



MECHATRONICS INSIGHTS

Winter 2023 Vol: 8

Bi-Annual Newsletter of
The Department of Mechatronics,
School of Automobile, Mechanical & Mechatronics Engineering

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Vision

Global excellence in Mechatronics domain to provide comprehensive solution for industrial advancements and societal challenges.

Mission

M1: Impart value-based education to fulfil industrial needs by nurturing inter-disciplinary knowledge for enhancing academic and professional excellence.

M2: Provide with state-of-art academic and research facilities, fostering humanistic values and peer teaching-learning approach for enhancing employability and entrepreneurship skills.

M3: Encourage inter-disciplinary approach to foster research and innovative ideas for smart Mechatronics system by experiential learning.

M4: Provide opportunity to exhibit and enhance life long learning skills with ethical values and social relevance.

The Director's Message Dr. Shiva Prasad H. C.



As the director of the school, I'm honored to write this statement for the Mechatronics Engineering Department Newsletter. Faculty members participated in a variety of Departmental events in 2023. They have proven their research abilities, and multiple organizations have given them funds. The Department's faculty members are always challenging themselves to perform better, and the department's pursuit of greatness never ends. I wish them the best of luck in their endearing endeavor to release the newsletter. Globally, there are fewer core branches, and since many companies are wary of chat GPT, the slump in CSE and IT has begun. What will happen to the global labor force in the event that open AI takes over, and where and what will open AI be used to manufacture by hardware manufacturing companies? Everything has an upper bound. NEP 2020 and the freedom for students to select from a range of specialization areas within the broad field of engineering are two considerations that went into the enhancement of the program. Students can pick from a variety of electives and university electives with flexible cores to learn the newest and be supported by program electives to tune to fine engineers change to global engineers. The coming years would be challenging for the Indian educational system due to the disruption in the field of education and the opening of international universities in India. This newsletter's activities show how HoD Prof. Dr. Shahbaz Ahmed Siddiqui of the Mechatronics Department has instilled a sense of dynamic goal-oriented leadership in his team. I applaud the newsletter crew for making the brave decision to publish a news letter.

The HoD's Message Dr. Shahbaz Ahmed Siddiqui



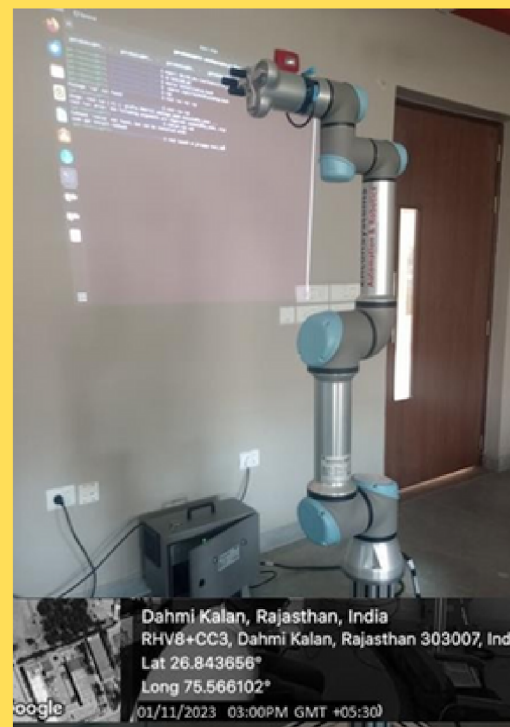
It brings me great pleasure to add a few lines to the department's Bi-annual newsletter. The modern technology landscape is changing quickly, and we need to stay abreast of these changes by being informed on the most recent developments in the industry. Conferences, seminars, webinars, faculty development programs, and other co-curricular and extracurricular activities are just a few of the events the department organizes to inform students about recent and upcoming technological advancements. The department has also received praise for the faculty and students' involvement in a variety of activities. For the department's general development, I hope to see more of these kinds of activities in the future.



Inside The Issues

- 3D-Printing Technology Workshop
- Technical Event on Hands-on experience of ROS integration with Cobot UR5e
- An Industry Expert Talk on-Industry Automation & Operation Management
- Alumni Talk -Career Workshop
- Tech & Future
- Department in Research & Publications
- Department Achievements
- Placements & Testimonials

Vital New Lab supply!



