



SCHOOL OF STUDIES OF ENGG. TECH. GURU GHASIDAS VISHWAVIDYALAYA

DEPARTMENT OF **MECHANICAL ENGINEERING** PRESENTS

THE MASTER STROKE



Jan – June (2023)

A Half-Yearly Newsletter

Volume IV



Prof. T. V. Arjunan

HOD, DEPARTMENT OF MECHANICAL ENGINEERING

FROM HOD DESK

Welcome to the department of mechanical Engineering, Guru Ghasidas Vishwavidyalaya. The department works with the objective of addressing critical challenges faced by the industry, society and academia. Perhaps even more important is our unceasing commitment to our students, helping them to learn, grow, develop, and achieve their goals in their pursuit to excel in their professional career.

Mechanical Engineering is a professional Core engineering discipline that deals with the design, production and maintenance of any product of any industry. The pride of every student and staff would be in his/her department and college.

Our department has a team of highly qualified and experienced faculty, good infrastructure and lab facilities. We are striving hard continuously to improve upon the quality of education and to maintain its position of leadership in engineering and technology. We always work with the motto "Nothing can be achieved without genuine effort." The core values of the department help the students to develop their overall personality and make them worthy to compete and work at global level.

Our faculty are continuously attending various training programs, publishing research papers, books and filing patents. Many are pursuing research. Our department has been conducting seminar / conferences to keep the faculty and students abreast with the latest developments in the field of technical education. We are happy to share that many students are pursuing higher studies in leading universities in India and abroad. I am certain that our students will prove to be an invaluable asset to an organization.

This newsletter is one of the such effort which will let the students to know about different activities, so that they can heartily involve themselves in various programs of the department.

My warm wishes to the entire team for their excellent work.

LATEST DEVELOPMENT

Navigating Towards a Circular Plastic Economy: Strategies and Challenges



'We need to rethink how we make, use and reuse plastics'

Plastic pollution presents a critical environmental challenge, prompting governments and businesses to promote recycling and cut plastic waste, including phasing out single-use plastics. However, plastics remain essential in various industries, necessitating a shift towards a circular economy model. The Ellen Macarthur Foundation advocates systemic solutions to redesign how plastics are made, used, and reused, aiming to minimize waste and pollution. Modular design facilitates product disassembly for recycling, yet challenges persist, especially with mixed-material components like umbrellas. Strategies like requirements management, generative design, and optimization simulations are emerging to address these issues. While the journey to a circular plastic economy is gradual, adopting modular and generative design technologies accelerates progress. Every effort to mitigate plastic harm matters, emphasizing the importance of incremental improvements toward a sustainable future.

Source: INSTITUTION OF MECHANICAL ENGINEERS

Innovative Solutions for Sustainable Energy: The Emergence of Solar Trees

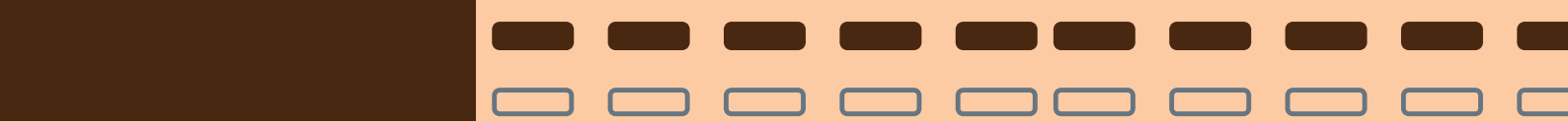


SolarBotanic Trees is developing the devices, which could be used to charge cars

A 'solar tree' project, developed by SolarBotanic Trees and CRL in Hayes, London, is advancing for commercial production by year-end. The prototype, part of CRL's 2023 Accelerator Programme, is in collaboration with the University of Sheffield's AMRC. These trees feature photovoltaic 'leaves' suitable for aesthetically sensitive areas like airports and stadiums, powering homes or charging EVs. The system integrates AI-driven energy storage and management, potentially forming local grids.

Beta testing will simulate tree performance in various weather conditions. Chris Shelley, CEO of SolarBotanic Trees, highlights the significance of CRL's industrial design expertise alongside AMRC's engineering. Crowdfunding begins in April, supplementing initial seed funding. The CRL Accelerator programme receives support from the European Regional Development Fund and Research England Development Fund

Source: INSTITUTION OF MECHANICAL ENGINEERS



Research Article

Machine Learning Model Towards Evaluating Data gathering methods in Manufacturing and Mechanical Engineering

The research presented in the International Journal of Applied Science and Engineering Research Volume 15, Issue 4 – 2023 focuses on the application of Active Learning (AL) in the field of mechanical engineering and manufacturing. The study introduces a Machine Learning Model that leverages AL techniques to enhance predictive modeling with limited data samples. By combining AL with Query by Committee (QBC) sampling strategies, the researchers demonstrate improved performance in predictive tasks.

