Department of Instrumentation and Control

MAPAN

THE MEASURE OF PROGRESS

Issue 20, October 2024

Inside this issue:

College Vision & Mission:

Vision

To be globally renowned institute for imparting quality education & to develop women leaders in engineering & technology.

Mission

To develop women professionals who are academically & technically competent with strong professional ethics.

Dept. Vision & Mission:

Vision

To develop the department as a center of excellence in Instrumentation & Control Engineering.

Mission

To develop students with a strong foundation of Instrumentation & Control Engineering.

To develop logical thinking ability, analytical skills, soft skills & create awareness about the professional ethics.

To provide a conducive environment to the students for higher studies & research.

From HOD's Desk — Dr. Dipali Ramdasi

The academic year 2023-2024 has been remarkable for the Department of Instrumentation and Control. With significant strides in both academics and co-curricular activities, we continue to uphold our tradition of excellence. I am proud to announce that this year 47% of our graduating batch secured first-class with distinction out of which 12 students completed a B.Tech with Honors. More than 80% of the graduating class received job offers from reputed companies. Students have received scholarships from ISA in this year too. The award given to Dr. Swati Madhe by ISA is a feather in the cap. Additionally, our students have actively participated in various industry visits, workshops, and competitions that have expanded their technical and practical skills.

Our faculty also contributed significantly by participating in Faculty Development Programs (FDPs). It is also a moment of pride to share that 7 patents of students and faculty have been granted since March 2023. The department has been instrumental in initiating institute level MoUs with ProExcel Systems and Logicon Technosolutions.

Looking forward, we aim to continue fostering a culture of innovation, research, and industry collaboration, providing our students with the best possible platform for their future success. I congratulate all students, faculty, and staff for their relentless efforts and achievements this year.

Wishing everyone success in the upcoming endeavours!

Workshops and Faculty Development Programs

Workshop was conducted by Mrs. Madhura Palshikar Pujari on *'Design Thinking'*, for TY B. Tech Students.

Dr. Swati Madhe served as a resource person for STTP on *'Developing Research Culture In Educational Institutes As per Recent Trends in Industry'* at Trinity College of Engineering Pune.

Workshop was conducted by the Experts from Emerson Pune for Second Year Students on '*Beyond Innovation'*.

Dr. Vaishali Upadhye served as a Session Chair for the Conference on '*Emerging Smart Computing & Informatics IEEE ESCI 2024'*, at AISSMS, Pune.

Dr. Anagha Panditrao served as a Session *Chair for the Conference on 'Sustainable and Futuristic Technologies 2023 (GConSFT-2023)'*, MMCOE, Pune.

Following are the Workshops/FDP/STTP/Courses completed by the Faculty Members in the last academic year:

Dr. Anagha Panditrao has completed certifications in—*Research Publications, Copyrights & Patents in Science & Technology, Overview of Data Visualization, Design Thinking, Implementation of Indian Knowledge System for NEP 2020.*

Dr. Dipali Ramdasi has completed certifications in—*Implementation of Indian Knowledge System for NEP 2020, Outcome based Education & Applications of Generative AI in Teaching & Research, Art & Science of Grant Writing,*

Dr. Swati Madhe has completed certifications in—*Effective Curriculum Implementation, Intro to Android App Development, Research Methodology using Chet GPT & AI Tools.*

Prof. Pratima Kulkarni has completed the certifications in—*NEP 2020 Orientation & Sensitization, Design Thinking, Implementation of Indian Knowledge System for NEP 2020, Outcome based Education & Applications of Generative AI in Teaching & Research., Art & Science of Grant Writing,*

Dr. Vaishali Upadhye has completed the certifications in—*Effective Curriculum Implementation, Research Methodology using Chet GPT & AI Tools, Art & Science of Grant Writing.*

Prof. H. T. Patil & Dr. Yashwant Adhav has completed the certifications in—*Industrial Robots, Outcome based Education & Applications of Generative AI in Teaching & Research., Hydrogen & Fuel Cell Technologies in EVs,*

Dr. Nivedita Daimiwal & Dr. Revati Shriram has completed the certifications in—*Patent Law for Engineers & Scientist, Ergonomic Research Techniques, Recent Trends in Computing 3.0, 5G & It's Impact on IoT Applications in Agriculture & Manufacturing Sector.*

Prof. Manisha Naravane has completed the certifications in—*Intro to Android App Development, NEP 2020 & It's Implications in Engineering Education, Curriculum Development inline with NEP 2020, OBE & Al Advancements, Intro to Industry 4.0 & Industrial Internet of Things.*

Prof. Sheetal Katwe has completed the certifications in—*Generative AI Audits Impact on Future Jobs, NEP 2020 & It's Implications in Engineering Education.*

Expert Lectures were arranged for the students on topics like— *Digital Transformation a Need of Industry, Overview of S88 Batch Standard, Biological Times Series & Patten Recognition, Automobile Industry & Role of Control Engineer, Flue Gas Analysers, etc.*

Department Toppers of Year 2023 - 2024

Ms. Rucha Darshane
(9.39/10)

Ms. Saee Gokhale
(9.06/10)

Ms. Anushka Kadam
(8.87/10)

Ms. Anwesha Sen
(8.86/10)

Ms. Harshada Bhawar
(8.84/10)

You are moving on to a new and exciting chapter in your life. We wish you all the best for the future that lies ahead!!

Best Outgoing Student of the Year 2024

Anwesha Sen has been honored as the Best Outgoing Student of the academic year 2023-24. Anwesha has distinguished herself through a remarkable academic performance and active participation in both co-curricular and extra-curricular pursuits.

Throughout her four-year engineering journey, Anwesha has not only excelled in her academic pursuits but has also demonstrated her prowess in various co-curricular and extra-curricular activities. Her achievements include being awarded the ISA Educational Foundational Scholarship in 2023, securing the first position at the Crack Domain Quiz during Innovation 2022, and attaining the second position at Astromania in Innovation 2023.

