Dr.T.Mohanraj

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Dr.T.Mohanraj received B.E, M.E & Ph.D. Degrees from Anna University, Chennai.

His area of interest are Mechatronics, Condition monitoring, Tribology, Robotics & Automation, Control Engineering, Manufacturing Systems.

T.Mohanraj received the "Certified LabVIEW Associate Developer" certification from National Instruments, Bangalore and received "Best faculty award – 2016" from Kongu Engineering College, Erode.

He is an Associate Member of Institution of Engineers (India) – IE(I) and a Member of International Association for Engineers (IAENG).

Research Expertise

Condition monitoring, Tribology, Robotics & Automation, Control Engineering, Manufacturing Systems, Optimization techniques, Surface coatings.

Funded Projects

- UGC – MRP : Wear prediction of multipoint cutting tool using sensor fusion model based on adaptive neuro fuzzy inference system (Completed)

Seminar / workshop / FDP organized

- Organized a Faculty Development Programme on "Emerging trends and advances in programmable automation controllers" funded by AICIE (Rs.5.50 Lakhs) during 20th April to 03rd May 2015.

- Organized a Seminar on "Evolutionary Humanoid Robotics" funded by DST-SERB (Rs.50,000.00) during 30th & 31st October 2015.
- Organized a Seminar on "Engineering in Bio medical Devices" funded by DBT (Rs.25,000.00) during 08th January 2016.

Teaching

- Mechatronics
- Design of Machine Elements
- Industrial Robotics
- Metrology and Measurements
- Automotive Electronics
- Fluid Power systems
- Rapid prototyping and Tooling
- Virtual Instrumentation
- Microfluidics and BioMEMS

Publications in Journals

1) Mohankumar, P., Ajayan, J., **Mohanraj, T**., & Yasodharan, R. (2021) Recent developments in biosensors for healthcare and biomedical applications: A review. *Measurement*, *167*, 108293. (SCI / SCOPUS indexed)
2) Moganapriya, C., Rajasekar, R., Kumar, P. S., **Mohanraj, T.,** Gobinath, V. K., & Saravanakumar, J. (2020). Achieving machining effectiveness for AISI 1015 structural steel through coated inserts and grey-fuzzy coupled Taguchi optimization approach. *Structural and Multidisciplinary Optimization*, 1-18. (SCI/SCOPUS indexed)
3) **Mohanraj T,** Yerchuru J, Krishnan H, Nithin Aravind RS, Yameni R (2020) Development of tool condition monitoring system in end milling process using wavelet features and Hoelder's exponent with machine learning algorithms. Measurement:108671. doi:https://doi.org/10.1016/j.measurement.2020.108671 (SCI / SCOPUS indexed)
4) **Mohanraj, T.,** Deepesh, T., Dhinesh, R., Jayaprakash, S., & Sai Krishna, S. (2020). Design and analysis of a strain gauge based eight-shaped elliptical ring dynamometer for

milling force measurement. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, 0954406220967681. (SCI / SCOPUS indexed)

5) Prabhu, S. R., Ilangkumaran, M., & **Mohanraj, T.** (2020). 3D Printing of automobile spoilers using MCDM techniques. *Materials Testing*, *62*(11), 1121-1125. (SCI/SCOPUS indexed)
6) Suganeswaran, K., Parameshwaran, R., **Mohanraj, T**., & Radhika, N. (2020). Influence of secondary phase particles Al2O3/SiC on the microstructure and tribological characteristics of AA7075-based surface hybrid composites tailored using friction stir processing. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, 0954406220932939. (SCI/SCOPUS indexed)
7) Sreenivasan, M., Kumar, M. D., Krishna, R., **Mohanraj, T**., Suresh, G., Kumar, D. H., & Charan, A. S. (2020). Finite element analysis of coil spring of a motorcycle suspension system using different fibre materials. *Materials Today: Proceedings*. (SCOPUS indexed)
8) Tamilvanan, A., Balamurugan, K., **Mohanraj, T**., Selvakumar, P., & Madhankumar, B. (2020). Parameter optimization of copper nanoparticle synthesis by electrodeposition process using RSM and CS. *Materials Today: Proceedings*. (SCOPUS indexed)
9) **Mohanraj, T**., Shankar, S., Rajasekar, R., & Uddin, M. S. (2020). Design, development, calibration, and testing of indigenously developed strain gauge based dynamometer for cutting force measurement in the milling process. *Journal of Mechanical Engineering and Sciences*, *14*(2), 6594-6609. (SCOPUS indexed)
10) **Mohanraj, T.,** Shankar, S., Rajasekar, R., Sakthivel, N.R., Pramanik, A. (2020). Tool condition monitoring techniques in milling process - a review, *Journal of Materials Research and Technology*, 9(1), 1032-1042. DOI:10.1016/j.jmrt.2019.10.031(SCI / SCOPUS indexed) **[IF:5.27]**
11) Vijay Anand, M., Vijayakumar, K. C. K., & **Mohanraj, T.** (2020). Evaluation of shoulder pain among the workers involved in ironing process using Surface Electromyography. *Journal of Medical Imaging and Health Informatics*, 10(1), 86-92. DOI:10.1166/jmihi.2020.2846 (SCI/SCOPUS indexed) **[IF 0.549]**