The Department of Mechatronics Engineering was established at Manipal University Jaipur in 2012. Mechatronics is a multidisciplinary field of engineering with a rich knowledge base formed by various disciplines of engineering. Hence an integrated curriculum is designed so to provide a broad-based education in the basic principles of electrical, electronics, computing, mechanical and control systems. Such a varied and diverse course is gaining much recognition and importance with every passing day and has become an engineering discipline high on demand.

Events & Activities of Department



3D Printing Technology WorkshopThe primary goal of the workshop is to empower participants with a comprehensive understanding of 3D printing technology, fostering hands-on experience and knowledge that can be applied across various disciplines



Career Workshop: Navigating success through undergraduate education and exploration The event was a one-day seminar organized by the International Society of Automation (ISA) MUJ Chapter, in partnership with the Department of Mechatronics Engineering and the Directorate of Alumni Relations (DoAR) and Directorate of International Collaborations (DoIC). The primary focus of the event was to provide valuable insights and guidance to students and attendees on various aspects related to education and career development.



Two days hands-on expert lecture was held in collaboration with the Department of Mechatronics Engineering. It featured two industry speakers, Ms. Darshi Dwivedi and Mr. Pritam Dey, from Encon System Pvt. Ltd., Gurugram, India. The hands-on session offered valuable insights into research, skill enhancement and industrial training.



Manipal University Jaipur has organized an offline Alumni Industry Talk-a-thon titled "Industry Automation & Operation Management." dated on 22nd Aug, 2023 at 10:00 am to 11:30 am. The event was organized by Department of Mechatronics Engineering. The event was specifically designed for students. Mr. Anmol Agarwal was the key speaker. Mr. Hemant Kumar was the convener of the event



A two-day workshop event organised in collaboration with SmarDen Technologies Pvt. Ltd. The workshop on Day one, i.e., on October 7th, 2022, was conducted by SmarDen Technologies in AB1 105 on the basics of IoT and automation, mainly targeted towards students who are just getting into automation. On day two, i.e., on October 8th, 2022, a workshop was again conducted by SmarDen Technologies in AB1 105, and advanced topics of automation and IoT were covered.



Department In Research & Publications

Patents

ID	Filing Office	Date of Filing	Title	Inventor	Status
202311049899	IP India	24/07/2023	Mop Mechanism In Autonomous Mobile Robot For Multipurpose Floor Cleaning	Dr Kumar Gaurav	Published
202311071603	IP India	18/10/2023	Multi-Terrain Self-Configurable Autonomous Mobile Robot For Multipurpose Cleaning	Dr Kumar Gaurav	Published
202311055479	IP India	18/08/2023	Autonomous Protective Enclosure For Unmanned Aerial Vehicles And Sensors	Dr Manish Rawat	Published
202311043298	IP India	16/09/2023	Electro-Hydraulics System For Industrial Intermittent Loading Applications	Dr Manish Rawat	Published

Journal Publications

S. No	TITLE
1	Hei TL, Kulshrestha M, Randhawa P. Design of a Shell to Protect Sensors and Drones. EAI Endorsed Scal Inf Syst [Internet]. 2023 Sep. 25 [cited 2024 Feb. 28];11(3).
2	Pooja Sharma, Prabhat Ranjan, Tanmoy Chakraborty, Study of TI-based perovskite materials $TlZX_3$ ($Z = Ge, Sn, Be, Sr; X = Cl, Br, I$) for application in scintillators: DFT and TD-DFT approach, Chemical Physics Impact, Volume 7, 2023
3	Gaurav K, Ranjan P. Moth-inspired odor source localization using robotic platforms: A comprehensive review. Adaptive Behavior. 2023;0(0)
4	D. R. Shrivastava et al., "Data-Driven Unified Scheme to Enhance the Stability of Solar Energy Integrated Power System in Real-Time," in IEEE Access, vol. 11, pp. 118443-118461, 2023
5	Alka Ashok Singh, Nkurunziza David, Mrinmoy Misra, Byung-Soo Chun, Gundo Kim, Angelica keiskei: A promising antioxidant and anticancer agent for Photothermal mediated drug delivery applications, Journal of Molecular Structure, Volume 1300, 2024
6	Arun S. Chopade, Laxman S. Walekar, Nagesh D. Kolhe, Abhijit N. Kadam, Harichandra A. Parbat, Vaishali Patil, Mrinmoy Misra, Dattakumar S. Mhamane, Mukund G. Mali, Hard acid soft base (HSAB) guided morphology engineered copper oxides for efficient photocatalytic degradation of textile effluent under visible light, Inorganic Chemistry Communications, Volume 159, 2024