In addition to her dedication to the standard curriculum, Anwesha has pursued additional certifications in areas such as Embedded Programming, Data Analytics, FEM/FEA (Ansys), and IoT for Systems. Her commitment to learning extends beyond the classroom, as evidenced by her six-month internship at Danfoss in the field of Digital Solutions and AIML. Anwesha's efforts culminated in her securing a placement at Flipkart with the highest package for the academic year 2023-24.

An active contributor to her academic community, nwesha served as the President of ISA CCOEW in 2023 and held the position of Editor at MAPAN. Beyond academia, she has played significant roles, such as Project Manager at Team Bharadwaj from 2021 to 2023, Team Leader for SIH in 2022, and Editor at Kshitij.

As Anwesha embarks on her future endeavors, we extend our best wishes for continued success and accomplishment.

Extra Curricular Activities

Congratulations on your Doctorate!!

Dr. Yashwant Adhav has complete his PhD from Savitribai Phule Pune University (SPPU), in December 2023. His topic of the Doctoral Thesis was " ***Real-Time Measurement Systems for Specific Gravity of Lead-Acid Battery Electrolyte***".

Patent has been granted to Dr. Yashwant Adhav on the work carried out by him during his PhD tenure.

CONGRATULATIONS & BEST WISHES !!

Co-Curricular Activities

During AY 2023-2024, students from SY, TY and Final Year Instrumentation and Control Engineering participated in the various project competitions like ‘India Automation challenge 2023’, ‘Smart India Hackathon’, ’Code it Competition’, ’Technovision CODEX at MIT WPU’, ‘Codekaze’, ‘ National Level Tackathon 2K24’, ‘ Lady Ada Programming Contest at PICT Pue’, ‘Codertine 4.0’, ‘Tata Imagination challenge 2023’, ‘Smiths Detection Hackathon’, ‘Avishkar 2023’, ‘ISA Student Led Conference’, ‘Industrial IoT Conference’, ‘Xiome Ode2codes 3.0’, etc. Student Led Conference on Future Forge—Automation for Tomorrow was organized and conducted by the students from the department of Instrumentation and Control.

Lots of participation from the students was observed in the workshops and SWAYAM NPTEL Courses and other Certifications during the year. They participated in the workshops like ‘Design Thinking’, ‘Arduino’, ‘7-days bootcamp with Devtown on Deep Learning and Deployment of web’, ‘General Mills In recognition of successful completion of the comprehensive training programme’. Students completed the certifications in ‘Introduction to Industry 4.0 and Industrial Internet of Things’, ‘MATLAB Onramp’, ‘Circuit Simulation Onramp’, ‘Simulink Onramp’, ‘Control System Design Onramp’, ‘Machine Learning Onramp’, ‘Deep Learning Onramp’, ‘Computer Vision Onramp’ etc. Students were able to gain knowledge in the diversified areas through these workshops & courses

Industrial Visits

During AY 2023-2024, various Industrial Visits were arranged for the students of SY, TY and Final Year B.Tech. Students visited companies like, Mikro, Cummins India, Elctronet, Sneha Process Control, Mind Gym Lonavala, IIT Bombay Nanofabrication Facility, Sakharwadi Sugar Factory etc.

Patents Granted

पेटेंट कार्यालय,भारत सरकार The Patent Office, Government Of India
पेटेंट प्रमाण पत्र | Patent Certificate

पेटेंट सं. / Patent No.	438851
आवेदन सं. / Application No.	201921026889
फाइल करने की तारीख / Date of Filing	04/07/2019
पेटेंटी / Patentee	Maharshi Karve Stree Shikshan Samstha's Cummins College of Engineering for Women
आविष्कारकों का नाम /Name of Inventor(s)	1.Dhananjay Bodas 2.Pratima Kulkarni 3.Akshada Jadhav 4.Sanchali Jadhav 5.Priyanka Inde 6.Ankita Chaudhari 7.Akanksha Deshpande 8.Apurva Zingade

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में दावाकृत *ASTUTE FOOTWEAR DEVICE WITH INTEGRATED SENSORS* नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख जुलाई 2019 के चौथे दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled *ASTUTE FOOTWEAR DEVICE WITH INTEGRATED SENSORS* as disclosed in the above mentioned application for the term of 20 years from the 4th day of July 2019 in accordance with the provisions of the Patents Act,1970

Patent No 438851

अनुदान की तारीख : 14/07/2023 Date of Grant :

Controller of Patents

Note. - The fees for renewal of this patent, if it is to be maintained, will fall / has fallen due on 4th day of July 2021 and on the same day in every year thereafter.

Title of the Patent Granted by Indian Patent Office:

Astute Footwear Device with Integrated Sensors

Name of Inventors:

Dhananjay Bodas, Pratima Kulkarni, Akshada Jadhav, Sanchali Jadhav, Priyanka Inde, Ankita Chaudhari, Akanksha Deshpande, Apurva Zingade

Dhananjay Bodas

Pratima Kulkarni

Akshada Jadhav

Sanchali Jadhav

Priyanka Inde

Ankita Chaudhari

Akanksha Deshpande

Apurva Zingade

पेटेंट कार्यालय,भारत सरकार The Patent Office, Government Of India
पेटेंट प्रमाण पत्र | Patent Certificate

पेटेंट सं. / Patent No.	450122
आवेदन सं. / Application No.	201721020360
फाइल करने की तारीख / Date of Filing	10/06/2017
पेटेंटी / Patentee	MKSSS"s CUMMINS COLLEGE OF ENGINEERING FOR WOMEN
आविष्कारक (कों) का नाम / Inventor(s)	1.Prof. Yashwant Adhav 2.Uttunga Shinde 3.Swapnali Satpute 4.Krutika Punekar

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में दावाकृत *SYSTEM AND METHOD FOR HARDNESS DETECTION OF WATER* नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख जून 2017 के दसवें दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled *SYSTEM AND METHOD FOR HARDNESS DETECTION OF WATER* as disclosed in the above mentioned application for the term of 20 years from the 10th day of June 2017 in accordance with the provisions of the Patents Act,1970.

Patent No 450122

अनुदान की तारीख : 07/09/2023 Date of Grant :

Controller of Patent

Note. - The fees for renewal of this patent, if it is to be maintained will fall / has fallen due on 10th day of June 2019 and on the same day in every year thereafter.

