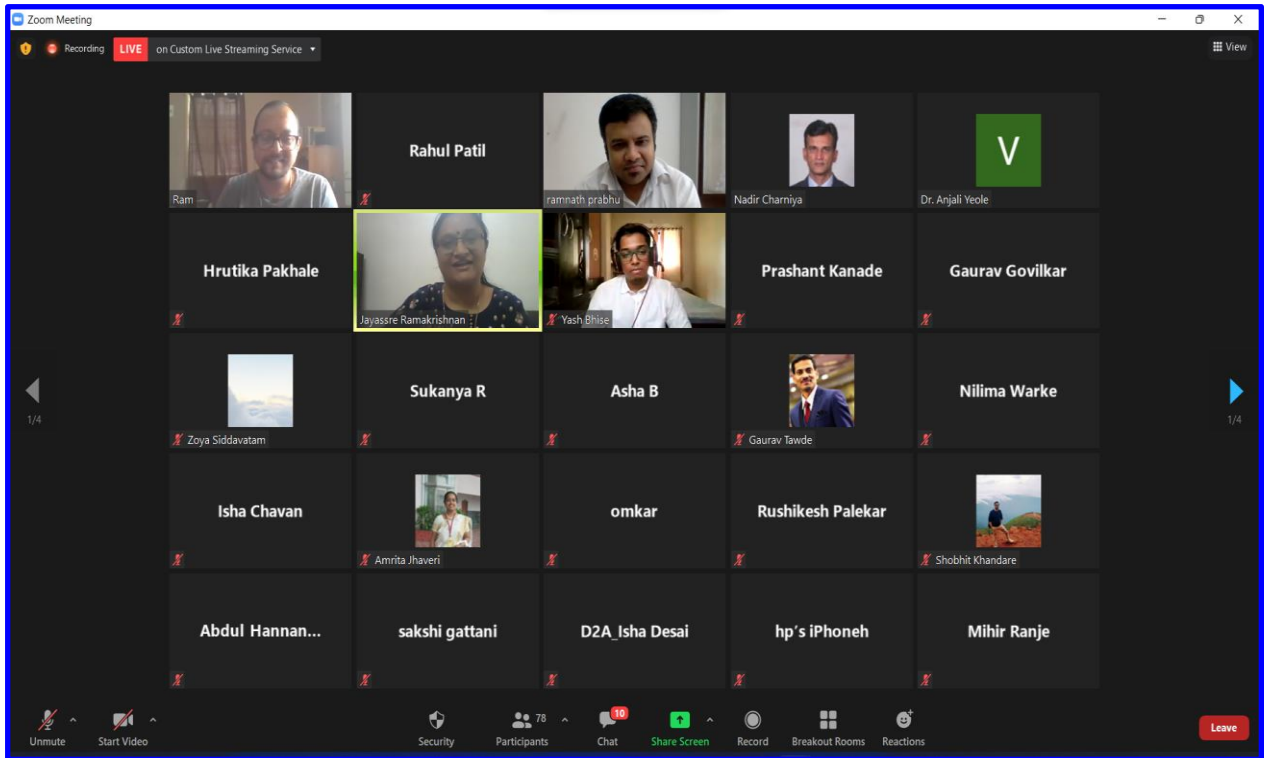
### 3. Entrepreneurship Initiatives

To initiate students with current knowledge, Industry affairs and enhance the students for start-ups, our faculty member Mrs. Jayashree Ramakrishnan played the coordinator role in the Entrepreneurship Initiative session under the guidance of IQAC-IIC.

An online session was conducted for all students & staff members, under IQAC-IIC, the details of which are:

- ❖ Dr. Ramakrishnan R. (Assistant Vice President – Intellect Design Arena) & Mr. Ramnath Prabhu (Assistant Manager - Intellect Design Arena) gave an expert lecture on “Design the Thinking - Preparing the Entrepreneurship Mindset” at 31st July 2021 from 10.00AM-12.00PM.





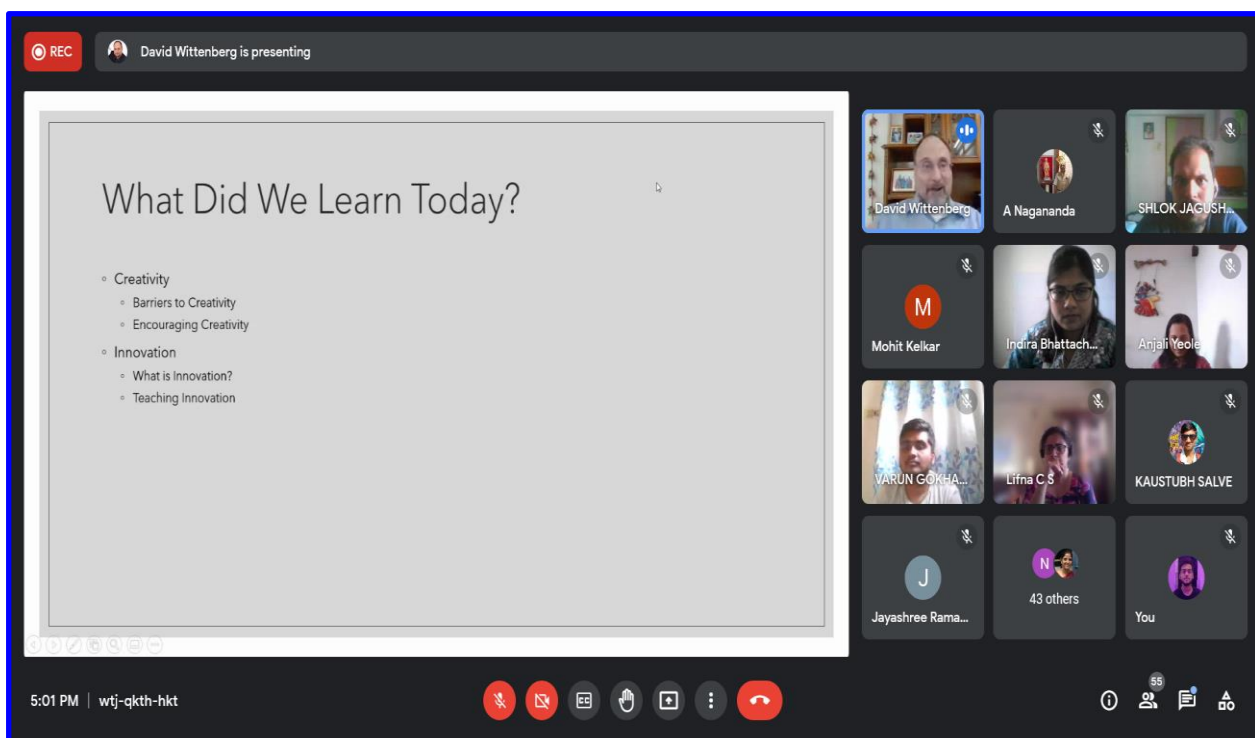


Meeting interface showing a grid of participants. The top bar displays the name 'siddharth tayde and 11 more', a grid icon, 48 participants, a chat icon, and the time '5:25 PM'. The grid contains 36 circular icons representing participants, with some showing initials like 'S', 'R', 'M', 'D', 'P', 't', 'J', 'R', 'D', 'N', 'A', 'R'. A blue rectangular area is visible in the top-left of the grid. The bottom bar includes 'Meeting details ^', mute, video, and screen share icons, and buttons for 'Raise hand', 'Turn on captions', and 'Present now'.

