**Dr. T. MOHANRAJ**

Residential address: Office:

No.79, Pallapalayam Pirivu, Department of Mechanical Engineering,

Thottiyapalayam, Amrita School of Engineering,

V.Vellode Post, Erode – 638112. Amrita Vishwa Vidyapeetham,

Phone: +91-9842581696 Coimbatore - 641112.

E-Mail: mohanrajthangamuthu@gmail.com

[Scopus Author ID: 56805060900](http://www.scopus.com/inward/authorDetails.url?authorID=56805060900&partnerID=MN8TOARS)

Orcid ID: 0000-0002-4866-1428

https://scholar.google.co.in/citations?user=1CEBjFIAAAAJ&hl=en

**Career Objective**

I am looking for a full-time faculty in an academic institution where I can reveal my technical and experimental skills and contribute to the institution's productivity and myself.

**Teaching and research**

My main teaching interest lies in a multidisciplinary area related to Mechatronics. I intend to develop my interest in teaching Industrial Robotics, Automation and IoT, Fluid power systems, Automotive Electronics, Virtual Instrumentation, Robot programming, Python programming, Control Engineering, and Smart manufacturing. My research specialization is in the field of Sensor Fusion Techniques. I have developed a milling tool dynamometer to measure the cutting force during the milling process. Currently, working in drones, mobile robot path planning, setting of Tool Condition Monitoring system (TCMs) for milling process with vibration signatures using machine learning algorithms with IoT, digital twin based tool condition monitoring system, and ADAS.

**Educational details**

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| --- | --- |
| **Jan' 2013 - Nov 2017**  | **Ph.D. - Mechatronics Engineering,** Anna University, Chennai**Supervisor:** Dr.S.Shankar M.E., Ph.D. (IITM)**Title: Tool Condition Monitoring in milling process using sensor fusion technique** |
| **June 2010 - May 2012** | **M.E-Mechatronics Engineering****CGPA 9.20** (First Class with distinction – Gold medal)Kongu Engineering College Perundurai, Erode - 638060. Anna University, Chennai.**Dissertation: Mobile robot path planning using Ant Colony Optimization Algorithm** |
| **July 2005 - May 2009** | **B.E- Mechatronics Engineering****83 %** (First Class with Distinction)Kongu Engineering College Perundurai, Erode - 638060. Anna University, Chennai. |

**Teaching / Research Experience**

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| **Teaching** **From 01st July 2021 to date** | Assistant Professor (S.G) at Amrita School of Engineering, Coimbatore, India. Currently teaching Python Programming, Automation & IoT, Industrial Robotics, and Instrumentation & Control systems for undergraduate Mechanical Engineering students and Smart Manufacturing for postgraduate students.  |
| **From 28th June 2018- 30th June 2021 (3 Years)** | Assistant Professor (Sr. G) at Amrita School of Engineering, Coimbatore, India. Taught Mechatronics, Metrology & measurements, Industrial Robotics, and Control Engineering for undergraduate Mechanical Engineering students. |
| **From 25th May 2012- 27th June 2018 (6 Years)** | **Assistant Professor** at Kongu Engineering College, Tamilnadu, India. Taught Industrial Robotics, Fluid power Systems, Automotive Electronics, Machine Vision and Image processing for undergraduate students & Rapid prototyping and Virtual Instrumentation for postgraduate students.  |
| **Research****From 26th June 2009 – 16th August 2010 (1 year & 1 month)** | **Project Fellow** at Kongu Engineering College, Tamilnadu, India.UGC - MRP: "Enhancement of pH Neutralization Process in Effluent treatment process using ANN." Involved in the design, development, and testing of various control algorithms for the pH Neutralization process in the pilot plant. |