* सत्य प्रति / Corrected Copy

Title of the Patent Granted by Indian Patent Office:

System and Method for Hardness Detection of Water

Name of Inventors:

Yashwant Adhav, Uttunga Shinde, Swapnali Satpute, Krutika Punekar

Yashwant Adhav

Uttunga Shinde

Swapnali Satpute

Krutika Punekar

Patents Granted

पेटेंट कार्यालय,भारत सरकार
पेटेंट प्रमाण पत्र |
The Patent Office, Government Of India
Patent Certificate

पेटेंट सं. / Patent No : 483852
आवेदन सं. / Application No. : 201721033872
फाइल करने की तारीख / Date of Filing : 25/09/2017
पेटेंटी / Patentee : MKSSS's Cummins College of Engineering for Women

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में यथाप्रकटित SYSTEM FOR AUTOMATIC RECYCLING OF PLASTIC MOLDED ARTICLES AND METHOD THEREOF नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख सितम्बर 2017 के पच्चीसवें दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled SYSTEM FOR AUTOMATIC RECYCLING OF PLASTIC MOLDED ARTICLES AND METHOD THEREOF as disclosed in the above mentioned application for the term of 20 years from the 25th day of September 2017 in accordance with the provisions of the Patents Act,1970.

Patent No 483852

अनुदान की तारीख Date of Grant : 15/12/2023

Controller of Patents

टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, सितम्बर 2018 के पच्चीसवें दिन को और उसके पश्चात प्रत्येक वर्ष के उसी दिन देय होगी।
Note. - The fees for renewal of this patent, if it is to be maintained, will fall / has fallen due on 25th day of September 2018 and on the same day in every year thereafter.

Title of the Patent Granted by Indian Patent Office:

System for Automatic Recycling of Plastic Molded Articles

Name of Inventors:

Atul Joshi, Radhika Nibandhe, Vaibhavi Vaidya, Akshada Shinde

Atul Joshi

Radhika Nibandhe

Vaibhavi Vaidya

Akshada Shinde

Soniya Kumbhojkar

पेटेंट कार्यालय,भारत सरकार
पेटेंट प्रमाण पत्र |
The Patent Office, Government Of India
Patent Certificate

पेटेंट सं. / Patent No : 482524
आवेदन सं. / Application No. : 201921017750
फाइल करने की तारीख / Date of Filing : 03/05/2019
पेटेंटी / Patentee : MKSSS's Cummins College of Engineering for Women

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में यथाप्रकटित SYSTEM AND METHOD FOR ARTHRITIS DETECTION नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख मई 2019 के तीसरे दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled SYSTEM AND METHOD FOR ARTHRITIS DETECTION as disclosed in the above mentioned application for the term of 20 years from the 3rd day of May 2019 in accordance with the provisions of the Patents Act,1970.

Patent No 482524

अनुदान की तारीख Date of Grant : 14/12/2023

Controller of Patents

टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, मई 2021 के तीसरे दिन को और उसके पश्चात प्रत्येक वर्ष के उसी दिन देय होगी।
Note. - The fees for renewal of this patent, if it is to be maintained, will fall / has fallen due on 3rd day of May 2021 and on the same day in every year thereafter.

Title of the Patent Granted by Indian Patent Office:

System and Method for Arthritis Detection

Name of Inventors:

Nivedita Daimiwal, Revati Shriram

Nivedita Daimiwal

Revati Shriram

Patents Granted

पेटेंट कार्यालय,भारत सरकार The Patent Office, Government Of India
पेटेंट प्रमाण पत्र | Patent Certificate

पेटेंट सं. / Patent No. : 491428
आवेदन सं. / Application No. : 533/MUM/2015
फाइल करने की तारीख / Date of Filing : 19/02/2015
पेटेंटी / Patentee : 1.KRUTI MANISHKUMAR PATEL 2.SHRUTI DHANANJAY KHARWANDIKAR

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में यथाप्रकटित AUTO-RESPONSIVE HANDLE GRIP DETECTION FOR VEHICLES नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख फरवरी 2015 के उन्नीसवें दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled AUTO-RESPONSIVE HANDLE GRIP DETECTION FOR VEHICLES, as disclosed in the above mentioned application for the term of 20 years from the 19th day of February 2015 in accordance with the provisions of the Patents Act,1970.

Patent No 491428

अनुदान की तारीख Date of Grant : 29/12/2023

Controller of Patents

Note. - The fees for renewal of this patent, if it is to be maintained, will fall / has fallen due on 19th day of February 2017 and on the same day in every year thereafter.

Title of the Patent Granted by Indian Patent Office:

Auto-Responsive Handle Grip Detection for Vehicles

Name of Inventors:

Kruti Patel, Shruti Kharwandikar

Kruti Patel

Shruti Kharwandikar

पेटेंट कार्यालय,भारत सरकार The Patent Office, Government Of India
पेटेंट प्रमाण पत्र | Patent Certificate

पेटेंट सं. / Patent No. : 506791
आवेदन सं. / Application No. : 201721034084
फाइल करने की तारीख / Date of Filing : 26/09/2017
पेटेंटी / Patentee : MKSSS's Cummins College Of Engineering for Women
आविष्कारकों का नाम /Name of Inventor(s) : 1.Revathi Shriram 2.Mrugali Nilkanth Bhat 3.Sharvari Satish Inamdar 4.Devyani Pradeep Kulkarni 5.Gauri Salil Kulkarni

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में यथाप्रकटित SYSTEM AND METHOD FOR PROGNOSIS OF PARKINSON'S DISEASE नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख सितम्बर 2017 के छब्बीसवें दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled SYSTEM AND METHOD FOR PROGNOSIS OF PARKINSON'S DISEASE as disclosed in the above mentioned application for the term of 20 years from the 26th day of September 2017 in accordance with the provisions of the Patents Act,1970.

Patent No 506791

अनुदान की तारीख Date of Grant : 03/02/2024

Controller of Patents

Note. - The fees for renewal of this patent, if it is to be maintained, will fall / has fallen due on 26th day of September 2018 and on the same day in every year thereafter.