12) Thangarasu, SK., Shankar, S., **Mohanraj, T**., Devendran, K. (2020). Tool wear prediction in hard turning of EN8 steel using cutting force and surface roughness with artificial neural network. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, 234 (1), 329-342. DOI: 10.1177/0954406219873932 (SCI/SCOPUS indexed) **[IF 1.359]**
13) Shankar, S., **Mohanraj, T**., & Pramanik, A. (2019). Tool Condition Monitoring While Using Vegetable Based Cutting Fluids during Milling of Inconel 625. *Journal of Advanced Manufacturing Systems*. 18(4), 563-581. DOI:10.1142/S02196867 1950029X (SCOPUS indexed) **[IF: 0.44]**
14) Shanmugam. A, Krishnamurthy. K, & **Mohanraj. T.,** (2019). Experimental Analysis on the Performance of Abrasive Waterjet Cutting of Glass Fiber Reinforced Plastics Using Response Surface Methodology. *Journal of the Balkan Tribological Association*. 24(4), 1029-1038. (SCOUPS Indexed).
15) **Mohanraj, T.,** & Dinesh kumar.M, (2019). The Process Parameter Optimization for Grey Cast Iron in Turning Process using Response Surface Methodology. *International Journal of Mechanical and Production Engineering Research and Development*, 9(2), 997 – 1006. (SCOPUS indexed)
16) P.M.Arunkumar, **T.Mohanraj**. (2019). Optimization of Milling Parameters using Vegetable Oil by Measuring Vibration Signal. *International Journal of Innovative Technology and Exploring Engineering*, 8(8), 706 – 711. (SCOPUS indexed)
17) Shanmugam, A., Krishnamurthy, K., & **Mohanraj, T**. (2019). Experimental study of surface roughness and taper angle in abrasive water jet machining of 7075 aluminum composite using response surface methodology. *Surface Review and Letters*, 1950112. DOI: 10.1142/S0218625X19501129 (SCI/SCOPUS indexed) **[IF:0.748]**
18) Shankar, S., **Mohanraj, T**., & Rajasekar, R. (2019). Prediction of cutting tool wear during milling process using artificial intelligence techniques. *International Journal of Computer Integrated Manufacturing*, *32*(2), 174-182. (SCI/SCOPUS indexed) **[IF:2.090]**
19) **Mohanraj, T.**, Shankar, S., Rajasekar, R., Deivasigamani, R., & Arunkumar, P. M. (2019). Tool condition monitoring in the milling process with vegetable based cutting fluids using vibration signatures. *Materials Testing*, *61*(3), 282-288. (SCI/SCOPUS indexed) **[IF 0.573]**