Meeting interface showing a presentation slide titled 'BUSINESS IDEA'. The slide content includes:

- 3. Viability**: what is likely to become part of a sustainable business model. Includes 'EMOTIONAL INNOVATION' (Brands, Marketing, Relationships) and 'EXPERIENCE INNOVATION'.
- 1. Desirability**: what makes sense to people and for people (Purpose). Includes 'PEOPLE DESIRABLE' and 'EMOTIONAL INNOVATION'.
- 2. Feasibility**: what is functionally possible within the foreseeable future. Includes 'TECHNOLOGY FEASIBILITY' and 'FUNCTIONAL INNOVATION'.

The diagram shows 'BUSINESS VIABILITY' at the center, connected to 'EMOTIONAL INNOVATION', 'EXPERIENCE INNOVATION', 'PEOPLE DESIRABLE', and 'TECHNOLOGY FEASIBILITY'. A URL is provided at the bottom: [https://www.youtube.com/watch?v=X\\_11roIgygQ](https://www.youtube.com/watch?v=X_11roIgygQ). The top bar shows 'Parameshwaran R is presenting', 'rahul patil and 86 more', 98 participants, a chat icon, and the time '10:58 AM'. The grid on the right shows participants like Pooja Kundu, Asma Parveen, Sangeeta Oswal, Jayashree Ramak..., Shoba krishnan, Shivkumar Goel, SRI PENDYALA, and SHIVASHAKTI PIL... The bottom bar includes 'Meeting details ^', mute, video, and screen share icons, and buttons for 'Raise hand', 'Turn on captions', and 'Parameshwaran R is presenting'.



## 4.Student Achievement

### 4.1 Higher studies details for 2021-22:

Instrumentation students who got admitted for higher studies in Indian and foreign universities include:

Sr.No.	Name of the Student	University	Field of Specialization
1	Tanmay Shravage	North-eastern University Boston	MS (Data Science)
2	Shubhangi B	University of Buffalo NY	MS (Computer science & Engineering)

### 4.2 Student Participation Workshops /Seminars /Internship/Training:

Sr. No.	Name of The Student	Class	Title of Training/Internship /Workshop	Organizing Industry/Institute Name	No. of Days
1	Sanskruiti Jadhav	BE	Internship on Design and Detail engineering	Sierra Instrumentation and control	15 Days
3	Rutwik Anant Pendse	BE	Design & Detail Engineering	Sierra Instrumentation & Control	15 days
4	Thikade Sanket Sanjay	BE	Internship in R.K. Dutt Concerns	R.K. Dutt Concerns	24 days

5	Mandhare sandesh hambirrao	BE	B&R automation training	B&R automation	10 days
7	Gaonkar Abhijeet Laxman	BE	B&R Automation Workshop	VESIT	1 Month
9	Pillai Shivashakti Raman	BE	Internship in Rk Dutt Concerns	VESIT	24 days
10	Zhankar Aditi Amit	BE	B&R Automation Workshop	VESIT	1 month
12	Mopkar Amogh Dattaprasad	BE	B&R Automation Workshop	VESIT	1 month
13	Sadhu Amogh Uttam	BE	B&R Automation Workshop	VESIT	1 month
16	Yadav Atish	BE	B&R Automation Workshop	VESIT	1 month
17	Shetty Bhavit Bhaskar	BE	B&R Automation Workshop	VESIT	1 month
18	Nigudkar Chinmayi	BE	B&R Automation Workshop	VESIT	1 month
21	Patil Gaurav Kamalakar	BE	B&R Automation Workshop	VESIT	1 month
25	Shelar Krishna Vithoba	BE	B&R Automation Workshop	VESIT	1 month
26	Patil Manish Gajanan	BE	B&R Automation Workshop	VESIT	1 month
29	Jaladi Omkar	BE	B&R Automation Workshop	VESIT	1 month
30	Kadam Prachay Prakash	BE	B&R Automation Workshop	VESIT	1 month
31	Ukarande Prajakta Arun	BE	B&R Automation Workshop	VESIT	1 month
36	Singh Rashmi Amar	BE	B&R Automation Workshop	VESIT	1 month
37	Singh Rashmi Chandrashekhar	BE	B&R Automation Workshop	VESIT	1 month
38	Shaikh Rizwan	BE	B&R Automation Workshop	VESIT	1 month
39	Bhor Rohan	BE	B&R Automation Workshop	VESIT	1 month
40	Panchal Rohan Ratnakar	BE	B&R Automation Workshop	VESIT	1 month
41	Mhatre Rohit Narayan	BE	B&R Automation Workshop	VESIT	1 month
43	Pendse Rutwik Anand	BE	B&R Automation Workshop	VESIT	1 month
44	Mandhare Sandhesh	BE	B&R Automation Workshop	VESIT	1 month
45	Bhosale Saurav Sachit	BE	B&R Automation Workshop	VESIT	1 month