Title of the Patent Granted by Indian Patent Office:

System and Method for Prognosis of Parkinson's Disease

Name of Inventors:

Revathi Shriram, Mrugali Bhat, Sharwari Inamdar, Devayani Kulkarni, Gauri Kulkarni

Revati Shriram

Mrugali Bhat

Sharwari Inamdar

Devayani Kulkarni

Gauri Kulkarni

Patents Granted

पेटेंट कार्यालय भारत सरकार
पेटेंट प्रमाण पत्र
The Patent Office, Government Of India
Patent Certificate

पेटेंट सं. / Patent No. : 530251
आवेदन सं. / Application No. : 201921026258
फाइल करने की तारीख / Date of Filing : 01/07/2019
पेटेंटी / Patentee : Neenu George Kalayil
आविष्कारकों का नाम /Name of Inventor(s) : 1.Neenu George Kalayil 2.Revathi Shriram 3.Shrinidhi Kulkarni 4.Jinu James 5.Sneha Parsewar

प्रमाणित किया जाता है कि पेटेंटी को उपरोक्त आवेदन में यथावर्णित SYSTEM AND METHOD FOR DETECTION OF NEURODEGENERATIVE DISEASE USING SPEECH AND BODY ODOR SIGNATURES नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख जुलाई 2019 के पहले दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled SYSTEM AND METHOD FOR DETECTION OF NEURODEGENERATIVE DISEASE USING SPEECH AND BODY ODOR SIGNATURES as disclosed in the above mentioned application for the term of 20 years from the 1st day of July 2019 in accordance with the provisions of the Patents Act,1970.

Patent No 530251

अनुदान की तारीख / Date of Grant : 26/03/2024

Controller of Patents

Note. - The fees for renewal of this patent, if it is to be maintained, will fall / has fallen due on 1st day of July 2021 and on the same day in every year thereafter.

Title of the Patent Granted by Indian Patent Office:

System and Method for Detection of Neurodegenerative Disease using Speech and Body Odor Signatures

Name of Inventors:

Neenu George, Revathi Shriram, Shrinidhi Kulkarni, Jinu James, Sneha Parsewar

Neenu George

Revati Shriram

Shrinidhi Kulkarni

Jinu James

Sneha Parsewar

ISA Awards & Divisional Scholarships 2023-2024

Forbes Marshall Project Award &

Kedar Tumne Project Award 2023—2024

Third Year B.Tech (Instrumentation & Control) students **Siddhi Karad, Vaishnavi Kadgavne, Bhagwati Kulkarni & Akshita More** were the winner of Forbes Marshall Project Award. Work was carried out on ***'Automated System to Remove Aquatic Weed for Cleaning Water Bodies'*** and **Dr. Dipali Ramdasi** extended her guidance for the said project.

Aquatic weeds pose a significant threat to the ecological balance of water bodies, impacting water quality, hindering navigation, and disrupting the natural habitat. Excessive growth of aquatic weeds can kill marine life in water bodies and decomposition of these plants can cause further oxygen depletion. Aquatic weed growth in irrigation canals, and other waterways, can reduce water flow in canals, which affects the agro-economy. Furthermore, the aquatic weed also provides an ideal ground for breeding mosquitoes.

To prevent such serious weed infestation, the team have come up with a solution that shall remove the weed from the water. The design shall work to extract the weed from the water and collect it as operated by the user. The system will consist of a specialized weed removal mechanism controlled by the user. This integrated system comprises three primary components: cutters, conveyor belts, and collecting unit. The cutters are affixed to the system's front end to precisely sever aquatic weeds floating on the water surface into smaller segments. Subsequently, the conveyor belt transports the weed fragments from the water surface and conveys them into the collecting unit. The entire operation of the cutters and conveyor belts is automated through integration with a camera positioned above the conveyor belt, providing a frontal view of the system. Leveraging real-time video feed facilitated by the camera, machine learning algorithms are employed to detect the presence of aquatic weeds.

Upon detection of weed growth, the cutters and conveyor belt initiate operation promptly. Conversely, in the event of any obstruction, such as plastic waste, being detected, the operation halts automatically. For this project we have used the Microsoft Lifecam VX2000 which is connected to the user interface like a PC, laptop, etc with a USB cable.

Hearty Congratulations to the Winning Team & Project Guide!

Forbes Marshall Project Award &

Kedar Tumne Project Award 2023—2024

Additionally, real-time tracking of the system's location is facilitated by a GPS module. The operation of propellers in this system is similar to the mechanism of hovercraft, where there are multiple fans pointing backward to push the system ahead. Based on the dimensions and weight of the overall system two propellers are attached to the system. These propellers are driven by BLDC motors. To control the speed of these motors electronic speed controllers are used. Upon activation of the RF remote controller and receiver, with the help of ESC, throttle calibration is performed to establish the 0% and 100% throttle speeds. Subsequently, the ESCs will activate the BLDC motors. In conclusion, the automated aquatic weed removal system provides a promising solution to stop the weed infestation in water bodies to maintain their ecological balance. This system integrates sensor technology, image processing, and motors. With continued research, this project holds the potential to further develop its application.

Forbes Marshall Project Award - Runner up Team

Third Year B.Tech (Instrumentation & Control) students Sayali Bachite, Sakshi Hole, Ashlesha Rathod, Yukti Mahajan were Runner Up of Forbes Marshall Project Award. Work was carried out on ***'Eletric Positioning of Control Valve'*** and **Dr. Atul Joshi & Dr. Revati Shriram** extended the guidance for the said project.

Congratulations

Projects, Progress & Priceless Memories!!

of INNOVATE to ELEVATE Internship

By Ms. Jui Anil Khambe, TY B. Tech




Every challenge is an opportunity in disguise." This quote perfectly encapsulates my two-month summer internship named "INNOVATE TO ELEVATE" under the RandD department at college, where each project presented new hurdles, but also valuable lessons. From the moment I started, I knew this experience would push me beyond the boundaries of classroom learning. The challenges I faced along the way became stepping stones toward growth, shaping both my skills and mindset for the future. I was excited to apply the theoretical knowledge I had gained in the classroom to real-world problems. One of the key projects I worked on was developing an Electronic samai or E-Samai, Maintenance Alarm or doing a small Lightning Project for our Kalawant club using the SY knowledge.