20) Shankar, S., **Mohanraj.T.** (2017). "Experimental investigation and process parameter optimization in milling of 7075 – T6 hybrid aluminium metal matrix composite using response surface methodology". *Journal of the Balkan Tribological Association*. 23(1): 124-138. (SCOPUS indexed)
21) Shankar, S., **Mohanraj.T**, Ponappa.K (2017). "Influence of vegetable based cutting fluids on cutting force and vibration signature during milling of aluminium metal matrix composites." *Jurnal Tribologi* 12: 1-17. (WoS indexed)
22) Shankar, S., **Mohanraj, T**. Thangarasu, S. K., (2016). "Multi-response milling process optimization using the Taguchi method coupled to grey relational analysis." *Materials Testing* 58.5: 462-470. (SCI/SCOPUS indexed) **[IF 0.573]**
23) Shankar, S., Thangarasu, S. K., **Mohanraj, T**., Pravien, D. S. (2015). "Prediction of cutting force in turning process: An experimental and fuzzy approach". *Journal of Intelligent & Fuzzy Systems*, *28*(4):1785-1793. (SCI/SCOPUS indexed) **[IF:1.637]**
24) Arulmozhivarman. J, Radhika. N., **Mohanraj. T** & Vairavel. M., (2019). The effect of bio-cutting fluids on surface roughness during end milling of A359 Aluminium alloy. *International Journal of Mechanical and Production Engineering Research and Development*, 9(2), 987 – 996. (SCOPUS indexed)
25) Suganeswaran,K., Parameshwaran,R, **Mohanraj,T,** & Meenakshipriya,B.,(2020). Process parameter optimization for the magnetic abrasive finishing of SS310s steel. *Materials Testing*, 62(2). 157-164. DOI:10.3139/120.111467 (SCI/SCOPUS indexed) **[IF 0.573]**
26) Tamilarasi, T., Rajasekar, R., Saminathan, K., Ravichandran, K., **Mohanraj, T**., Moganapriya, C., & Gobinath, V. K. (2020). Experimental investigation on the influence of carbon-based nanoparticle coating on the heat transfer characteristics of the microprocessor. *Journal of Composite Materials*, 54(1), 61-70. DOI: 10.1177/0021998319859926 (SCI/SCOPUS indexed) **[IF 1.755]**
27) **Mohanraj, T**., Arunkumar, S., Raghunath, M., & Anand, M. (2014). Mobile robot path planning using ant colony optimization. *International Journal of Research in Engineering and Technology*, *3*(11), 1-6.

Publications in Conferences

1) S.Shankar, **T. Mohanraj**. "Tool condition monitoring in milling using sensor fusion technique". *Malaysian International Tribology Conference*, November 2015. (Scopus indexed)
2) S.Shankar, **T.Mohanraj**, "Experimental analysis and Process parameter optimization in milling of Inconel 625 using Response Surface Methodology", *International Conference on Manufacturing Technology and Simulation 2017* IIT Madras, July 7-8, 2017. (Scopus indexed)
3) C. Sathishranganathan, R. Rajasekar, N. Saravanan, **T. Mohanraj** and K. V. Maheshkumar, "Investigation on Mechanical Properties of Aluminium 6063 with Basalt Powder", *International Conference on Nanotechnology : Ideas, Innovations and initiatives* - 2017, IIT Roorkee, December 06 -08, 2017.
4) P.Sethilvelmurugan, R.Rajasekar, **T.Mohanraj**, R.Manivannan, G.Sridharraj, "Investigation of Sound Particle Velocity and Vibration Signature During Turning Process", *International Conference on Sustainable Materials, Design and Applications 2018 (ICSMDA 2018)*, Kongu Engineering College, March 16-17, 2018.
5) S.Shankar, **T.Mohanraj**, R.Rajasekar, S.Deepanraj, P.Karthikeyan, S.Krishnakumar, "Tool condition monitoring using sensor fusion technique - a review*", International Conference on Sustainable Materials, Design and Applications 2018 (ICSMDA 2018)*, Kongu Engineering College, March 16-17, 2018.
6) **T.Mohanraj**, S.Shankar, R.Rajasekar, S.Dhamodharan, S.Aravindh, M.Ajay Kumar, "Experimental analysis and process parameter optimization in Milling of AISI 304 Austenitic stainless steel using Response Surface Methodology", *International Conference on Advances in Metallurgy, Materials, and Manufacturing (ICAMMM-2017 GCE Salem)*, 06 to 08th March 2017.
7) **T.Mohanraj**, B.Saravanan. "Throughput time reduction in OHT (Off Highway Trucks) main assembly line through fixture and modularity". *International Conference on Applied Mathematical Models*, PSG College of Technology, Coimbatore, January 2016.
8) **T.Mohanraj**, S.Shankar, R.Rajasekar, P.M.Arunkumar, " Optimization of process parameters using Taguchi's DOE for cutting force in Milling of 7075-T6 composite

Aluminium Alloy" *International conference on Sustainable Materials design and applications ICSMDA 2016*, Kongu Engineering College, March 18&19, 2016.