**Awards and achievements**

* Received "**Publication Excellence award**" from Amrita Vishwa Vidyapeetham (2021)
* Received **Gold medal** in M.E. Mechatronics Engineering
* Received "**Best faculty**" award from Kongu Engineering College during the academic year 2015-2016
* Received **Certified LabVIEW Associate Developer (CLAD) certification** from M/s. National Instruments, Bangalore (2016)
* Received a **grant** worth Rs.11.42 Lakhs from the University Grants Commission for the Major Research Project entitled "*Wear prediction of a multipoint cutting tool using Sensor fusion model based on Adaptive Neuro-Fuzzy inference System*" – Co-Principal investigator (Completed)
* Executed a student project worth Rs.7,500 from TNSCST, Tamilnadu, entitled "*Development of tool condition monitoring system for milling process using wavelet features and machine learning algorithms*" (Completed)

**Research Projects executed/ Submitted**

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| --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Title of the Project** | **Sanction Ref. No. & date** | **Name of the P.I. / Co-PI(s)** | **Name of the Funding agency** | **Total amount sanctioned** | **Status** |
|  | Wear prediction of a multipoint cutting tool using sensor fusion model based on an Adaptive Neuro-Fuzzy inference System | F.No.43-443/2014 (S.R.)&01.07. 2015 MRP13729 | Dr.R.RajasekarT. Mohanraj | UGC (MRP Scheme) | 11,42,000.00 | Completed |
|  | Design and development of a novel tool condition monitoring system for milling process using particle velocity sensor | -- | Dr. T. Mohanraj | DST-SERB | 17,25,000.00 | Not recommended |
|  | Modernization of Instrumentation and Control Engineering Laboratory for Mechatronics system design applications | -- | Dr.S.Thirumalini, Dr. T. Mohanraj | AICTE – MODOROB | 17,24.098.00 | Not recommended |
|  | Development of online tool condition monitoring system for milling process using particle velocity signal with the Internet of Things | -- | Dr. T. Mohanraj | DST-SERB | 20,75,000.00 | Not recommended |
|  | Design and testing of indigenously developed dynamometer for cutting force measurement in the milling process | -- | Dr.S.Thirumalini,Dr. T. Mohanraj | TNSCST Science & Technology | 4,00,000.00 | Not recommended |
|  | Development of tool condition monitoring system for milling process using wavelet features and machine learning algorithms | Lr. No. TNSCST/SPS/AR/2019-2020 dated 18.03.2020  | Dr. T. Mohanraj | TNSCST-SPS | 7,500.00 | Completed |
|  | Cow-Kin: Smart and precision animal farming for the health and welfare of the cattle | -- | Dr. S. Rammohan, Dr. R.Karthika Dr. V.Anantha Narayanan, Dr.T. Mohanraj  | SSUP India Expression-of-Interest | 20,00,000.00 | Sanctioned |
|  | Risk assessment of Work-related Musculoskeletal Disorder among the Sewing Machine Operators Using a Sensor-based Machine Learning Model | -- | Dr.T.Mohanraj,Dr.K.Rameshkumar,Dr.KV.Nisha | DST-SERB (CRG) | 29,35,965.00 | Submitted |
|  | Investigations on solidification cracking behavior of Ultrasonic aided fusion-welded AZ91 Magnesium alloy using nanocomposite filler composite wire fabricated through powder metallurgy  | -- | Dr.T.Satishkumar, Dr.M.Ramu,Dr.T.Mohanraj | DST-SERB (CRG) | 24,12,000.00 | Submitted |

**Products developed:**

* **Milling tool dynamometer**
* **IoT based walking assistance for the visually impaired person**