However, the journey wasn't without its challenges. One of the major difficulties I encountered was Selection of components, soldering of the components. At first, I found it daunting, but with guidance from our mentor and through persistent working on my soldering skills, I was able to overcome it. This experience taught me the value of resilience, problem-solving, and the importance of seeking help when needed. In addition to technical skills, I also learned how to manage my time effectively, especially when working under tight deadlines.

The internship helped me develop valuable skills like Teamwork, Time management, Logical thinking etc which I know will be beneficial as I move forward in my academic and professional journey.

Overall, internship was a transformative experience that reinforced my interest in the Instrumentation field & gave me the confidence to tackle future challenges. However, the work was balanced with enjoyable moments that made the journey unforgettable. Whether it was collaborating with my fellow friends working with me, sharing laughs over impromptu brainstorming sessions. While having the fun, it had reminded me that teamwork & enjoyment are just as important in the professional world as hard work. Coming to college at 10 in the morning & going home at 6 & after going home, working till 12 in the midnight to get a solution for the difficulties was also a great experience. In the end, my internship was not just about gaining technical skills or overcoming challenges, but also enjoying the process of learning in a collaborative environment with my Friends. The experience has left me more confident, equipped with practical skills which I can apply in real life problems, and ready to take on future challenges with a great enthusiasm.

Predictive Maintenance

Predictive maintenance builds on condition-based monitoring to optimize the performance and lifespan of equipment by continually assessing its health in real time. By collecting data from sensors and applying advanced analytical tools and processes such as machine learning. Predictive maintenance can identify, detect, and address issues as they occur, as well as predict the potential future state of equipment, and so reduce risk. The key is providing the right information at the right time to the right people. Predictive maintenance technologies are already being adopted across industries for many assets whether that be cash points, wind turbines, heat exchangers or manufacturing robots. Asset-intensive industries such as Energy, Manufacturing, Telecommunications and Transportation, where unforeseen equipment failures might have widespread consequences, are increasingly turning to advanced technologies to improve equipment reliability and labor force productivity.

https://www.ibm.com/topics/predictive-maintenance

Sneha Ranade's Journey in Tennis

A Story of Passion, Perseverance & Discipline

Interview by Devyani , TY B. Tech

From the moment she picked up a tennis racket in the 3rd standard, Sneha Ranade's life has been intertwined with the sport. Inspired by her father, who was a tennis coach, Sneha's passion for tennis was nurtured from a young age. What began as a simple pursuit gradually transformed into a competitive sport that would take her to national and international platforms.

This year, Sneha had the honor of representing Savitribai Phule Pune University (SPPU) at the Khelo India University Games held in Assam—an experience she describes as one of the best of her life. Her journey to the Games was paved with remarkable achievements, including a Gold Medal at the West Zone Nationals held in Mumbai. This victory secured her a spot in the All India National Games in Haryana and the prestigious Khelo India University Games.

However, success in tennis did not come without its challenges. One of the most significant hurdles Sneha faced was juggling the demands of her college life, tennis matches, and her involvement with the National Cadet Corps (NCC) Air Wing. With exams looming, match schedules intensifying, and NCC camps requiring her attendance, Sneha found herself in a whirlwind of responsibilities. Managing academic submissions, preparing for matches, and attending parades was no small feat.

As a female athlete, Sneha feels strongly about motivating young girls to embrace sports alongside their studies and hobbies. She believes that sports prepare individuals for life in ways that few other pursuits can. Through sports, one experiences the highs of victory, the lessons from defeat, the discipline of training, the spirit of competition, and the joy of teamwork. Sneha emphasizes that these experiences are invaluable, shaping individuals to be strong, resilient, and empowered.

Sneha also cherishes the incredible opportunities she has had as a tennis enthusiast. Watching the legendary "Big 3" of tennis—Rafael Nadal, Roger Federer, and Novak Djokovic—compete on the world stage has been a source of inspiration for her. While she dreams of playing with these tennis icons, Sneha finds immense joy in playing Doubles Tennis with her friends. These matches, filled with laughter and camaraderie, have created memories that Sneha will hold dear for the rest of her life.

Reflecting on her journey, Sneha expresses deep gratitude to her father for introducing her to tennis and providing her with opportunities that have shaped her as both an athlete and an individual. Tennis has not only been a sport for her but a lifelong companion, teaching her lessons that extend far beyond the court. As Sneha continues her journey, she remains passionate about inspiring others and embracing the experiences that sports offer.

For Sneha Ranade, tennis is more than just a game—it's a way of life.

Drug Discovery AI Model

Google Deepmind has released the third major edition of its "AlphaFold" artificial intelligence model, which is intended to help scientists create medications and target diseases more effectively.

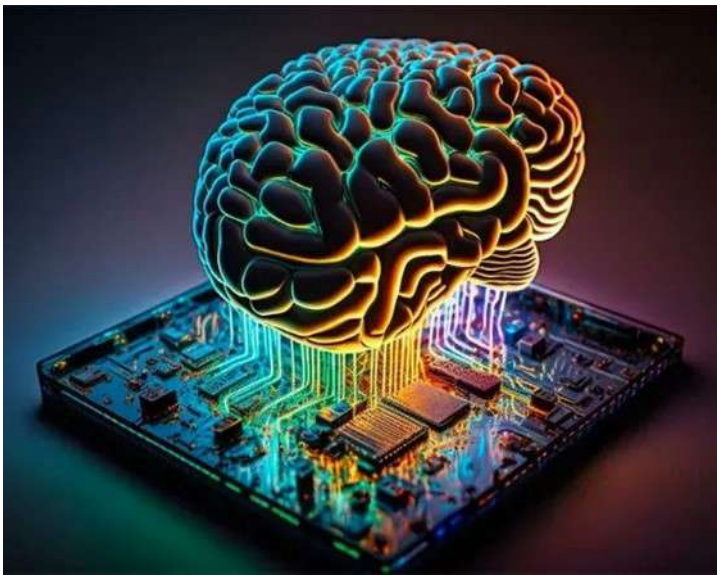
Protein interactions with other molecules are critical to drug discovery and development, ranging from enzymes that are essential for human metabolism to antibodies that combat infectious diseases. With these new skills, we can build a chemical that will bind to a precise location on a protein and anticipate how strongly it will bind. It's an important stage if you want to develop medications and substances that can aid with disease.