The experiment involved evaluating different sampling techniques and predictive models across three predictive tasks. Results were averaged over 30 independent runs for each setup, considering iterations from the initial training set size to the final training size. The study highlights the importance of AL readiness for real-world applications, emphasizing the need for efficient data acquisition methods in practical scenarios where prior data may be limited.

Overall, the research contributes to advancing the use of AL in mechanical engineering and manufacturing by providing a robust validation schema for active learning. The findings suggest that integrating AL techniques, such as QBC sampling, can lead to more effective data gathering processes and improved predictive model performance in industrial applications.

Source: International Journal of Applied Science and Engineering Research



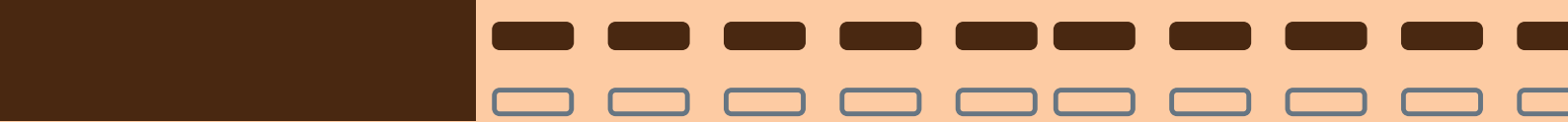
Non-Tech Article

From Sheep's Lungs to Fighter Jets: The Unconventional Journey of an Engineer



Laura Hoang (left) stumbled across engineering by chance, but is now one of the industry's proudest ambassadors

Laura Hoang fainted when she saw the sheep's lungs and realized that the medicine was not suitable for her. She found a job while she was in school. Laura's interests range from the quiet and gentle art of origami to smoking tires and the noise of Formula One racing. Laura, the daughter of Vietnamese refugees, tries everything as she starts a new life in Leeds. And she said she always felt more resistance than ever from her family, who did not believe women needed jobs. "I want to do something," she explained. "I was not sure what to do". Things changed when a new physics teacher was offered a job at the Engineering Development Foundation. Visitors to her school came from National Grid. "We found a broad solution to a real problem," she said. "That's the beauty of it". She is a member of the Council of the Royal Aeronautical Society and is committed to equity, diversity and inclusion. She is a member of the SheCanEngineer team, an organization dedicated to promoting diversity in engineering. Laura studied engineering at university and then gained hands-on experience for a year. She joined an architecture firm and her first major project was a railway station in Manchester.



Laura majored in mechanical engineering and completed an internship. This opened the door for her to the UAE, where she spent the next 11 years. She works in the field of electrical and gas systems, builds cabins and tests software. At one point she was invited to speak to military leaders in Washington, D.C. It was the best thing she ever did. At the time, Laura was thinking about how engineers and pilots would be trained to fly the F35 fighter jet. There are complex and complex information center systems around the world, and the information they use is a service. Represent all your work and find ways to improve the design. She came up with the idea of using engineering models, and the first thing that came to mind was to fly to Washington.

She will now ask senior military leaders to point out shortcomings in the training. The UAE, the project's second partner, is not allowed to speak at the meetings it normally attends. And since your audience is not engineers, they need a brief explanation of the technology. The pressure continues and Laura is forced to give in. This year, Laura left the world of F35s, Hawks and Typhoons where she became a Senior ERM Human Factors Consultant.. Her primary focus is security and her clients span a variety of industries. Laura's parents accompany her to her engineering fairs or STEM conferences and smile happily when they take her picture. She believes in the power of change and the benefits of joining a professional structure. She learns how to play the game and also learns how to become one of the many guards who keep everyone safe."No two engineers work the same way," says Laura."So I always say, 'Just give it a try.' You will find something you like".