47	Jadhav Simran Nitin	BE	B&R Automation Workshop	VESIT	1 month
48	Koshti Suyash Narendra	BE	B&R Automation Workshop	VESIT	1 month
49	Sayyed Usman Gaus	BE	B&R Automation Workshop	VESIT	1 month
50	Shetty Vineet Bhaskar	BE	B&R Automation Workshop	VESIT	1 month
53	Mopkar Amogh Dattaprasad	BE	Automation Studio Basics	B&R Automation	30 days
54	Patil Manish Gajanan	BE	B&R Automation	B&R Automation	1 month
56	PATIL GAURAV KAMALAKAR	BE	Traning at B&R Automation	B&R Automation	1 month
57	Verma Rajnandini Rajesh Kumar	SE	Results & Market Development	Bennett, Coleman & Co. Ltd.(The Times Group)	40 Days
58	Gurav Aaditya Dipak	TE	B&R Automation Workshop	VESIT	1 month
59	Gurav Aaditya Dipak	TE	Internship in R.C.F, Thal-Alibag.	R.C.F, Thal-Alibag.	15 days
60	Waghmare Ajinkya Rajendra	TE	B&R Automation Workshop	VESIT	1 month
61	Mestry Aniruddha Vinod	TE	B&R Automation Workshop	VESIT	1month
62	Daware Anushka Vidyanand	TE	B&R Automation Workshop	VESIT	1 month
63	Shah Devanshi Kapil	TE	B&R Automation Workshop	VESIT	1 month
64	Govilkar Gaurav	TE	B&R Automation Workshop	VESIT	1 month
65	Pakhale Hrutika Mahesh	TE	B&R Automation Workshop	VESIT	1 month
66	Sharma Ishaan Rajan	TE	B&R Automation Workshop	VESIT	1 month
67	Khavnekar Kaustubh Vishnu	TE	B&R Automation Workshop	VESIT	1 month
68	Nair Nidhi Vivek	TE	B&R Automation Workshop	VESIT	1 month
69	Hirugade Omkar Satish	TE	B&R Automation Workshop	VESIT	1 month
70	Waghmode Pratik Ramchandra	TE	B&R Automation Workshop	VESIT	1 month
71	Dubey Priyanshu Rajesh	TE	B&R Automation Workshop	VESIT	1 month
72	Maurya Rahul	TE	B&R Automation Workshop	VESIT	1 month
73	Patil Rahul Sanjay	TE	B&R Automation Workshop	VESIT	1 month

74	Vedak Rutvik Sachin	TE	B&R Automation Workshop	VESIT	1 month
75	Kakade Siddhesh Satyawan	TE	B&R Automation Workshop	VESIT	1 month
76	Deshpande Vinit Vinod Neeta	TE	B&R Automation Workshop	VESIT	1 month
77	Hirugade Omkar Satish	TE	B&R control systems programming workshop	B&R Automation	30 days
78	Patil Pranav Sandip	TE	R.C.F, Thal Unit (In-Plant training)	R.C.F, Thal Unit	15 days

### 4.3 Industry Interactions/Training

Industry proctored project under B&R Industrial Automation Pvt Ltd.

B&R Industrial Automation Pvt. Ltd, Pune, Maharashtra offered industry collaborated training and project mentorship to final and pre-final year students. Participants were trained on various methods of PLC programming and HMI development. Program development for various applications in process control, motion control, factory automation, etc was taught to participants. Different methods of programming such as ladder, structured text, block diagram, etc were covered in detail. B&R Automation Studio 4.7 is used for program development and simulation. Automation Studio software supports OPC UA (Open Platform Communications - Unified Architecture). Several simulations were also demonstrated in iPhysics and ACOPOStrack.

Broad areas of training and project mentorship:

1. Machine Centric Robotics (MCR) + OPC-UA

In machine centric robotics the participants are taught to control a certain process using Map- Robotics and HMI screen developed for the robot. The main objective of this project is to learn about the sensors, actuators used in robots, controlling a robot, learning about industrial automation, building HMI screen, understanding and communicating the standard industrial communication protocol OPC-UA.

2. Digital Twin + OPC-UA

A Digital twin can be used to simulate the physical behaviour of any system in real time before any part of the real system has been constructed. A digital twin is a detailed, dynamic representation of a real machine. Three-dimensional CAD data is used to create a digital model. Not only does this simplify and accelerate hardware and software development, it also makes it possible to perform virtual commissioning of the track. Simulating the physical behaviour of a machine in real time makes it possible to identify bottlenecks and potential for optimization very early in development. A digital twin dramatically accelerates the process of developing and optimizing a machine design. Before ever setting up an actual robot, developers can check their design's performance on key metrics like picks per minute.

List of projects assigned/demonstrated to students:

1. Digital twin:
  - a. Box Lift
  - b. CrossCutter+OPC-UA
  - c. CrossCutter RegMark+OPC-UA
  - d. DrillingMachine+OPC-UA
  - e. FlyingSaw+OPC-UA
  - f. Labeler+OPC-UA
2. Robotics:
  - a. Delta+OPC-UA
  - b. Scara+OPC-UA

Schedule/time line of events:

Sr No	Description	Date
1.	Announcement of training and opening of registration	18 <sup>th</sup> Aug, 2021
2.	Online training	13 <sup>th</sup> Sep to 23 <sup>rd</sup> Sep, 2021. From 11 AM to 4 PM
3.	Assignment evaluation and grading	24 <sup>th</sup> Sep, 2021
4.	OAC 21 announcement and opening of registration	4 <sup>th</sup> Oct, 2021
5.	OAC 21 final competition & results	26 <sup>th</sup> & 27 <sup>th</sup> Oct, 2021

Course certificate

Course certificate is for 30 days training. According to Tanmay Sharma the certificate has included advance training days and topics. Dates on certificate: 13/09/2021 to 22/10/2021.

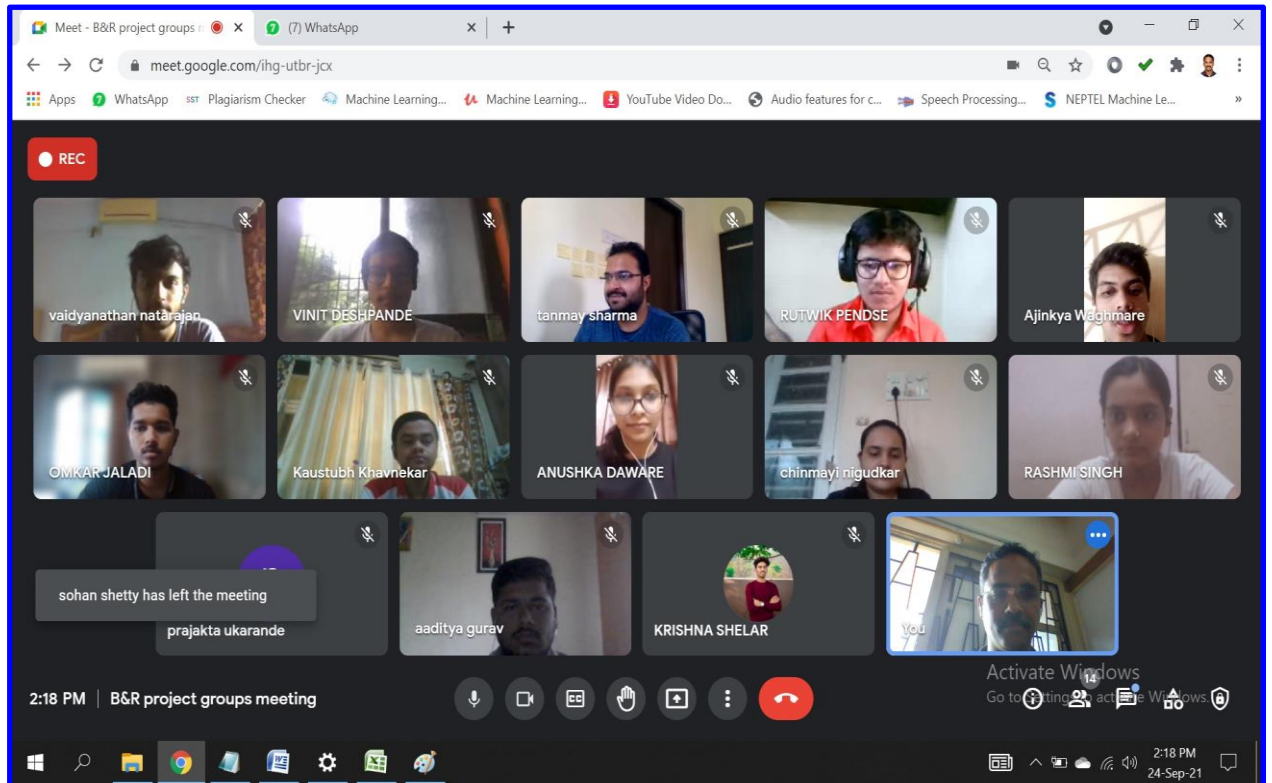
Activity was corroborated as listed below:

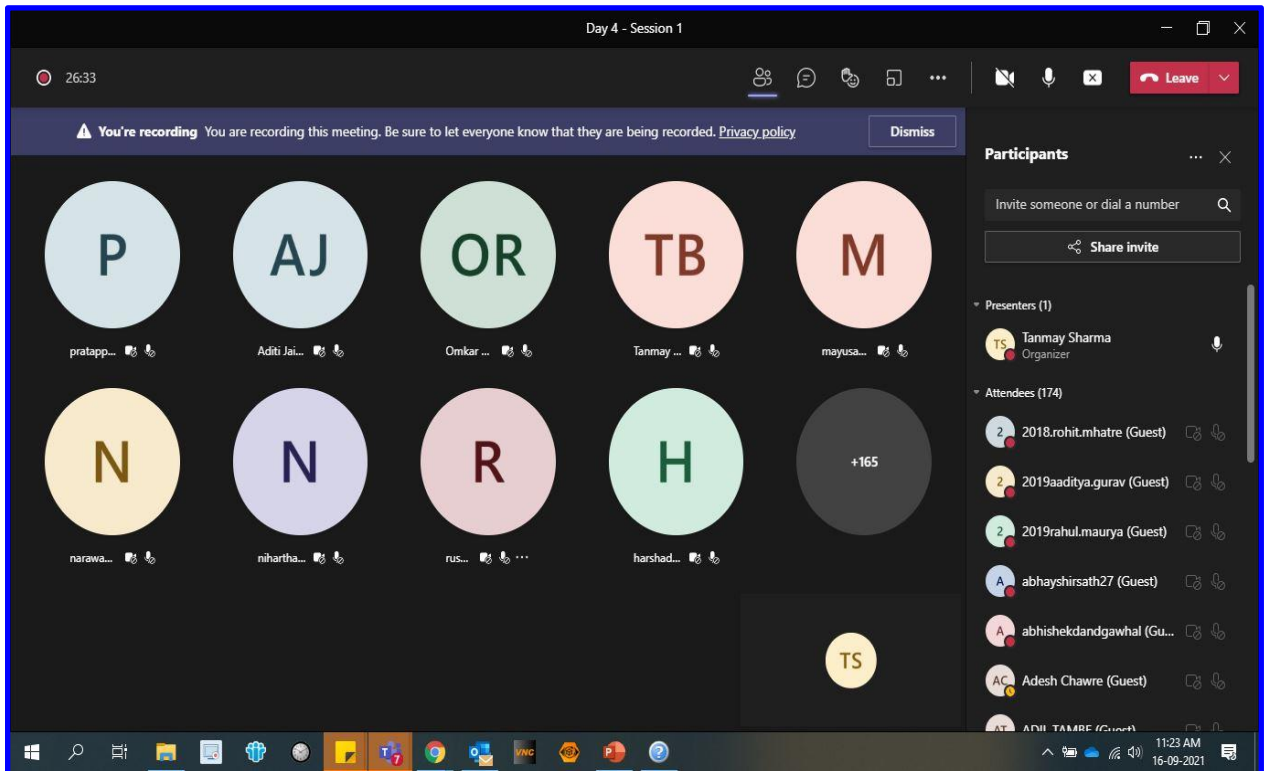
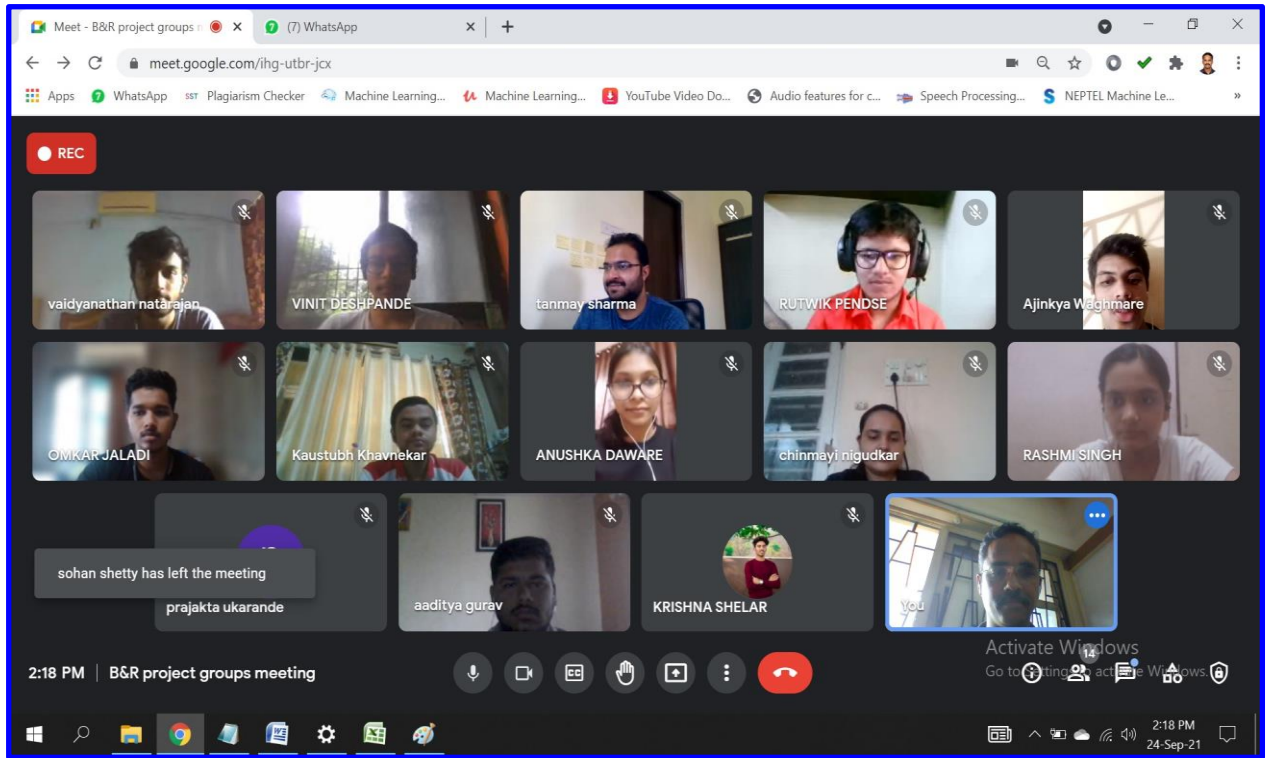
1. Two weeks training conducted from 13/09/2021 to 24/09/2021, 11 am to 4 pm.
2. Total 47 students participated in the event. Final year (BE batch) – 23, pre-final year (TE batch) – 24. 5 faculties participated in the event.
3. Students are distributed into five groups. One faculty advisor allotted to each group.
4. Group consisted of 3 to 5 students from final year (BE batch) and 4 to 7 students from pre-final year (TE batch).
5. Two weeks training on PLC & HMI programming was conducted. Programming conducted using B&R Automation Studio 4 development and runtime environment.
6. Training was conducted online using Microsoft Teams.
7. Mentoring and all activities are provided free of cost. No charges or fees to be paid by students or institute for training, software license, etc.
8. Certificates will be awarded to students for training and project implementation. Certificate/appreciation letter would also be provided to faculty mentors from college.
9. Three assignments were assigned to students. Checking and discussion on assignments were conducted on 24<sup>th</sup> Oct 2021. Grades assigned to individual