Dr Nicole Wheeler, a microbiology expert at the University of Birmingham, believes AlphaFold 3 could considerably accelerate drug development pipeline since "physically producing and testing biological designs is a big bottleneck in biotechnology at the moment".

AlphaFold's predictions have been publicly available to non-commercial researchers as part of a database comprising over 200 million protein structures, and they have been mentioned thousands of times in other people's works.

Google DeepMind unveils next generation of drug discovery AI model | Reuters

Neuromorphic Computing



https://www.ibm.com/think/topics/neuromorphic-computing#:~:text=Neuromorphic%20computing%2C%20also%20known%20as,the%20brain%20to%20process%20information.

“Neuromorphic Computing," sometimes referred to as "Neuromorphic Engineering," replicates how the human brain functions. In order to process information, it involves creating hardware and software that mimic the neural and synaptic structures and operations of the brain. Neuromorphic computing has the potential to accelerate artificial intelligence (AI), improve high-performance computing, and be one of the foundational technologies for artificial superintelligence. Furthermore, attempts to integrate quantum and neuromorphic computing are being performed.

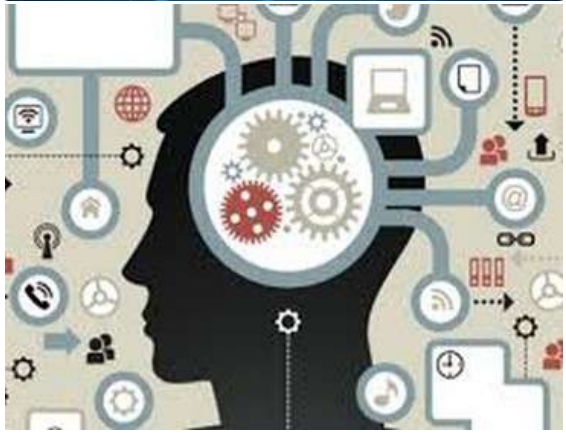
Neurons are the fundamental units of the brain and nervous system. These nerve cells serve as messengers, sending information to and from various parts of the body and brain. In order for neurons to communicate with one another, a network of connections known as synapses is used to carry chemical and electrical signals that are released when a neuron becomes active, or "spikes." Spiking neural networks (SNNs) are used in neuromorphic computing systems to model these biological and neurological mechanisms. Spiking neurons and synapses make up spiking neural networks, a particular kind of artificial neural network.

Internet of Behavior (IoB)

Utilizing data to alter behavior is at the core of IoB. It collects information from various sources and utilizes feedback loops to use this information to change user behavior. For instance, a taxi service can keep an eye on a driver's actions, including how fast they drive, how aggressively they turn, how abruptly they stop, etc. This information can be used to evaluate the driver's performance and take the necessary action.

Internet of Behavior (IoB) analyzes behavioral data to help businesses anticipate trends more precisely, streamline operations, and make well-informed decisions. IoB can automate procedures and tasks, lowering the possibility of human mistake and increasing operational effectiveness across a range of sectors.

By enhancing infrastructure and urban planning and analyzing data from citizen behavior, IoB contributes to the development of smart cities. Furthermore contributes to improving public space security.



ttps://www.geeksforgeeks.org/overview-of-internet-of-behavior-iob/
https://terralogic.com/internet-of-behaviors/

Isha Madhvan: A Rising Star in Volleyball

Journey, Achievements, and Leadership

Interview by Devyani , TY B. Tech

Isha Madhvan's passion for volleyball began at a young age, inspired by her school coach and teammates. Over the years, her dedication has led to numerous achievements, including representing SSPU at the West Zone University Games & winning gold at the Ashwamedh Krida Mahotsav, where she was named 'Player of the Tournament' at the PICT inter-college competition.

Her approach to high-pressure games is simple: focus on enjoying the game and giving her best effort. “I focused on having fun and helping the team win,” she shared. Every victory brings her a deep sense of fulfilment and accomplishment, making the hard work worthwhile.

As a team leader, Isha balances personal performance with motivating her team, relying on clear communication and constant encouragement. While challenges arise in maintaining team unity, she emphasizes the importance of leveraging individual strengths for collective success.

In high-stakes games, Isha handles pressure by focusing on one point at a time and using her pre-game ritual of listening to music to stay energized. Her disciplined training routine includes fitness sessions and team-building exercises, ensuring she’s prepared both mentally and physically for competitions.

Isha is committed to inspiring the next generation of female athletes, encouraging them to believe in themselves, stay dedicated, and view challenges as opportunities for growth. Her future goals include refining her game, learning new strategies, and continuing to foster a motivated team environment.

When asked about a dream partner on the court, Isha chose volleyball legend Karch Kiraly, admiring his versatility and strategic mind. Isha Madhvan’s journey is a testament to her passion, dedication, and leadership, serving as an inspiration for aspiring athletes.

Harmonizing Academics and Athletics

By Ms. Dhanashree Deshmukh, TY B. Tech

In today’s fast-paced world, balancing academics with extra-curricular passions like volleyball, theatre, social work, alved in athletics, I’ve learned to manage both with discipline and focus, gaining valuable lessons in time management, resilience, and teamwork. Sports have not only enriched my education but also equipped me with skills to excel both in the classroom and on the field.

The Sanskrit phrase, "क्रीडायाः शिक्षायाः च, सर्वांगीण उन्नतिः साधिता" (Through sports and education, comprehensive development is achieved.), aptly reflects how the integration of sports and academics fosters holistic growth. This approach has helped me thrive in both areas. Balancing competitive volleyball with academics has been demanding yet fulfilling. I’ve represented my college in numerous tournaments, earning accolades such as second place at IIT Bombay Avhan 2024, a university bronze, and gold in events like COEPZest, Damini, and Pentacle.