**PUBLICATIONS:**

**International Journals : 39**

**International conferences : 17**

**Book chapters : 14**

**No. of Ph.D. scholars : 02 (Pursuing)**

 **Publications in International Journals**

1. Suganeswaran, K., Muthukumar, P., Parameshwaran, R., Nithyavathy, N., **Mohanraj, T.,** and Deepandurai, K., 2022. Optimization of FSP parameters to fabricate AA7075-based surface composites using Taguchi technique and TOPSIS approach. *Journal of Adhesion Science and Technology*, pp.1-25. DOI: [10.1080/01694243.2022.2046247](https://doi.org/10.1080/01694243.2022.2046247) (Article in Press) (SCI / SCOPUS indexed) **[IF 2.077]**
2. M. Sam, N. Radhika, V. Sidvilash, **T. Mohanraj** (2022), [Investigation on the Mechanical and Wear Behaviour of Al-6082-BN-B4C-Corn Cob Ash Hybrid Composites](https://www.tribology.rs/journals/aips/1165.pdf), *Tribology in Industry*, pp. 1-16, DOI: 10.24874/ti.1165.08.21.11. (Article in Press) (SCOPUS indexed) **[IF 1.41]**
3. **Mohanraj, T**., Tamilvanan. A (2022). Decision support system for tool condition monitoring in milling process using artificial neural network. *Journal of Engineering Researc*h. DOI: [10.36909/jer.9621](https://doi.org/10.36909/jer.9621)  (SCI / SCOPUS indexed)
4. **Mohanraj, T**. (2021). Application of A.I. techniques for modeling the performance measures in milling of 7075-T6 hybrid aluminum metal matrix composites. *International Journal of Modeling, Simulation, and Scientific Computing*, 2250034. [DOI:10.1142/S1793962322500349](https://doi.org/10.1142/S1793962322500349) (SCOPUS indexed)
5. Shanmugam, A., **Mohanraj, T**., Krishnamurthy, K., & Gur, A. K. (2021). Multi-Response Optimization On Abrasive Waterjet Machining Of Glass Fiber Reinforced Plastics Using Taguchi Method Coupled With TOPSIS. *Surface Review and Letters*, *28*(12), 2150120.
6. Suganeswaran. K, Parameshwaran, R., Nithyavathy. N, Deepandurai. K., **Mohanraj. T.,** & Muthukumar, P. (2021). Assessment of erosion rate on AA7075 based surface hybrid composites fabricated through friction stir processing by Taguchi optimization approach. *Journal of Adhesion Science and Technology*, 36(6), pp. 584-605. DOI:[10.1080/01694243. 2021.1929018](https://doi.org/10.1080/01694243.2021.1929018) (SCI / SCOPUS indexed) **[IF 2.077]**
7. Moganapriya, C., Rajasekar, R., **Mohanraj, T.,** Gobinath, V. K., Kumar, P. S., & Poongodi, C. (2021). Dry Machining Performance Studies on TiAlSiN Coated Inserts in Turning of AISI 420 Martensitic Stainless Steel and Multi-Criteria Decision-Making Using Taguchi-DEAR Approach. *Silicon*, 1-14. doi.org/10.1007/s12633-021-01202-4 (SCI / SCOPUS indexed) **[IF 2.670]**
8. Sakthivel, R, **Mohanraj, T.,** Ganeshkumar, P, Sukhapradha, V & Anoop,R (2021). Optimization of performance and emission characteristics of compression ignition engine powered with Azolla pinnata fuel blends–A response surface methodology approach. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 1-10. <https://doi.org/10.1080/15567036.2021.1923866>. (SCI / SCOPUS indexed) **[IF 3.447]**
9. 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) **[IF 3.927]**
10. **Mohanraj T,** Yerchuru J, Krishnan H, Nithin Aravind RS, Yameni R (2021) Development of tool condition monitoring system in end milling process using wavelet features and Hoelder's exponent with machine learning algorithms. *Measurement*, 173, 108671. doi:https://doi.org/10.1016/j.measurement.2020.108671 (SCI / SCOPUS indexed) **[IF 3.927]**
11. **Mohanraj, T.,** Deepesh, T., Dhinesh, R., Jayaprakash, S., & Sai Krishna, S. (2021). 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*, 235(17), 3125-3134. (SCI / SCOPUS indexed) **[IF 1.762]**
12. Moganapriya, C., Rajasekar, R., Kumar, P. S., **Mohanraj, T**., Gobinath, V. K., & Saravanakumar, J*.* (2021) Achieving machining effectiveness for AISI 1015 structural steel through coated inserts and grey-fuzzy coupled Taguchi optimization approach. *Structural and Multidisciplinary Optimization*, 63(3), 1169-1186 https://doi.org/10.1007/s00158-020-02751-9 (SCI/SCOPUS indexed) **[IF 4.542]**
