DEPARTMENT OF MECHANICAL ENGINEERING

Professional Details

Name:	**Dr. Kumararaja K**
Designation:	Assistant Professor
Educational Qualification:	M. E., Ph. D.,
Experience:	06 Years (Research: 04 Years | Teaching: 02 Years)
Area of Specialization:	Heat Transfer, Nanofluid and Artificial Intelligence
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Educational Details

S. No.	Degree	Branch/ Specialization	Institute/ University	Year
1.	Ph.D.	Mechanical Engineering	Annamalai University	2024
2.	M.E.	Thermal Power Engineering	Annamalai University	2019
3.	B.E.	Mechanical Engineering	A.V.C. College of Engineering (Affiliated to Anna University)	2017

Article Details

International:

1. **Kumararaja, K.,** Khiran Kumar, C.S. and Sivaraman, B., 2022. A convolutional neural network analysis of a heat pipe with Hybrid Nanofluids. International Journal of Ambient Energy, 43(1), pp.6284-6296. **(SCOPUS only)**
2. Saravanan, S., **Kumararaja, K.** and Raghukandan, K., 2023. Application of deep learning techniques to predict the mechanical strength of Al-steel explosive clads. Metals, 13(2), p.373. (SCIE)
3. Saravanan, S., Gajalakshmi, K., **Kumararaja, K.,** Sivaraman, B. and Raghukandan, K., 2023. Prediction of aluminium–stainless steel explosive clad strength through machine learning. Sādhanā, 48(3), p.140. **(SCIE)**
4. Saravanan, S. and **Kumararaja, K.,** 2023. Performance of ANN in predicting the depth to width ratio and tensile strength of UNS S32750 laser weld joints. Welding International, 37(2), pp.111-117. **(SCOPUS & Web of Science)**
5. **Kumararaja, K.,** Sivaraman, B. and Saravanan, S., 2024. Performance evaluation of hybrid nanofluid-filled cylindrical heat pipe by machine learning algorithms. Journal of Thermal Engineering, 10(2), pp.286-298. **(SCOPUS & Web of Science)**
6. Saravanan, S., **Kumararaja, K.** and Raghukandan, K., 2025. Weld Aspect Ratio and Tensile Strength Prediction in the Laser Beam Welding (LBW) of Super Duplex Stainless Steel (SDSS) Using

Machine Learning (ML) Architectures. Lasers in Engineering (Old City Publishing), 59. **(SCIE)**

7. **Kumararaja, K.,** Gajalakshmi, K. and Saravanan, S., 2025. Automated classification of laser weld defects using deep neural networks. Welding International, pp.1-12. **(SCOPUS & Web of Science)**

8. **Kumararaja, K.,** Sherpa, B.B. and Saravanan, S., 2025. Prediction of shear strength in Al-LCS explosive clads through recurrent neural network. Welding International, 39(1), pp.32-39. **(SCOPUS & Web of Science)**

9. Velmurugan, P., **Kumararaja, K.,** Harisivasankaran, RS., Saravanan, S., 2025. Comparative performance of different solar still configurations. Journal of Thermal Engineering, 11(6), pp.1729-1740. **(SCOPUS & Web of Science)**

10. Obidhusin, S., Chandramowleeswaran, G., Rajesh, K., Francis, M.M., **Kumararaja, K.,** Kizi, K.S.M. and Goswami, A., 2025. Autonomous Decision Systems for Ubiquitous Smart Factories. Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications, 16(3), pp. 532-545. **(SCOPUS only)**

11. Shyamalagowri, M., Ali, S.A., Alabdeli, H.M., Pavan, J., **Kumararaja, K.** and Abdullaev, X., 2025. Mobility-Aware Wireless Routing in UAV-Assisted Internet Coverage. Journal of Internet Services and Information Security, 15(4), pp. 345-357. **(SCOPUS only)**

National:

1. Saravanan, S., and **Kumararaja, K.,** 2023. Performance of ANN in Predicting the Tensile and Shear Strength of Al-Steel Explosive Clads. Journal of Manufacturing Engineering, 18(1), pp.026-029.

Conference Details

Proceedings:

1. **Kumararaja, K.,** C. Khiran Kumar, and B. Sivaraman, "Predicting the outlet temperature of a heat pipe with hybrid nanofluid using deep neural networks," 2nd International Black Sea Modern Scientific Research Congress, Rize, Türkiye, 2022, ISBN: 978-625-6404-16-8.

2. **K. Kumararaja**, C. Khiran Kumar, and B. Sivaraman, "Thermal performance predictions on a heat pipe charged with hybrid nanofluid using deep network's regression technique," National Conference on Engineering Applications of Alternate Fuels, Sustinable Energy and Bio-Materials (NCASB23), Annamalai University, Annamalainagar, 2023, ISBN: 978-93-92537-58-5 **(National).**

3. **Kumararaja, K.,** and B. Sivaraman, "Optimizing heat pipe outlet temperature with hybrid nanofluids through deep neural network," 12th International Mardin Artuklu Scientific Researches Conference, Mardin, Türkiye, 2024, ISBN: 978-625-367-821-0.