These experiences have taught me leadership, perseverance, and the ability to perform under pressure, all of which have significantly enhanced my academic performance.

A key factor in successfully balancing these two worlds has been the unwavering support from my department and college staff. Faculty members have been flexible with deadlines and exams, understanding the demands of sports. Their encouragement and guidance have allowed me to pursue both my academic and athletic goals without feeling overwhelmed. Reflecting on my journey, I am deeply grateful for the support from my teachers. The skills I’ve developed in sports—such as teamwork, discipline, and problem-solving—have been invaluable in my academic growth. Their flexibility and constant encouragement have allowed me to thrive in my studies and excel in sports for which I remain deeply grateful.

Schoolyard Fun to Golden Boot Glory: Shalvi Jawalkar's Football Journey

Interview by Ms. Devyani Patil, TY B. Tech

At the age of 10, Shalvi found her passion for football while playing with friends at school. What started as a fun pastime quickly turned into a lifelong love for the game, winning the prestigious Golden Boot at her first Pentacle tournament.

In an unforgettable moment, Shalvi was informed by her team captain, also the Sports Secretary, that she had won the Golden Boot. "I felt an overwhelming mix of happiness, excitement, and pride. But more than anything, I was grateful for everything that led to that moment," she says. Her parents' joy made the achievement even sweeter. The final match of the tournament was particularly challenging. Shalvi's team went down early against a strong opponent, but she remained calm and led the comeback. "We never lost hope and kept fighting until the last minute," she recalls. Her team's resilience paid off, as they eventually scored two goals and secured victory.

Pressure, according to Shalvi, is a privilege. "It means people believe in your ability to perform," she explains. For her, high-stakes games are an opportunity to rise to the occasion. In preparation for such matches, she focuses on visualization and staying in motion to keep her body ready.

Shalvi credits her growth to her coaches, who have helped her improve physically and technically. Their guidance, along with her team's open communication and camaraderie, plays a key role. in their success.

Shalvi is passionate about inspiring young girls to take up sports. "If you can't see it, you can't be it," she believes. By introducing football to girls she meets, she hopes to make women in sports more visible, encouraging the next generation to dream big.

Looking ahead, Shalvi's immediate goal is to excel in university tournaments and secure a spot on the district team. She's focused on improving her fitness, finishing, and defending, while also becoming a more vocal presence on and off the field. In the long term, she hopes to explore coaching, where her passion for the tactical side of the game can flourish.

For Shalvi, football is more than just a sport—it's a way of life. "Never forget why you started playing: to have fun with your friends," she advises aspiring footballers. And with her talent, leadership, and determination, Devyani is well on her way to leaving an indelible mark on the football field.

Industrial Metaverse

The Industrial Metaverse is the concept of a virtual world to mirror and simulate real machines and factories, buildings and cities, grids and transportation systems. It will be a world which is always on (persistent), allow for the interaction of an infinite number of people and assets (concurrent), and offer the full immersion into a physics-based, photo-realistic and real-time simulation. In this digital environment people can break the barriers of distance and work together across countries and continents, enabling a whole new level of collaboration. Problems can be found, analyzed, and fixed quickly – or even discovered before they arise. And businesses and economies will be able to become more sustainable, driving the decarbonization and dematerialization of product design, their processes and production.

The Industrial Metaverse is a training and validation space that allows the creation of synthetic data that can be used as input for AI-based systems, for example autonomous driving. Furthermore, AI is used to create intelligent and autonomous agents in the Metaverse, e.g., human avatars or robots that can communicate and share interactions. Finally, AI is a key technology in creating the real-

https://www.siemens.com/global/en/company/digital-transformation/industrial-metaverse/industrial-metaverse-glossary.html

Placement & Internships for year 2023 - 2024

PLACEMENTS

- ***General Mills**: Rukita Sharma*
- ***FPL Technologies**: Neha Kubal*
- ***Danfoss:** Anwesha Sen*
- ***Hero MotoCorp:** Udita Shedkar*
- ***Honeywell Automation:** Tvesha Pophali, Siddhi Nirgude, Anjali Rakibe, Nakshatra Khadethanekar, Harshada Bhawar, Sanika Pimprika*
- ***Forbes Marshall:** Anajali Lambore, Prerana Nibhandhe*
- ***Air Products:** Prathishta Tiwari, Shravani More*
- ***Adiya Birla Group:** Nidhi Kylkarni, bhakti Patil, Anushka Kadam, Revati Landge*
- ***Aker Solutions:** Rutuja Ghorpade*
- ***Rockwell Automation:** Anjali Meshram*
- ***Siemens Engergy**: Tanvi Mhatre*
- ***SMS Group:** Sakshi Inamdar*
- ***Emerson Export Engineering Centre-II:** Saloni Patil, Akshata Amane, Tanaya Chabukswar, shruti Kelkar, Sayli Mandhare, Priyanka Sahani, Pallavi Patne, Darshana Sawale, Shewta Wadkar, shraddha Mhandhare, Sanika Deshmukh, Chaitrali Kharat, Cedantika Chawan, Pranali Arerao, Sakshi Nanavre, Renuka Kulkarni, Devangi Jadhav, Saloni Raut, Konkana Datta, Vaishnavi Nesarikar, Shreyasi Sagale, Renuka Bothikar, Samruddhi Jambhale, Sai Gokhale*
- ***Worley:** Sakshi Chaudhari, Sonali Pawar, Priti Patil, Manasi Gojari*
- ***Siemens LTD:** Shruti Ghate, Ketaki Khilare*
- ***Thyssen Krup:** Pranjal Gaikwad*
- ***DFPCL:** Vedika Pote*
- ***Uni-Tech Automation:** Kaivalya Indapurkar*

INTERNSHIPS

In the AY 2023—2024 all T.Y. B.Tech students from the department had completed six months Industrial Internship in this

- *Unitech Automation Pvt Ltd*
- *Seuz*
- *Emerson*
- *Orbittal*
- *Concord Technologies*
- *Lentra AI PVT LTD*
- *Matel Motion*
- *Kirloskar Pneumatics*
- *Sairupam Technologies*
- *Bit Mapper Integration Technologies*
- *Dynomerk Conttols*
- *Mikro Innotech*
- *Danfoss*
- *ARAI*
- *Saipro Automation*
- *Sprng Energy*
- *ITFMS Infotech*
- *General Mills*
- *Thermax*
- *Panasonic Life Solutions PVT LTD*
- *IPAC Automation*
- *First Principle Lab Technologies*
- *Worley*

Publications by Students & Faculty in 2023 - 2024

Anagha Panditrao, "*Dual Axis Automatic Sun Tracking System for a Parabolic Solar Concentrator*", Journal of Instrumentation and Innovation Sciences, Vol 8, Iss 3, pp 26-32, Dec 2023, e-ISSN: 2456-9860.