students. Session was conducted jointly by VESIT faculty and Mr. Tanmay Sharma from B&R.

10. Students motivated to participate in OpenAutomation Challenge 2021 (OAC 2021). Two teams submitted their proposal to OAC 2021. Only one team was shortlisted for the competition.

11. Team members of the shortlisted team were awarded participation certificates.







#### 4.4 Student Achievements/Award:

Two final year Instrumentation project groups had participated in the National level project competition called **“openAutomation Challenge 2021”** organised by B&R Industrial Automation. The challenge is dedicated to the emerging student community interested in developing innovative ideas focusing on automation, IoT, data and cloud-based solutions.

**openAutomation Challenge 2021** is an online event for students to develop use cases using open-source technology OPC UA and automation solutions from B&R. Teams demonstrating innovative ideas will get a chance to win exciting prizes. Among the two groups which had participated, the details of which are given below, one group reached the final stage of the competition.

Sr. No.	Name of the Industry	Title of Project	Name of Students	Resource Person	Project Mentor
1	B&R Industrial Automation Pvt. Ltd.	PLC based AGRIVOLTICS	1.Rohan Panchal 2.Gaurav Patil 3.Amogh Mopkar 4.Ashish Adhikari	Tanmay Sharma (Engineer, Business Development Education Network)	B&R Industrial Automation Pvt. Ltd.
2	B&R Industrial Automation Pvt. Ltd.	AUTOMATED EV PARKING	1.Rutwik Anant Pendse 2.Manish Patil 3.Prachay Kadam 4.SandeshMandhare	Tanmay Sharma (Engineer, Business Development Education Network)	B&R Industrial Automation Pvt. Ltd.

## **5. Skill Development Activities**

- 1) A series of 3 BMI special lectures / Skill Enhancement Lectures (SEL) were conducted for final year students under the Biomedical Instrumentation course. The first SEL was on "Signal analysis and design of EMG signal conditioning circuit" and was delivered by Ms. Monica, (PhD scholar, IIT-B) on 28th August 2021.
- 2) Second Skill Enhancement Lecture (SEL) was on "Signal analysis and design of EMG signal conditioning circuit" and was delivered by Ms. Monica, (PhD scholar, IIT-B) on 04th October 2021 for the final year students.
- 3) Third Skill Enhancement Lecture (SEL) was on "Brain-computer interface (BCI) application of EMG/EEG signals" and was delivered by Ms. Monica, (PhD scholar, IIT-B) on 09th October 2021 for the final year students.
- 4) Skill Enhancement Lecture (SEL) on "Digitalization in Pharmaceutical Industry" was delivered by Mr. Lalit Bangera, Digital Transformation consultant-Process Industries, Siemens Pte Ltd, Singapore on 25th Sept, 2021 for the final year students.

### **5.1 Finishing school Training**

- 1) Finishing school was conducted for students moving from third year to final year during summer from 12th July-24th July for 12 Days by faculty of the department & other Expert Persons

## **6. Professional Society Activities (ISA)**

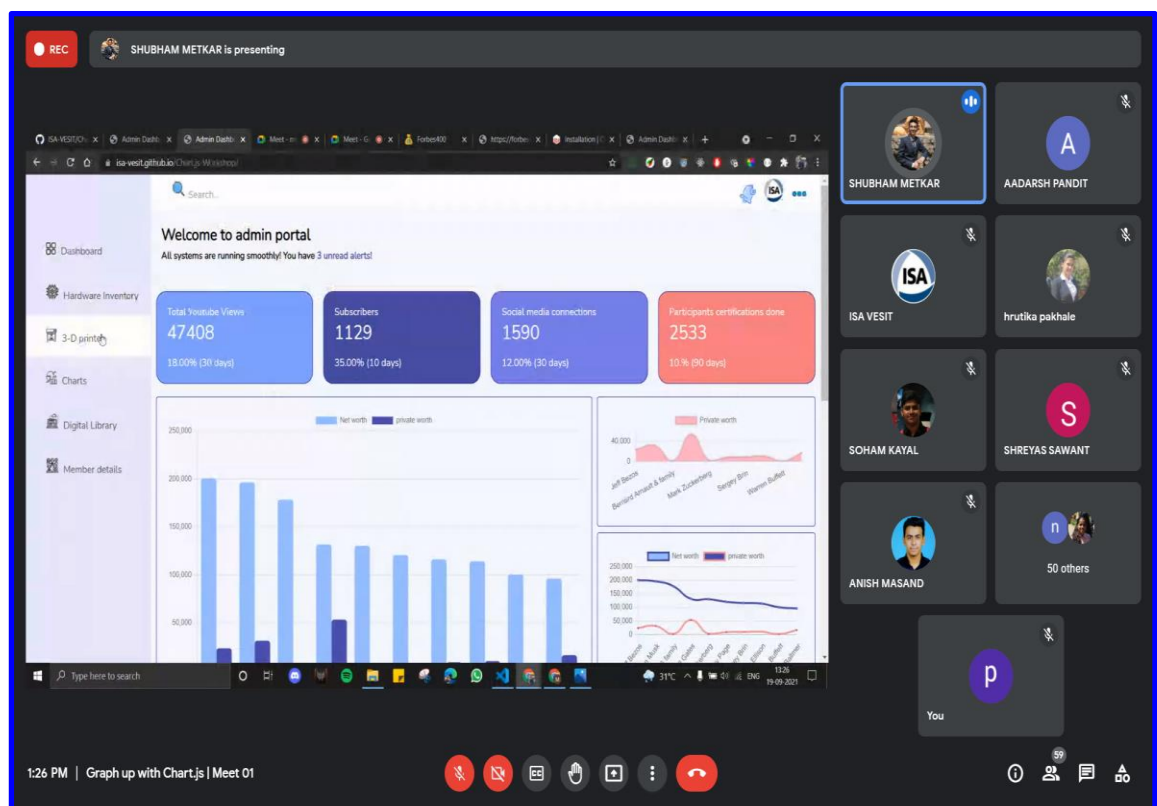
### **ISA Activity (Students Platform)**