13. Suganeswaran, K., Parameshwaran, R., **Mohanraj, T**., & Radhika, N. (2021). 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*, 235(1): 161-178. (SCI/SCOPUS indexed) **[IF 1.762]**
14. **Mohanraj, T**., Ragav, P., Gokul, E. S., Senthil, P., & Anandh, K. R. (2021). Experimental Investigation of coconut oil with nano boric acid during milling of Inconel 625 using Taguchi-Grey relational analysis. *Surface Review and Letters*. 28(03), 1-11. DOI:[10.1142/S0218625X21500086](https://doi.org/10.1142/S0218625X21500086) (SCI/SCOPUS indexed) **[IF:1.152]**
15. **Mohanraj,T**, Jayanthi Yerchuru, Nithin Aravind Ramasamy Shanmugam, Yameni Ravi, and Ali Kaya Gur. (2021) "Multi-response optimization of End-milling parameters for Inconel 625 using Taguchi coupled with TOPSIS." *Surface Review and Letters*: 20(10), 2150096. [doi.org/10.1142/S0218625X21500967](https://doi.org/10.1142/S0218625X21500967). (SCI/SCOPUS indexed) **[IF:1.152]**
16. Punniyawarthana, S., & **Mohanraj, T.** (2021). Design and Analysis of Two-Link Discrete Flexible Manipulator. In *IOP Conference Series: Materials Science and Engineering* (Vol. 1055, No. 1, p. 012057). IOP Publishing.
17. Madheswaran, D. K., **Mohanraj, T**., Gopi, S., Krishna, R., Mohan, S., Jayakumar, A., & Hussain, S. T. N. (2021). A Comparative Simulation Analysis of Conventional and Composite Leaf Spring. *In Advances in Manufacturing Engineering and Materials II: Proceedings of the International Conference on Manufacturing Engineering and Materials (ICMEM 2020), 21–25 June*, 2021, Nový Smokovec, Slovakia (pp. 270-281). Springer International Publishing. (SCOPUS indexed)
18. **Mohanraj, T**., & Shanmugam, A. (2021, July). Prediction of tool wear in milling of Inconel 625 using and integrated kurtosis-based algorithm with vibration signals. In *Journal of Physics: Conference Series* (Vol. 1969, No. 1, p. 012048). IOP Publishing. (SCOPUS indexed)
19. Tamilvanan, A., Balamurugan, K., **Mohanraj, T**., Selvakumar, P., & Madhankumar, B. (2021). Parameter optimization of copper nanoparticle synthesis by electrodeposition process using RSM and C.S. *Materials Today: Proceedings*. 45, 751-756. DOI:[10.1016/j.matpr.2020.02.801](https://doi.org/10.1016/j.matpr.2020.02.801) (SCOPUS indexed)
20. 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*. 33(1): 275-279 DOI:[10.1016/j.matpr.2020.04.051](https://doi.org/10.1016/j.matpr.2020.04.051) (SCOPUS indexed)
21. ***Ali Kaya Gür,*** Semih Taskaya, S.Shankar, **Mohanraj T** (2020), FEA of SAW penetration of Ramor 500 steel. *Materials Testing* 62(12): 1192-1198 (SCI / SCOPUS indexed) **[IF 1.589]**
22. Raghavendra Prabhu S, Ilangkumaran M, **Mohanraj T** (2020) 3D Printing of automobile spoilers using MCDM techniques. *Materials Testing* 62 (11):1121-1125 (SCI / SCOPUS indexed) **[IF 1.589]**
23. **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 Sciences*, 14(2), 6594-6609 (SCOPUS indexed)
24. **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:5.039]**
25. 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 indexed) **[IF 0.659]**
26. 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 1.762]**
27. 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 1.589]**
28. 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/S021968671950029X (SCOPUS indexed)
29. 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*. 25(4), 1038-1051. (SCOPUS Indexed).
30. **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)
31. Arunkumar, PM, **Mohanraj,T**. (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)
32. 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*, 27(03), 1950112. DOI: 10.1142/S0218625X19501129 (SCI/SCOPUS indexed) **[IF:1.152]**
33. 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:3.205]**
34. **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 1.589]**
35. 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)
36. 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)
37. 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)
38. 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 1.589]**
39. 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:1.739]**
40. **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.