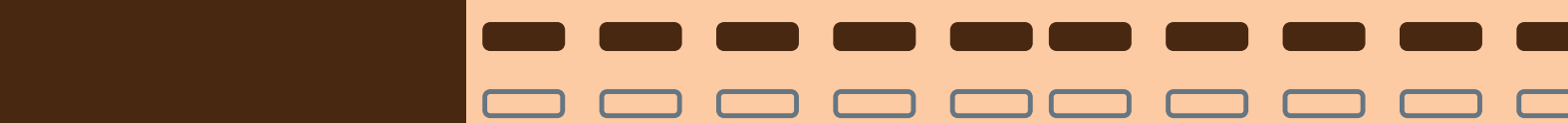
Source: INSTITUTION OF MECHANICAL ENGINEERS



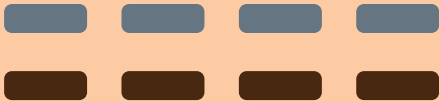
Patent & Publication

Academic Years-2022-2023 (Patent Granted):

S.No.	Authors	Patent Types and detail	Patent Description
1.	Mr. Pradeep Patanwar, Mr. Manish Bhaskar Dr. Samarjit Singh, Mr. Biplab Das, Mr. Tikeswar Sahu, Dr. Ajay Kumar Sharma, Dr. Prasanjeet Mukharjee and Mr. Manoj Kumar Kushwaha	Granted(Registration/ Design No: 383025-001) dated on 05 April'23 and Granted on 26-07-2023	Solar energy storage system
2.	Dr. T V Arjunan, Mr. Manish Bhaskar, Mr. Manoj Kumar Kushwaha, M.M. Matheswaran, Mr. Pradeep Patanwar, Selvaraj Vijayan and Sharma	Granted (Ref. No.202023100669) Granted on: 16/03/2023	Design of chip cooling system
3.	Dr.S.V.A.R.Sastry, Dr. Pankaj Kumar Gupta, Dr.Shravan Kumar, Mr.Gaurav Singh	Granted(Registration/ Design No: 378426-001) dated on 01 Feb'23and Granted on 25-04-2023	A solar-powered exhaust cooling fan for cars



S. S.No.	Departmental author/authors	Journal titles vol. and references	Name of the Journals in which publications are made as GGV faculty	Impact Factors
1	Prof.T V.Arjunan	Venkatesh L, Arjunan TV, Arulraj M, Ravikumar K. Study on tribological behaviour of aluminium hybrid composites strengthened with novel groundnut shell ash and boron carbide.	Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering. 2022;0(0). doi:10.1177/09544089221112162-SCI	SCI-I.F: 1.8
2	Dr. Anoop Kumar Sahu	Sahu A. K., Sahu, N. K., and Sahu, A. K (2023) Laminating STRATH block chain technology-SWOT architectures to endure business strategy between digital transformation, firms and supply chains capabilities for sustainability,	Journal of Cleaner Production, Elsevier, 383, pp. 135531- Science Citation Index-ACategory (ABDC)	SCI-I.F: 11.12
3	Dr. Anoop Kumar Sahu	AK Sahu, RD Raut, VV Gedam, N Cheikhrouhou, AK Sahu (2022) Lean-agile- resilience-green practices adoption challenges in sustainable agri-food supply chains,	Business Strategy and the Environment, Wiley- Science Citation Index-A-Category (ABDC)- I.F.-10.1	SCI-I.F: 10.1
4	Dr. Anoop Kumar Sahu	Sahu, N.K., Singh, M.K., Sahu, A.K. and Sahu, A.K. (2023) Employment of cylindrical electrolytic copper grade electrode under EDMed Inconel 825 super alloy: emphasis on machining behavior accompanied with surface topography for sustainability.	Int J Adv Manuf Technol (2023). https://doi.org/10.1007/s00170-023-10967-4 Science Citation Index-	SCI-I.F: 1.2
5	Dr. Anoop Kumar Sahu	Sahu, A.K., Katyayan, A., Khandey, U., Jangde, P., Sahu, A.K. and Sahu, N.K. (2023), "Adaptation of block chain technology in SCM for steering managerial strategies: investigative study under Indian context", Journal of International Logistics and Trade, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JILT-06-2022-0020	Journal of International Logistics and Trade, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JILT-06-2022-0020-Scopus	Scopus