ISA-VESIT took a huge leap this year on the path to give the service of a Technical Society in the true sense. Set out to achieve technical prowess, it has surely come a long way. ISA-VESIT has now become a more technical oriented society and aims at imparting technical skills to its members in tandem with recreational events and skill enhancing workshops. The various activities conducted under ISA are:



## 6.1 Graph up with Chart.js Workshop

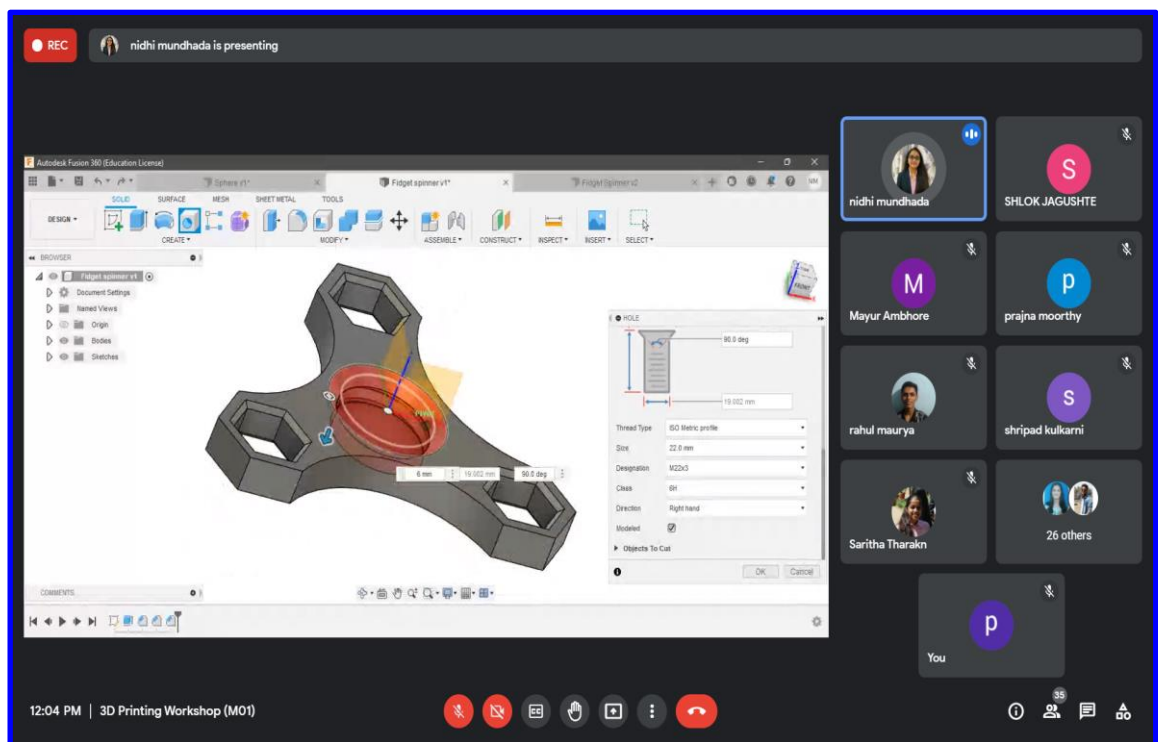
To help the students visualize data using interactive charts on the web, ISA-VESIT conducted a Graph up with Chart.js workshop on the 19th of September, 2021. This workshop was conducted by Mr. Omkar Mangalpalli and Mr. Shubham Metkar. The first session commenced with an explanation of the functioning and development of websites and the importance of data visualization. Before moving to hands-on programming, a short quiz was played with the participants which tested how well the participants had grasped the concepts taught to them. The interactive programming session kick-started with the participants being familiarized with the basics of HTML for displaying the visual elements of a web page, CSS for making it visually appealing, and JavaScript for adding interactive client-side functionality. The first part of the session concluded with the participants being shown different types of charts created using Chart.js. The participants were taught to design an admin dashboard in the second session. They were given a detailed description of each and every Chart.js function to make a visually appealing admin panel. The didactic session was then topped off by putting forward a 'Dashboard Making Competition' for ensuring that the participants successfully inculcated the skills learned upon attending the workshop.