7	Tejaswi Tanaji Salunkhe, Vanish Kumar, Abhijit N. Kadam, Mukund Mali, Mrinmoy Misra, Rational construction of hollow ZnO@SnS ₂ core-shell nanorods: A way to boost catalytic removal of Cr (VI) ions, antibiotic and industrial dyes, Ceramics International, Volume 50, Issue 1, Part B, 2024
8	Nagesh D. Kolhe, Laxman S. Walekar, Abhijit N. Kadam, Arun S. Chopade, Sang-Wha Lee, Dattakumar S. Mhamane, Sadanand N. Shringare, Anjana S. Lawand, Gavisiddappa S. Gokavi, Mrinmoy Misra, Mukund G. Mali, MOF derived in-situ construction of core-shell Z-scheme BiVO ₄ @ α -Fe ₂ O ₃ -CF nanocomposites for efficient photocatalytic treatment of organic pollutants under visible light, Journal of Cleaner Production, Volume 420, 2023

Book Chapter Publications

September 2023	Nanotechnology-Enhanced Solid Materials	Lionello Pogliani, Ann Rose Abraham, A. K. Haghi, Prabhat Ranjan
September 2023	A Computational Study of Metal Doped Silver Nanoparticle-Based Clusters	Shayeri Das, Prabhat Ranjan, Tanmoy Chakraborty
September 2023	Applications of Recycled Solid Substances of Solar Photovoltaic Modules and Their Environmental Impact Analysis	Manisha Sheoran, Pancham Kumar, Susheela Sharma, Prabhat Ranjan

Conference Publications

1	Divya Rishi Shrivastava, Shahbaz Ahmed Siddiqui, Kusum Verma; Transient stability assessment of power system with solar PV energy penetration through DlgSILENT power factory and Python. <i>AIP Conf. Proc.</i> 31 May 2023; 2752 (1)
2	Gunjan Sharma, Sarfaraz Nawaz, Shahbaz A. Siddqui; Employing an improved loss sensitivity factor approach for optimal DG allocation at different penetration level using ETAP. <i>AIP Conf. Proc.</i> 31 May 2023; 2752
3	K. Kumar, R. Noronha, S. P. H. C, V. Satija, M. R. Pradhan and P. Randhawa, "Determinants of Cloud Services and Customer Satisfaction in Indian Start-up Companies," 2023 International Conference on Information Management (ICIM), Oxford, United Kingdom, 2023, pp. 50-55
4	Prabhat Ranjan, Tanmoy Chakraborty; Theoretical analysis of AgInX ₂ (X = S, Se, Te) nanomaterials: A DFT study. <i>AIP Conf. Proc.</i> 31 May 2023; 2752 (1)
5	Parveen Badoni, Shahbaz A. Siddiqui, Niti Nipun Sharma; Scope of reference architecture model for industry 4.0 in mushroom production. <i>AIP Conf. Proc.</i> 31 May 2023; 2752 (1)
6	Anupam Agrawal, Shahbaz A. Siddiqui, Amit Soni; Dye sensitized semi-transparent solar cell: Building application, transparency and colour characterization. <i>AIP Conf. Proc.</i> 31 May 2023; 2752 (1)
7	Satija, V., Pradhan, M.R., Randhawa, P. (2023). Early Prediction of Coronary Heart Disease Using the Boruta Method

9	Nemade, P., Kumawat, A.K. (2023). Interfacing of Industrial Inductive Proximity Sensor with NI DAQ and Speed Measurement
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New Labs