6	Dr. Anoop Kumar Sahu	Sahu, A.K., Sahu, A.K. and Sahu, N.K. (2023), "Evaluation of machine tool substitute under data-driven quality management system: a hybrid decision-making approach",	The TQM Journal, Vol. 35 No. 1, pp. 234-261. https://doi.org/10.1108/TQM-07-2020-0153	Scopus+Web of Science
7	Dr. Anoop Kumar Sahu	M Goli, AK Sahu, S Bag, P Dhamija (2023) Users' Acceptance of Artificial Intelligence-Based Chatbots: An Empirical Study	International Journal of Technology and Human Interaction (IJTHI) 19 (1), 1-18	Scopus+Web of Science
8	Dr. Ekka,J.P	Jasinta, P. E and Dhananjay K. (2023) A review of industrial food processing using solar dryers with heat storage systems	Journal of Stored Products Research Volume 101, March 2023, 102090	SCI I.F: 2.8
9	Biplab Das & Prateek Gupta	Kumar, D.A., Biplab, D., Prateek, G. (2023). Voltage Output Characteristics of PZT-5H Disk Under Temperature, Humidity and Traffic Load.	Intelligent Manufacturing and Energy Sustainability. Smart Innovation, Systems and Technologies, vol 334. Springer, Singapore. https://doi.org/10.1007/978-981-19-8497-6_32 - Scopus	NA
10	Manish Bhaskar, Dr. Samarjit Singh, Biplab Das, Pradeep Patanwar, Dr. Pankaj Kumar Gupta	Manish Bhaskar, Dr. Samarjit Singh, Biplab Das, Pradeep Patanwar, Dr. Pankaj Kumar Gupta (2023) Influence of Stacking Sequence and Orientation on Tensile and Flexural properties of Jute/glass/carbon fiber epoxy-based hybrid composites	Polymer (Korea)	SCI-IF: 2.4 13th June 2023 I.F.-0.4

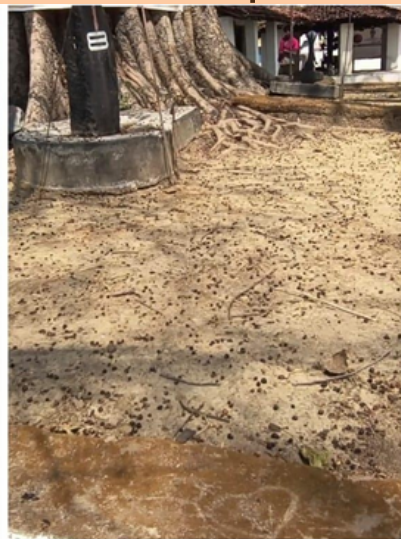
1.Books Chapters Edited/Published

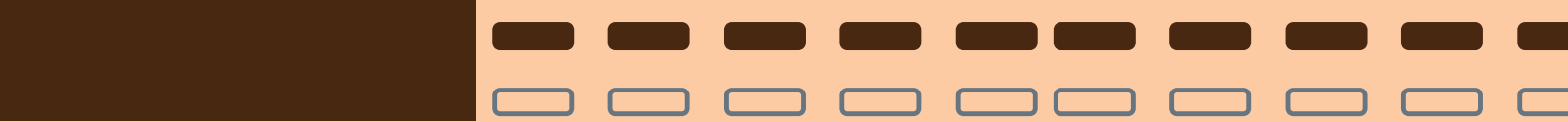
Name of the faculty	Title of Book and Reference	Publishers
Prof. Arjunan, T.V.	Arjunan, T.V.- Selvaraj,V. and Matheswaran, M.M (2023) Solar Thermal Conversion Technologies for Industrial Process Heating, CRC press, Taylor and Francis, eBook ISBN 9781003263326, First Edition.	CRC press, Taylor and Francis
Dr. Anoop Kumar Sahu	Sahu, A.K., Rohit Raja Sahu, A.K., Sahu, N.K. and Rakesh D Raut, Industrial and manufacturing design: Quantitative and Qualitative Analysis, Wiley-Scrivener	Wiley-Scrivener Indexed by Scopus
Das Biplab & Gupta Prateek	Kumar, D.A., Biplab, D. & Prateek, G. (2023) Voltage Output Characteristics of PZT-5H Disk Under Temperature, Humidity and Traffic Load, Intelligent Manufacturing and Energy Sustainability	Springer
Prof. T.V. Arjunan, Prashant Jangde	Jangde, P.K., Vijayan, S., T.V., Arjunan and P. Kanagavel (2023), Solar Thermal Energy for Industrial Process Heating Potentials and Challenges, Book: Solar Thermal Conversion Technologies for Industrial Process Heating, CRC press, Taylor and Francis, eBook ISBN 9781003263326, First Edition.	CRC press, Taylor and Francis
Prof. T.V. Arjunan	Mirhamed, H. , Kamaruzzaman, S. Bhuvana, V. and T.V. Arjunan (2023), Global Energy Model and International Solar Energy Policies, Book: Solar Thermal Conversion Technologies for Industrial Process Heating, CRC press, Taylor and Francis, eBook ISBN 9781003263326, First Edition.	CRC press, Taylor and Francis
Dr. Ekka, J.P	Ekka, J.P (2023), Solar Energy in Food Processing Industries An Overview, Book: Solar Thermal Conversion Technologies for Industrial Process Heating, CRC press, Taylor and Francis, eBook ISBN 9781003263326, First Edition.	CRC press, Taylor and Francis
Prof. T.V. Arjunan	A Veera Kumar, D. Seenivasan , T.V. Arjunan, R. Venkatramanan and Vijayan Selvaraj (2023), Solar Thermal Conversion Technologies for Process Heating Applications in Automobile Industries, Book: Solar Thermal Conversion Technologies for Industrial Process Heating, CRC press, Taylor and Francis, eBook ISBN 9781003263326, First Edition.	CRC press, Taylor and Francis

