

Curriculum - Vitae

Dr. Rajendra Machavaram,
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Areas of Interest

- Farm Power and Renewable Energy
- Artificial Intelligence
- Evolutionary Algorithms
- Machine Design
- Structural Engineering Optimization

Academic Qualification

1. Doctorate (Ph. D.) in Machine Design from Department of Mechanical Engineering, Indian Institute of Technology Madras, India in 2014 with 9.23 CGPA.
2. Masters (M. Tech.) in Farm Machinery and Power from Agricultural and Food Engineering Department, Indian Institute of Technology Kharagpur, India in 2008 with 8.88 CGPA.

Work Experience

1. Agricultural and Food Engineering Department, IIT Kharagpur, India. As Assistant Professor from July 2016 to present.
2. Agricultural and Food Engineering Department, IIT Kharagpur, India. As Visiting Faculty from October 2014 to July 2016 (1 year 10 months).
3. Department of Mechanical Engineering, Sri Ramaswamy Memorial (SRM) University, Chennai, India. As Assistant Professor from June 2014 to October 2014 (5 months).
4. Department of Mechanical Engineering, IIT Madras, Chennai, India. As Pre-Post doctoral Fellow from April 2014 to June 2014 (3 months).
5. Department of Mechanical Engineering, IIT Madras, Chennai, India. As Research Scholar from December 2009 to April 2014 (4 years 5 months).
6. Tractors and Farm Equipment (TAFE), Ltd., Chennai, India. As Research and Development (R&D) Member from June 2008 to April 2010 (1 year 11 months).

Teaching Experience - Main Courses Undertaken

At the undergraduate (UG) level:

1. ME1012: Machines and Mechanisms at SRM University
2. ME0301: Fundamentals of Vibration and Noise at SRM University
3. ME1018: Manufacturing and Assembly Drawing at SRM University
4. ME0321: Machine Dynamics Laboratory at SRM University

5. AG31007: Theory and Design of Machine Elements at IIT Kharagpur along with Prof. V. K. Tewari
6. AG40017: Advances in Tractor Hydraulics and Transmission-IIT Kharagpur along with Prof. V. K. Tewari
7. AG40009: CAD and Simulation of Agricultural Machinery at IIT Kharagpur along with Prof. V. K. Tewari
8. AG31002: Tractor & Power Systems at IIT Kharagpur along with Prof. V. K. Tewari
9. AG39002: Tractor & Power Systems Laboratory at IIT Kharagpur along with Prof. V. K. Tewari

At the postgraduate (PG) level:

10. AG60109: Soil Dynamics in Tillage and Traction at IIT Kharagpur along with Prof. H. Raheman
11. AG69005: Farm Machinery Design Laboratory at IIT Kharagpur along with Prof. E. V. Thomas
12. AG60004: Tractor Systems Design II at IIT Kharagpur along with Prof. E. V. Thomas
13. AG69004: Tractor Systems Laboratory II at IIT Kharagpur along with Prof. H. Raheman
14. ATAEE 2015 and ATAEE 2016: Traction Aids and Tractive Performance of a Pneumatic Tyre

Research Publications

Journal Publications

1. Rajendra, M. and K. Shankar. "Improved Complex-valued Radial Basis Function (ICRBF) neural networks on multiple crack identification." *Applied Soft Computing* 28 (2015): 285-300.
2. Rajendra, M. et al., "Prediction of particle damping parameters using RBF neural network," *Procedia Materials Science*, Vol. 5, 2014, pp. 335-344.
3. Rajendra, M. et al., "System identification of a composite plate using hybrid response surface methodology and particle swarm optimization in time domain," *Measurement*, Vol. 55, 2014, pp. 499-511.
4. Rajendra, M. and Shankar. K., "Damage identification of multimember structure using improved neural networks," *International Journal of Manufacturing, Materials, and Mechanical Engineering*, Vol. 3, No. 3, 2013, pp. 57-75.
5. Rajendra, M. and Shankar. K., "Identification of crack in a structural member using improved radial basis function neural networks," *International Journal of Intelligent Computing and Cybernetics*, Vol. 6, No. 2, 2013, pp. 182-211.
6. Rajendra, M. and Shankar. K., "Joint damage identification using Improved Radial Basis Function (IRBF) networks in frequency and time domain," *Applied Soft Computing*, Vol. 13, No. 7, 2013, pp. 3366-3379.

7. Rajendra, M. and Shankar. K., " Structural Damage Identification Using Improved RBF Neural Networks in Frequency Domain," Advances in Structural Engineering, Vol. 15, No. 10, 2012, pp. 1689-1704.
8. Rajendra, M. et al., "Biodiesel production from mixture of mahua and simarouba oils with high free fatty acids," Biomass and Energy, Vol. 34, 2010, pp. 1108-1116.
9. Rajendra, M. et al., "Predicting the draught requirement of tillage implements in sandy clay loam soil using an artificial neural network," Biosystems Engineering, Vol. 104, 2009, pp. 476-485.
10. Rajendra, M. et al., "Prediction of optimized pretreatment process parameters for biodiesel production using ANN and GA," Fuel, Vol. 88, 2009, pp. 868-875.

Conference Publications

11. Rajendra, M. and Shankar, K. (2011). "Damage Identification of Multimember Structure Using Improved Neural Networks". Proceedings of the International Conference on Design and Advances in Mechanical Engineering (ICDAAME 2011), India. 16-17 December, 2011. pp. 89-96.
12. Rajendra, M. and Shankar, K. (2012). "Structural Damage Detection in Time Domain Using Improved RBF Neural Networks". Proceedings of Advances in Control and Optimization of Dynamic Systems (ACODS 2012), India. 16-18 February, 2012.

Sponsored Research and Consultancy Projects

1. Development of a Vegetable Transplanter with Robotic Arm for Metering of Pot Seedlings – ICAR –Co-PI – from 01-02-2016 to 31-01-2018.
2. Testing of Farm Tyres – Birla Tyres Ltd. –Co-consultant – from 01-11-2015 to 31-01-2016.
3. Development of Solar Energy Operated Agricultural Machinery for Paddy Crop – Sanctioned by SERI-2016, DST.
4. Effect of Mechanization Level on Productivity, Energy and Economics of Small Size Farm (One Hectare) – Submitted to ISRD, IIT Kharagpur.