9) R.Rajasekar, **T.Mohanraj,** P.M.Arunkumar. "Influence of bio-oils as cutting fluid in tool Wear prediction for milling operation". *International Conference on Advances in Materials and Manufacturing - INTCOMM 2016*, Hindusthan College of Engineering and Technology, Coimbatore. February 2016.
10) **T.Mohanraj**, S.Arunkumar, J.Mohamed al ameen, J.Arun Kumar, G.Janarthanan. "Intelligent motorisd shopping droit". *International Conference on Advances in Materials and Manufacturing -INTCOMM 2016*, Hindusthan College of Engineering and Technology, Coimbatore, February 2016.
11) **T.Mohanraj**, S.Shankar, B.Saravanan, T.G.Sastikumar, "Design, development, and testing of a strain gauge based milling dynamometer for measurement of cutting force". *International Conference on Materials, Design and Manufacturing Process, ICMDM '16*, Anna University, Chennai February 17-19, 2016.
12) B.Saravanan, M. Mohamed Asfar, T.G.Sastikumar, **T.Mohanraj**, "Automatic Pineapple peeler", *International Conference on Advanced Engineering and technology for sustainable development, ICAETSD 2016*, Feb 19 -20, 2016.
13) **T.Mohanraj**, B.Saravanan. "Design and Fabrication of Automatic Dhoop Making Machine". *International Conference on Modern, Intelligent, and Green Manufacturing*, Erode Sengundhar Engineering College, Erode. December 2015.
14) **T.Mohanraj**, B.Saravanan. "Automatic Pesticide Spraying machine". *International Conference on Mathematical Computer Engineering ICMCE 2015*. VIT University, Chennai, December 14 & 15, 2015
15) **T. Mohanraj**, P.Anandakumar, M.K.Boopathi, B.Elango. "Some studies on mobile robot path planning – a review." *International Conference on Advances in Mechanical and Mechatronics Engineering,* Sri Krishna College of Engineering and Technology Coimbatore, December 2014.
16) **T. Mohanraj**, A.Muthu Krishnan, C. Naveen Kumar, R. Prasannababu. "Thermo mechanical analysis of single point cutting tool using fem approach". *International Conference on Advances in Mechanical and Mechatronics Engineering*, Sri Krishna College of Engineering and Technology Coimbatore, December 2014.

17) **T. Mohanraj**, S.Shankar, S.Eswararaj."Optimization of process parameters for surface roughness in milling based on response surface methodology". *International Conference on Advances in Mechanical and Mechatronics Engineering*, Sri Krishna College of Engineering and Technology Coimbatore, December 2014.

Book chapters

1) **Mohanraj. T**, Tamilarasi, T, Gopinath, VK, Moganapriya, C & Rajasekar, R. (2020). Fluid Power Actuators. *Actuators: Fundamentals, Principles, Materials and Applications*, 187-209.
2) Mohankumar A, Rajasekar. R, Gopinath, VK & **Mohanraj, T** (2020). Research Insights on the Development of Biosensors. In *Nanosensor Technologies for Environmental Monitoring* (pp. 33-48). Springer, Cham. https://doi.org/10.1007/978-3-030-45116-5_2
3) M. Harikrishna Kumar, C Moganapriya, R Rajasekar, **T Mohanraj,** (2020). Plant Fibre Based Biodegradable Green Composites. *Materials Research Foundations*, *68*.
4) Sakthivel R, **Mohanraj T**, Joseph Marshal, Baranitharan P, Tamilvanan A, Gomathi K, (2020), Book chapter on "*Emission Aspects of Biomass-Based Advanced Second Generation Bio-Fuels in IC Engines*" in *Recent Technologies for Enhancing Performance and Reducing Emissions in Diesel Engines*, IGI Global, DOI: 10.4018/978-1-7998-2539-5
5) Tamilvanan A, Balamurugan K, **Mohanraj T**, Selvakumar P, Ashok B, Sakthivel R, (2020), Book chapter on "*Influence of Nano-Particle Additives on Bio-Diesel-Fuelled CI Engines: A Review*" in *Recent Technologies for Enhancing Performance and Reducing Emissions in Diesel Engines*, IGI Global, DOI: 10.4018/978-1-7998-2539-5.
6) P.M. Arunkumar, T.Mohanraj, (2020), "*Tool condition monitoring system for milling process"*, Lambert Academic Publishing. ISBN: 978-620-0-53008-0