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Dr. Anoop Kumar Sahu	Sahu, A.K., Katyayan, A., Khandey, U., Jangde, P., Sahu, A.K. and Sahu, N.K. (2023), "Adaptation of block chain technology in SCM for steering managerial strategies: investigative study under Indian context", Journal of International Logistics and Trade, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JILT-T-06-2022-0020	Journal of International Logistics and Trade	https://doi.org/10.1108/JILT-06-2022-0020-Scopus	Scopus
Dr. Anoop Kumar Sahu	M Goli, AK Sahu, S Bag, P Dhamija (2023) Users' Acceptance of Artificial Intelligence-Based Chatbots: An Empirical Study	International Journal of Technology and Human Interaction (IJTHI)	Vo. 19, No. 1, pp. 1-18	Scopus+Web of Science
Dr. Ekka,J.P	Jasinta, P. E and Dhananjay K. (2023) A review of industrial food processing using solar dryers with heat storage systems	Journal of Stored Products Research,	Vol. 101, pp. 102090	SCI I-F: 2.8
Manish Bhaskar, Dr. Samarjit Singh, Biplab Das, Pradeep Patanwar, Dr. Pankaj Kumar Gupta	Manish Bhaskar, Dr. Samarjit Singh, Biplab Das, Pradeep Patanwar, Dr. Pankaj Kumar Gupta (2023) Influence of Stacking Sequence and Orientation on Tensile and Flexural properties of Jute/glass/carbon fiber epoxy-based hybrid composites	Polymer (Korea)	-	SCI-IF: 2.4 13th June 2023 I.F.-0.4
Jasinta Poonam Ekka	Maurya, O.P , Ekka, P.J., Kumar, D., Dewangan, D., Singh, A (2023), Experimental and numerical methods for the performance analysis of a tubular three-pass solar air heater	Energy Volume 283, 15 November	pp. 128640	SCI-IF 9.0
Jasinta Poonam Ekka,	Ekka, P.J and Dewangan, D. (2023) A comprehensive review on recent developments, applications and future aspects of heat pipe-assisted solar collectors	Journal of Thermal Analysis and Calorimetry,	Vol. 148, pp. 11173–11201	SCI-IF 4.8

Student Activities

7 Day Special NSS Camp 2023





Summary By Students

Attending the Unit Camp of National Service Scheme (NSS) was an unforgettable experience that has left a lasting impact on my life. The NSS is a youth-based program in India that aims to develop the personality and character of students through community service activities.

On the first day of the camp, all participants were divided into nine groups, with each group consisting of nine to ten members. Our group coordinator assigned tasks for us to complete during the camp, including going for Prabhat Pheri, doing exercises or yoga, collecting wood for making food, beautifying the campsite, conducting surveys in nearby villages to identify problems and solutions, cleaning the village, giving speeches in Bodhik Paricharcha, preparing meals as a group, playing NSS games, preparing for cultural programs like dancing and drama, and organizing a cultural event.

One of the tasks that I thoroughly enjoyed was conducting surveys in nearby villages. This activity provided us with an opportunity to interact with the local people, understand their problems and needs, and come up with solutions to address their issues. This task gave me a sense of fulfillment and enabled me to contribute to the betterment of society.

Another task that I found exciting was preparing meals as a group. Cooking with my group members helped me develop my leadership skills, teamwork abilities, and communication skills. Moreover, the meals we cooked together were delicious and nutritious, which made the experience even more enjoyable.

Playing NSS games and preparing for cultural programs like dancing and drama were other tasks that I found fulfilling. These activities helped me bond with other participants, explore my talents, and showcase my skills. They also helped me step out of my comfort zone and develop my confidence.

Overall, attending the Unit Camp of NSS was a life-changing experience that helped me develop my personality, character, and skills. It taught me the importance of community service, teamwork, and leadership, and provided me with an opportunity to make a positive impact on society. I will always cherish the memories of this camp and the friends I made there.





**CREATE
END**

Thank you for reading our Mechanical Engineering
Department Newsletter

Mechanical
Engineering