Bhagyashree Dhamane; Saloni Badave; Anusree Mandal, Nivedita Daimiwal & Revati Shriram, "*Power Machine Learning based Mood Disorder Detection System",* 8th International Conference on Communication and Electronics Systems IC-CES2023, PPG Insttitute of Technology Coimbatore, India.

Bidding Adieu to Mrs. Rajashree Padalkar on her Superannuation

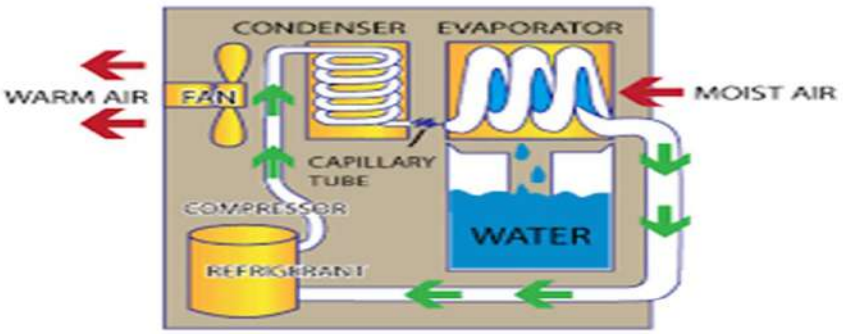
Mrs. Rajashree Padalkar retired from the Dept. of Instrumentation and Control in May 2024 after rendering more than 30 years of fruitful service.

BEST WISHES !!

Awards Received by the Faculty Members

Congratulations

Atmospheric Water Generator



An atmospheric water generator (AWG) is a device that absorbs water from humid air to produce drinking water. Water vapor in the air can be extracted through condensation, which involves chilling the air below its dew point, exposing it to desiccants, utilizing membranes that only pass water vapor, collecting fog, or pressurizing the air. AWGs are beneficial in areas where potable water is difficult to get because water is always present in the air.

In 2024, researchers introduced a gadget with vertical fins spaced 2 mm (0.08 in) apart. The fins are copper sheets wrapped in copper foams covered with zeolite. Water is released when the copper sheets are heated to 184 °C (363 °F). Once every hour, the fins become saturated with air containing 30% humidity. When heated hourly, the harvester can yield 5.8 L (1.5 gal)/day per kilogram (2.2 lb) of material.

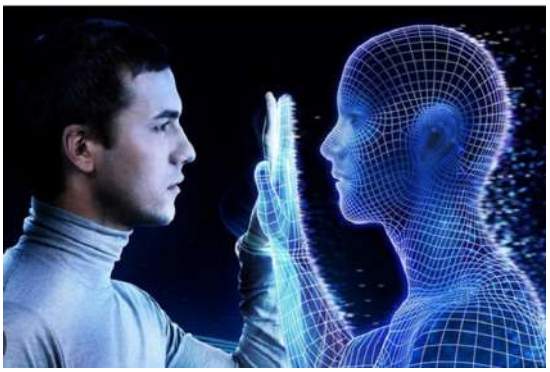
Cooling-based systems are the most popular, however hygroscopic systems have shown potential. Hybrid systems combine adsorption, refrigeration, and condensation. Air wells are one method for passively collecting moisture from air.

https://en.wikipedia.org/wiki/Atmospheric_water_generator

https://www.airowater.com/

Digital Twin Technology

A digital twin is a virtual model of a physical object. It spans the object's lifecycle and uses real-time data sent from sensors on the object to simulate the behavior and monitor operations. Digital twins can replicate many real-world items, from single pieces of equipment in a factory to full installations, such as wind turbines and even entire cities. Digital twin technology allows you to oversee the performance of an asset, identify potential faults, and make better-informed decisions about maintenance and lifecycle.



Digital twins can offer you a complete visual and digital view of your manufacturing plant, commercial building, or facility even if it is made up of thousands of pieces of equipment. Smart sensors monitor the output of every component, flagging issues or faults as they happen. You can take action at the first sign of problems rather than waiting until equipment completely breaks down.

Digital twins are used across the whole manufacturing lifecycle, from designing and planning to maintaining existing facilities. A digital twin prototype allows you to monitor your equipment at all times and analyze performance data that shows how a particular part or the entirety of your plant is functioning.Digital twins are used in the healthcare industry for several instances. These include building virtual twins of entire hospitals, other healthcare facilities, labs, and human bodies to model organs and run simulations to show how patients respond to specific treatments.

https://aws.amazon.com/what-is/digital-twin/#

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Student Editors: *Ms. Mukta Kadam, Ms. Vedika Joshi, Ms. Madhura Shahane*

Alumnae Corner

Dept of Instrumentation and Control is thankful to our alumnae for their support through out the last year. In the last year our department alumnae have helped us in many ways viz by conducting guest lectures and sharing their experiences about management, self discipline, Sponsoring Award for Third Year Mini Project to encourage students do better and for generous support towards the Bhaubij Nidhi.

We are always grateful towards the generous support extended by our department alumni in various way. We kindly request you to all to share your achievements and we will be glad to showcase them always! ……. THANK YOU!!

Best Wishes for the future!!
&
Thank you for your support!

Achievements, Visits & Sessions by Alumnae