## 6.2 3D Printing Workshop

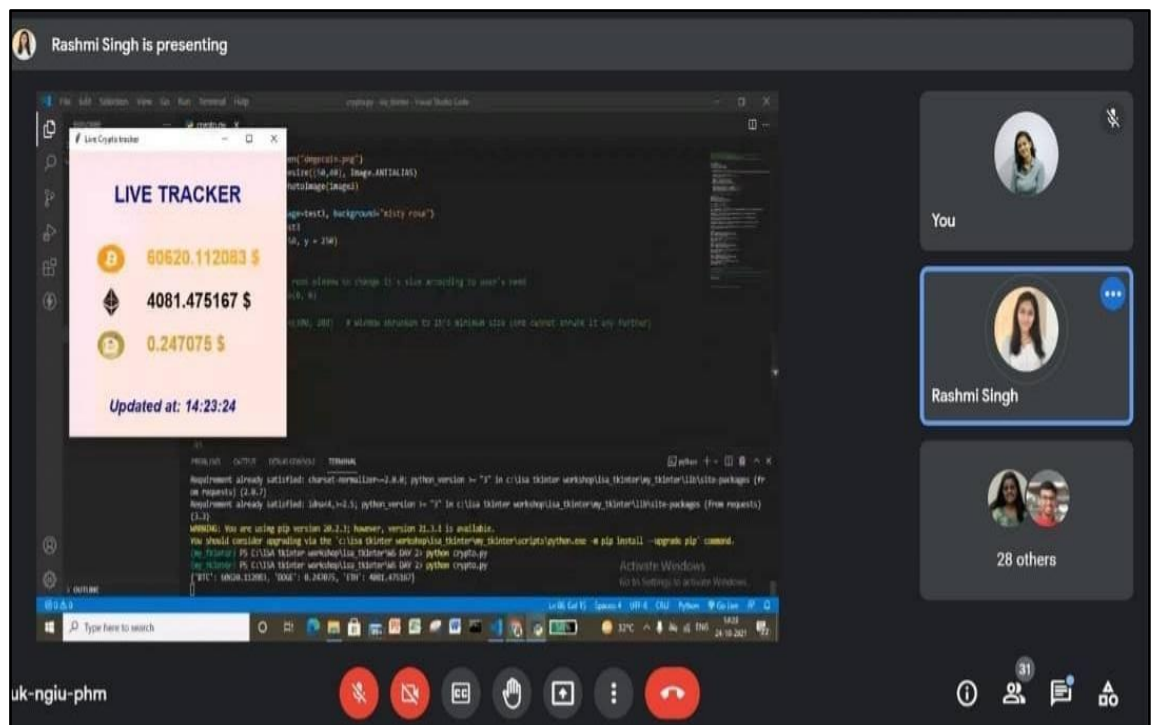
ISA-VESIT successfully conducted its 3D Printing workshop on the 3rd of October, 2021. It was conducted by Ms. Nidhi Mundhada and Ms. Esha Kadam. The first session commenced with an interactive quiz for the participants followed by a brief introduction about 3D printing. The participants were then given a brief tour of Fusion 360, a software used to create the 3D models. Towards the end of the first session, a 3D model of a fidget spinner was created on the software. In the second session, participants were taught advanced designing. The project that the participants worked on during this session was designing a mug from scratch and embossing a logo on it. After this, the session continued with the participants being taught how to use FlashPrint software for using ISA-VESIT's very own 3D Printer - 'Flashforge Adventurer 3' to get their designs printed. They were shown a video recorded by the council that explained the working of the 3D printer. The workshop concluded with the announcement of the '3D Design Competition' for the participants to create their own designs and have them printed on ISA-VESIT's 3D printer.



## 6.3 Desktop Applications using Tkinter Workshop

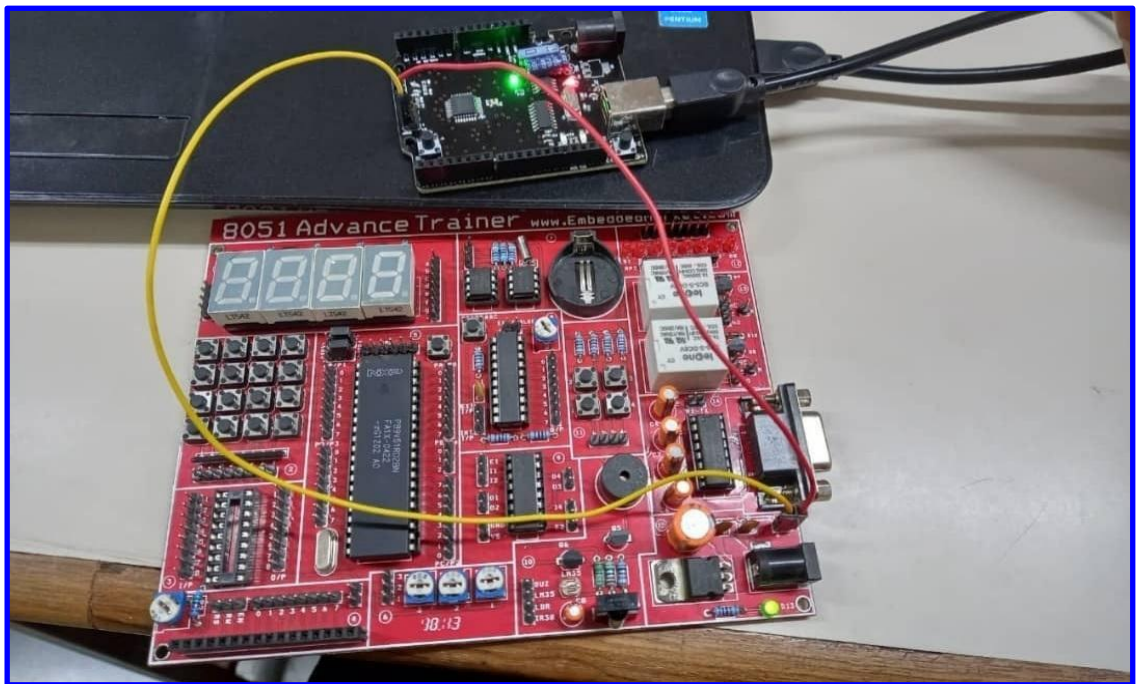
To acquaint the students with GUIs and desktop applications, ISA-VESIT conducted Desktop Applications using Tinker workshop on the 23rd and 24th of October, 2021. This workshop was conducted by Ms. Hrutika Pakhale, Ms. Rashmi Singh, and Ms. Asmita Bhangare. The first day of the workshop commenced with the basics of Python programming followed by a quiz on the

concepts of Python. Basics of Tkinter, databases, and their management using SQL were taught. At the end of the first day, attendees were given a task to create a GUI for a login and registration page. The second day commenced with creating a project of login and registration authorization. Further, the participants were also taught to connect a database to the application and make a verification page. A live cryptocurrency tracker was built and the participants were familiarized with APIs.



## 6.4 Embedded Systems Workshop

ISA-VESIT conducted its first offline workshop on Embedded Systems after the longest break on the 27th and 28th of December, 2021 followed by an internship opportunity to make the members familiar with microcontrollers and implement embedded systems in their projects. The first day of the workshop covered the fundamentals of the 8051-microcontroller board. MS51, which is an enhanced version of 8051, was utilized and its numerous features and functions such as push-pull mode, input mode, and masking were discussed. At the end of the first day, participants got acquainted with timers, counters, and printing on the Terminate terminal. The second day began with understanding the concept of serial communication followed by an overview of ADCs and interfacing boards. Finally, the participants were given an opportunity to work on some basic projects like blinking LED, blinking patterns of LEDs, buzzers, relays, and temperature measurement using LM35.