4. Siddiqua, A., Shnaeen, A.H., Begam, S.S., **Kumararaja, K.** and Saipramod, A., 2025, January. Real Time Network Traffic Classification based on Multimodal Semantic Collaborative Network. In 2025 International Conference on Intelligent Systems and Computational Networks (ICISCN) (pp. 1-5). IEEE. **(SCOPUS only)**

5. Obidhusin, S., Chandra, N.S., Balamurugan, D. and **Kumararaja, K.,** 2025, February. Classification of System Failures in Cyber-Physical Systems Using Heterogeneous Edge Enhanced Graph Attention Networks. In 2025 3rd International Conference on Integrated Circuits and Communication Systems (ICICACS) (pp. 1-6). IEEE. **(SCOPUS only)**

6. Umamaheswari, B., Hassan, M.M., **Kumararaja, K.,** Yadav, K., Pushkarna, G. and Saxena, A.K., 2025, February. Blockchain for Supply Chain Excellence: Transparency and Efficiency in Global Networks. In 2025 International Conference on Technology Enabled Economic Changes (InTech) (pp. 183-188). IEEE. **(SCOPUS only)**

7. **Kumararaja, K.,** "Neural network-based prediction of heat pipe outlet temperature using optuna hyperparameter optimization," 9th International conference on multidisciplinary scientific studies, Istanbul, Türkiye, 2025, ISBN: 979-8-89695-124-7.

8. **Kumararaja, K.,** "Neural network-based prediction of outlet temperature in heat pipe using alumina nanofluid," 9th International conference on multidisciplinary scientific studies, Istanbul, Türkiye, 2025, ISBN: 978-93-49818-03-3 **(National).**

Book/ Book Chapter Details

Book Chapters:
1. Endla, P., Suresh, K., Devi, P.P., Chellam, J.R., Vurukonda, N. and **Kumararaja, K.,** 2025, May. Emotionally Intelligent AI Powered Customer Experience Optimization with Deep Learning Based Sentiment Analysis and Engagement Metrics. In International Conference on Sustainability Innovation in Computing and Engineering (ICSICE 2024) (pp. 565-575). Atlantis Press.

2. Venkata Narasareddy Annapareddy, P. Kiran Kumar, R. S. Sabeenian, M. Ambika, Allam Balaram, and **Kumararaja, K.,** 2025, June. Artificial Intelligence Infused Real Time Interaction Systems for Next Generation Retail Experiences Personalized Consumer Insights and Augmented Shopping Journeys. In Proceedings of the International Conference on Sustainability Innovation in Computing and Engineering (ICSICE 24) (Vol. 120, p. 208). Springer Nature.

Funded Project Details

State Level:
1. **Kumararaja, K.,** Anbarasan. S, Kamalesh. R, Sakthivel. D and Vishnu. P. "Development of a High-Efficiency Heat Exchanger Using Phase Change Materials". (2024). Student Project Scheme (2024-25). TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY.

Patent Details

National:
1. Saravanan, Somasundaram & Murugan, G. & Velmurugan, P. & Karthikeyan, Duraisamy & Manikandan, S. & Sivakumar, K. & **Kumararaja, K..** (2023). SOLAR BIOMASS INTEGRATED CROP DRYER **(Design).**

2. G. Rajeswarappa, D. Pravin Kumar, R. Sudha, T. Balachander, J. Kumar, **Kumararaja, K.** and P. Meenalochini.. (2024). PORTABLE RENEWABLE ENERGY HARVESTING TOOLKIT FOR IOT-CONNECTED SMART DEVICES, **(Design).**

3. New Prince Shri Bhavani College of Engineering and Technology, & Sreedhar, R. & Sai Charan, P. S. & Anbarasan, S. & Kamalesh, R. & **Kumararaja, K..** (2025). DESIGN AND OPTIMIZATION OF TRANSMISSION SYSTEMS IN ELECTRIC VEHICLE **(Utility).**

4. New Prince Shri Bhavani College of Engineering and Technology, & Karthikeyan M, & Aswin Vishvaraj, P. & Monish Kumar, A. & **Kumararaja, K..** (2025). ANALYSIS OF THE THERMAL PERFORMANCE OF ALUMINIUM NANOFLUID USING PARALLEL AND COUNTER FLOW HEAT EXCHANGERS **(Utility).**

Membership Details

National:
1. Indian Society for Heat and Mass Transfer (ISHMT) | Life Member | ID: 1793
2. Institution of Green Engineers (IGEN) | Member

International:
1. Institute of Electrical and Electronics Engineers (IEEE) | Member | ID: 101238738

Other Details

1. Active SWAYAM-NPTEL contributor.
   a. NPTEL Discipline Star.
   b. NPTEL Motivated Learner.
   c. NPTEL Domain Scholar – Faculty Domain (Fundamental).
2. Actively participating in FDPs, PDPs, STTPs, Conferences, Seminars and Workshops.
3. Actively contributing as a Reviewer in Conferences and Peer-reviewed Journals.