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.
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. Tamilvanan, A., B. Ashok, **T. Mohanraj**, P. Jayalakshmi, P. Dhamodharan, and R. Sakthivel. "Effect of engine operating parameters in NOx reduction." In *NOx Emission Control Technologies in Stationary and Automotive Internal Combustion Engines*, pp. 125-153. Elsevier, 2022.
2. Sakthivel, R., S. Sidharth, P. Ganesh Kumar, **T. Mohanraj**, A. Tamilvanan, and B. Ashok. "Effect of engine design parameters in NOx reduction." In *NOx Emission Control Technologies in Stationary and Automotive Internal Combustion Engines*, pp. 95-124. Elsevier, 2022.
3. **Mohanraj T**, Jegadeeshwaran, R, Book chapter on "*Introduction to Industry 4.0*" in Tribology of Polymer and Polymer Composite for Industry 4.0, Springer.
4. **MohanrajT**, Jayanthi Yerchuru, Nithin Aravind RS, Yameni. R, Book chapter on "*Machine learning: an Expert thinking system*" in [Handbook of Smart Materials, Technologies, and Devices: Applications of Industry 4.0](https://meteor.springer.com/project/dashboard.jsf?id=1100), Springer.
5. [Tamilvanan Ayyasamy](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Ayyasamy%2C+Tamilvanan), [Abubakkar Abdul Jaffar](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Jaffar%2C+Abubakkar+Abdul), [Selvakumar Pandiyaraj](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Pandiyaraj%2C+Selvakumar), [**Mohanraj Thangamuthu**](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Thangamuthu%2C+Mohanraj), [Thangavel Palaniappan](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Palaniappan%2C+Thangavel). (2021). Nanostructured Materials and Their Processing Techniques. *Materials for Solar Energy Conversion: Materials, Methods and Applications*, 269-298.
6. **Thangamuthu, Mohanraj,** Tamilvanan Ayyasamy, and Santhosh Sivaraj. "Multi‐Junction Solar Cells." *Materials for Solar Energy Conversion: Materials, Methods and Applications* (2021): 87-106.
7. Ramu M, **Mohanraj T**, and Lovin K John, Book chapter on "*Influence of process parameters on the mechanical properties of additive manufactured part using fused deposition modeling*" in [Handbook of Smart Materials, Technologies, and Devices: Applications of Industry 4.0](https://meteor.springer.com/project/dashboard.jsf?id=1100). Springer.
8. Ramu M, and **Mohanraj T**, Book chapter on "*Mechanical Behavior of Additive Manufactured Porous Biocomposites*" in Mechanical and dynamic properties of biocomposites, Wiley.
9. **Mohanraj T**, Radhika, N, (2021), Book chapter on "*Biolubricants*" in Tribology and Sustainability, DOI:10.1201/9781003092162. CRC Press, Taylor & Francis, USA.
10. Sakthivel, R., **Mohanraj, T.**, Abbhijith, H., & Ganesh Kumar, P. (2021). Chapter on *"Use of Optimization Techniques to Study the Engine Performance and Emission Analysis of Diesel Engine"* in *Liquid Biofuels: Fundamentals, Characterization, and Applications*, 639-679. Wiley
11. **Mohanraj. T**, Tamilarasi, T, Gopinath, VK, Moganapriya, C & Rajasekar, R. (2020). Book chapter on "*Fluid Power Actuators*" in *Actuators: Fundamentals, Principles, Materials and Applications*, [https://doi.org/10.1002/9781119662693.ch8 pp187-209](https://doi.org/10.1002/9781119662693.ch8%20pp187-209). Wiley.
12. Mohankumar A, Rajasekar. R, Gopinath, VK & **Mohanraj, T** (2020). Book chapter on "*Research Insights on the Development of Biosensors*" in *Nanosensor Technologies for Environmental Monitoring* (pp. 33-48). Springer. <https://doi.org/10.1007/978-3-030-45116-5_2> (Scopus indexed)
13. M. Harikrishna Kumar, C Moganapriya, R Rajasekar, **Mohanraj, T** (2020). *Plant Fibre Based Biodegradable Green Composites*. *Materials Research Foundations*, *68*.
14. 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 I.C. Engines*" in *Recent Technologies for Enhancing Performance and Reducing Emissions in Diesel Engines*, IGI Global, DOI: 10.4018/978-1-7998-2539-5
15. 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.
16. P.M. Arunkumar, **Mohanraj, T** (2020), "*Tool condition monitoring system for milling process"*, Lambert Academic Publishing. ISBN: 978-620-0-53008-0