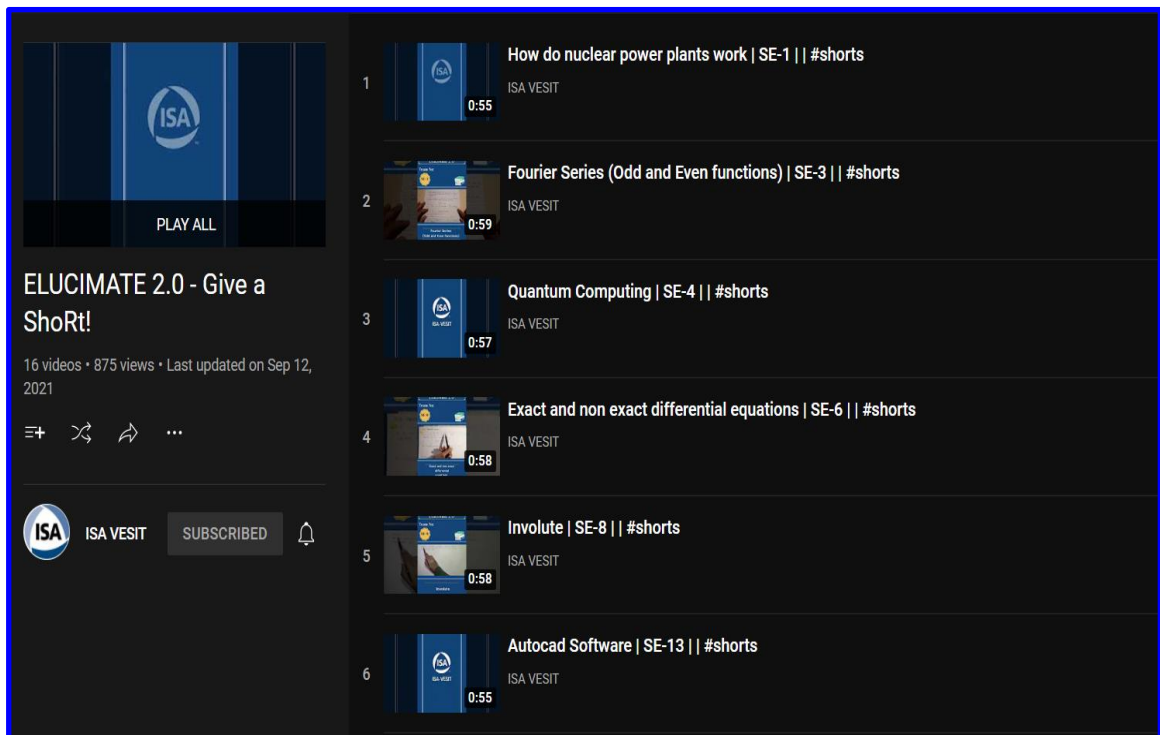


## 7.ISA Non-Technical Events

### 7.1 EluciMate 2.0

EluciMate 2.0 was successfully conducted from 17th August to 22nd September 2021. This video-making competition was conducted in two rounds. The first round was 'Give a ShoRT' in which participants were given a span of 5 days to create a short video of 60 seconds introducing their technical topic which showcased their creativity and teaching skills. 8 teams from second year and third year each out of 36 teams that participated, qualified in the next


round and their videos were also published as YouTube shorts on ISA-VESIT's official YouTube channel. The next round was 'Chase to the Cut', where the participants were supposed to create a video explaining their topic in detail. These videos were also published on YouTube and were judged on the basis of the likes and marks given by the judges, the criteria being innovation, communication, presentation, and knowledge of the topic. The judging panel consisted of Mrs. Himali Patel from the EXTC department, Dr. Rajani Mangala from the ETRX department, and Mr. N. Gopalkrishnan from the Instrumentation department. After the evaluation, Rajnandini Verma (D8) secured 1st place and Suleman Mathekar (D10A) and Gaurang Desai (D10A) secured 2nd place in SEs. Priyanka Moopnar (D14A) and Isha Chavan (D14A) secured 1st place and Sakshi Gupta (D14B) secured 2nd place in TEs. The time and dedication of judges made it possible for us to reward students for their creative efforts.



## 7.2 BE and Beyond

BE and Beyond is a talk series which takes us through the journeys of alpha geeks from around the world wherein they share with us their experiences and expertise in top-tier fields of technology and science. It was launched on ISA-VESIT's YouTube channel on 10th October, 2021. Three episodes of 'BE and Beyond' have been aired till date featuring VESIT's prominent alumni Mr. Mihir Lele, Mr. Dhairya Pujara, and Mr. Navin Sridhar.





**BE and Beyond**

3 videos • 252 views • Last updated on Dec 25, 2021

ISA VESIT SUBSCRIBED

1 MS in Embedded Systems | Multilateral Program | Mihir Lele | BE and Beyond | Episode 1  
43:03

2 Entrepreneurship | Complex Problem Solving | Dhairya Pujara | BE and Beyond | Episode 2  
59:14

3 Aviation | Web development | Navin Sridhar | BE and Beyond | Episode 3  
25:01

# BE AND BEYOND



**CREATING HUMAN-CENTERED SOLUTIONS**




/ISA-VESIT

1:32 / 59:13 • Role of VESIT in shaping Dhairya's career >
CC Settings Full Screen

## 8. Extra-curricular activities

Details of participation of Instrumentation students in various Intra College Competitions are given in the table below:

Sr. No.	Name of The Student	Class	Description of Event	Organized By	Venue	No. of Days	Awards or Achievement	Level
1	CHAVAN VEDANG NITIN	SE	Graph up with Chart.js Workshop	ISA-VESIT	VESIT	2 days	Participation	College
2	Koyande Anvita Abhay	FE	Musical Misfit	Music Council	VESIT	2 days	Council Member	Class Music incharge
3	Verma Rajnandini Rajesh Kumar	SE	ELUCIMATE 2.0	ISA-VESIT	VESIT	2 Days	First prize	College
4	Kumbhare Raunik Laxman	SE	Elucimate 2.0	ISA-VESIT	VESIT	2 weeks	Participation	College
5	Mhadgut Sanchit Navneet	SE	Elucimate 2.0	ISA-VESIT	Vesit	2 Week	Participation	College
6	CHAVAN VEDANG NITIN	SE	Desktop Applications using Tkinter Workshop.	ISA-VESIT	VESIT	2 days	Participation	College
7	Tanaya Gaikar	SE	Online Quiz on Late Shri Hashu Advani's Birth Anniversary	SoRT VESIT	VESIT	1 hour	Participation	College
8	Gaikar Tanaya	SE	E-Quiz n VACHAN PRERNA DIVAS	Department of Library	VESIT	1 hour	Participation	College
9	Gaikar Tanaya	SE	E-Quiz on Samvidhan Divas	Department of Library	VESIT	1 day	Participation	College