Advanced Robotics Laboratory

At MUJ, the Advanced Robotics Lab is at the forefront of cutting-edge technology, seamlessly combining innovation and engineering prowess. This cutting-edge facility acts as a dynamic hub for research and development, pushing the boundaries of robotics to new heights. The lab, which is equipped with cutting-edge artificial intelligence, machine learning, and sensor technologies, fosters an environment in which groundbreaking ideas can be realised. This high-tech haven brings together researchers and engineers to explore advanced algorithms, autonomous systems, and human-robot interaction. The lab's focus goes beyond traditional robotics, exploring soft robotics, swarm robotics, and bio-inspired designs to pave the way for next-generation robotic platforms. Precision and agility are essential in this futuristic workspace, where experimental prototypes and robotic mechanisms are thoroughly tested and refined.



Robotics Laboratory

At MUJ, the Robotics Lab is a dynamic environment dedicated to the research and development of robotics technology. This cutting-edge facility serves as a hub for research, development, and experimentation, encouraging collaboration among engineers and scientists. The lab, which is outfitted with cutting-edge hardware and software, serves as an innovation playground, transforming ideas into tangible robotic systems. The Robotics Lab's researchers study a wide range of topics, including autonomous navigation, machine learning, computer vision, and human-robot interaction.

Department Achievements



Financial Sanction of the research project titled Computational Study of Nanoalloy Clusters for Potential Applications in Energy Sector under the guidance of Dr. Prabhat Ranjan, Mechatronics Engineering, Manipal University, Jaipur



Mrunalini Ghadge has secured 1st prize at National sports day celebration organized by Manipal university Jaipur



'GTC Registration & Attendance Awards program - NVIDIA GTC | March 21-23, 2023 run by RP-Tech. Dr. Krishna Kant Pandey being awarded an "NVIDIA Jetson", as one of the top 30 in the list (the top 13-50 bracket) who has met the program condition.



Reimbursement of Travel grant to Dr. Princy Randhawa, Mechatronics department, Manipal University Jaipur

Placements & Testimonials

MANIPAL UNIVERSITY
JAIPUR

Department of Mechatronics Engineering

Congratulates

Anavi Malhotra

For getting Selected in
UNO MINDA



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I am grateful to the department and MUJ for providing the opportunity and platform for learning and updating my knowledge in the field of Artificial Intelligence ,Robotics (Mechatronics Engineering). My mentors have really helped me to sharpen my skills and it has been an exhilarating experience.


MANIPAL UNIVERSITY
JAIPUR

Department of Mechatronics Engineering

Congratulates,

Ritvik Mahapatra

For getting Selected in
L&T Infotech



"I would like to convey my special thanks to the Training and Placement Cell for smooth conduction of drives and successful placement. Also I would like to thanks Dept. of Mechatronics, SAMM for their constant help and guidance throughout the complete placement process.."

MANIPAL UNIVERSITY
JAIPUR

Department of Mechatronics Engineering



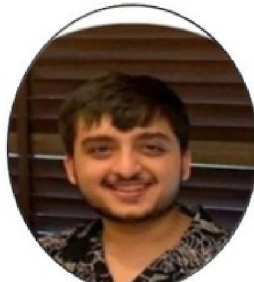
Congratulates

Saksham Sinha

For getting Selected in
Lutron Electronics



"I wanted to express my sincerest gratitude for the excellen education and guidance that you provided me with during my time here. Thanks to your efforts, I was able to secure a great placement that perfectly aligns with my career goals. I feel truly blessed to have been a part of this wonderful institution."

	<p>MUJ is one of the most resourceful places for astudent togrow, bothpractically and academically.</p> <p>-Jaiveer Singh(2013-17)</p>
	<p>MUJ gives great opprotunities to get acquainted with the industrial environment and help build up the Practical knowledge</p> <p>-Rushil Soni(2013-17)</p>
	<p>I would like to thank MUJ and department of mechatronics for 4 years of brilliant experience. The department has been really helpful with many knowledgeable professors and the design of the course is also done in an excellent way to create a perfect balance between theory and practical domains.</p> <p>Tanmay Bhatia(2018-22)</p>