**Seminars / workshops /FDP**

**No. of programs organized : 04 (FDP-2 & Seminar-2)**

**No. of programs attended : 16**

**No. of webinars attended : 25**

**Industrial consultancy**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Title of the Consultancy work** | **Name and Address of the Organization** | **Role played** | **Period** | **Amount Rs.** |
|  | Polymer Sack roll Cutting and collecting machine | M/s.Venbro Polymers, Erode | Coordinator | June 2016 – March 2017 | 29,868.00 |

**Non-Formal / Value added courses offered**

* Modeling & Simulation Using Pro-E and ANSYS
* Graphical System Design using LabVIEW core I and II
* Graphical System Design – Data acquisition and signal conditioning
* Graphical System Design Platform - Real-time and FPGA based Embedded System Design
* Advanced Programming – Industrial Robot ABB IRB 1410

**Professional Affiliations**

* Institutions of Engineers (India) - AM 155680-3
* International Association for Engineers - 140970

**Courses developed**

* Industrial Robotics
* Automation and IoT
* Instrumentation and control system
* Smart Manufacturing
* Advanced Robotics
* Mechatronics System Design
* Micromanufacturing

**Training programs organized**

* Modeling & simulation using MATLAB & Soft tools
* Mechatronics System Design
* Build your own Bot- Tracker
* Modern Pneumatics Control

**Workshops/Events organized through Robotics club**

* Electronics for you - Basic Electronics
* Tracker – basic line follower bot
* Design and fabrication of PCB
* Design of bots
* Expelliarmus – Robowar – National Level Robotic competition

**Online Courses completed**

* Research writing –IIT Kharagpur (2017 NPTEL)
* Robotics - IIT Kharagpur (2019 NPTEL)
* Machine Learning for All - University of London (2020 COURSERA)
* Programming for Everybody (Getting Started with Python) - University of Michigan (2020 COURSERA)

**Technical Skills**

Data acquisition and processing: N.I. – LabVIEW, Node MCU 8266, RPi

Sensors and Instrumentation: Microphone, Microflown, Accelerometer, and strain gauge based

dynamometer

Pneumatic circuit design: Automation Studio, Fluid Sim-P

**Other responsibilities**

* OBE Coordinator
* DAAC – Member
* IQAC Member
* BoS – Member
* Automation & IOT Lab Incharge
* Robotics and Machine Vision Lab Incharge (@ Kongu Engg College)
* Robotics club Incharge (@ Kongu Engg College)

**Personal Details**

* Date of Birth : 27th April 1988
* Languages known : English and Tamil
* Marital status : Married