

Dr. Amit Kumar Jain
Mechanical Engineering
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Research interests

I lead research activities in the areas of operations and digital maintenance. In particular, I focus on examining how data and digital technologies can radically transform asset performance. My primary research interests are predictive maintenance, industry 4.0 for SMEs, manufacturing analytics, and operations management.

Qualifications

Postdoctoral Research, Industrial Asset Management, University of Cambridge
1 Aug 2018 → 14 Aug 2020
Award Date: 14 Aug 2020

Doctor of Philosophy, Data-centric Real-Time Integration of Diagnostics, Prognostics, & Process Quality Control:
Realising Intelligent Manufacturing, Indian Institute of Technology Indore
Award Date: 16 Oct 2018

Master of Technology, Investigation of Tribological Characteristics of Non-Edible Castor & Mahua Oils as Bio Lubricant,
Maulana Azad National Institute of Technology
Award Date: 30 Jul 2013

Employment

Lecturer

Mechanical Engineering
Glasgow Caledonian University
Glasgow, United Kingdom
1 Feb 2022 → present

Assistant Professor & Assistant Dean – Research

Alliance University, India
India
1 Aug 2021 → 1 Jan 2022

Research outputs

Hard metal-matrix composite coating via laser cladding on engineered surfaces

Raza, M. S., Hussain, M., Kumar, P., Jain, A. K. & Das, A. K., 22 Dec 2023, *Laser Applications in Manufacturing*. Kumar, P., Hussain, M., Kumar Jain, A. & Pathak, S. (eds.). CRC Press, p. 45-58 14 p.

Laser Applications in Manufacturing

Kumar, P. (ed.), Hussain, M. (ed.), Jain, A. K. (ed.) & Pathak, S. (ed.), 22 Dec 2023, CRC Press. 220 p. (Materials, Devices, and Circuits: Design and Reliability)

Railway track degradation modelling using dynamic multi-regression to predict failure patterns

Santos, NG. D., Alkali, B. M., Kumar, A. J. & Niculita, O., 6 Jul 2023.

Natural convection of large Prandtl number fluids: a controversy answered by a new thermal lattice Boltzmann model

Chen, S., Luo, K. H., Jain, A. K., Singh, D. & McGlinchey, D., Apr 2023, In: *Case Studies in Thermal Engineering*. 44, 13 p., 102827.

Multiphysics simulation of the shape prediction and material removal rate in electrochemical machining process

Kumar, P., Jain, A. K., Srivastava, J. P., Kumar, R., Saxena, K. K., Prakash, C. & Buddhi, D., 17 Mar 2023, (E-pub ahead of print) In: *Advances in Materials and Processing Technologies*. 13 p.

Sustainable machining using eco-friendly cutting fluids: a review

Kumar, P., Jain, A. K., Chaurasiya, P. K., Tiwari, D., Gopalan, A., Dhanraj, J. A., Solomon, J. M., Sivakumar, A., Velmurugan, K. & Rushman, J. F., 26 Sept 2022, In: *Advances in Materials Science and Engineering*. 2022, 16 p., 5284471.

Editorial: life cycle engineering in the era of industry 4.0

Jain, A. K., Kumar, S. & Tayal, S., 23 Sept 2022, In: *Frontiers in Manufacturing Technology*. 2, 2 p.

Simulation-based POLCA integrated QRM approach for smart manufacturing

Kumar, S., Petchrompo, S., Ahmed, T. & Jain, A. K., 24 Jul 2022, (E-pub ahead of print) *Industry 4.0 and Advanced Manufacturing: Proceedings of I-4AM 2022*. Chakrabarti, A., Suwas, S. & Arora, M. (eds.). Springer Nature, p. 421-434 14 p. (Lecture Notes in Mechanical Engineering).

Sensitive sub-band selection criteria for empirical wavelet transform to detect bearing fault based on vibration signals
Sharma, V., Raghuwanshi, N. K. & Jain, A. K., Oct 2021, In: *Journal of Vibration Engineering and Technologies*. 9, 7, p. 1603-1617 15 p.

A comprehensive framework from real-time prognostics to maintenance decisions

Jain, A. K., Dhada, M., Hernandez, M. P., Herrera, M. & Parlikad, A. K., 9 Jun 2021, In: *IET Collaborative Intelligent Manufacturing*. 3, 2, p. 175-183 9 p.

Comparing agent-based control architectures for next generation telecommunication network infrastructures

Hernández, M. P., McFarlane, D., Herrera, M., Jain, A. K. & Parlikad, A. K., 14 Apr 2021, In: *IFAC-PapersOnLine*. 53, 2, p. 11062-11067 6 p.

Relaxing platform dependencies in agent-based control systems

Hernandez, M. P., McFarlane, D., Parlikad, A. K., Herrera, M. & Jain, A. K., 12 Feb 2021, In: *IEEE Access*. 9, p. 30511-30527 17 p.

Multivariate and online prediction of closing price using kernel adaptive filtering

Mishra, S., Ahmed, T., Mishra, V., Kaur, M., Martinetz, T., Jain, A. K. & Alshazly, H., 2021, In: *Computational Intelligence and Neuroscience*. 14 p., 6400045.

Novel architecture in Gate-All-Around (GAA) MOSFET with high-k dielectric for biomolecule detection

Bhol, K., Jena, B., Nanda, U., Tayal, S. & Jain, A. K., 2021, *High-k Materials in Multi-Gate FET Devices*. Tayal, S., Singla, P. & Davim, J. P. (eds.). 1 ed. Boca Raton: CRC Press, p. 131-139 9 p. (High-k Materials in Multi-Gate FET Devices).

Distributed diagnostics, prognostics and maintenance planning: realizing industry 4.0

Jain, A. K., Chouksey, P., Parlikad, A. K. & Lad, B. K., 18 Dec 2020, *4th IFAC Workshop on Advanced Maintenance Engineering, Services and Technologies - AMEST 2020*. Parlikad, A., Emmanouilidis, C., Lung, B. & Macchi, M. (eds.). 3 ed. International Federation of Automatic Control (IFAC), Vol. 53. p. 354-359 6 p. (IFAC Proceedings Volumes (IFAC-PapersOnline)).

Empirical convergence analysis of federated averaging for failure prognosis

Dhada, M., Jain, A. K. & Parlikad, A. K., 18 Dec 2020, *4th IFAC Workshop on Advanced Maintenance Engineering, Services and Technologies AMEST 2020*. Parlikad, A., Emmanouilidis, C., Lung, B. & Macchi, M. (eds.). 3 ed. International Federation of Automatic Control (IFAC), Vol. 53. p. 360-365 6 p. (IFAC PapersOnline).

Product quality driven auto-prognostics: low-cost digital solution for SMEs

Jain, A. K., Dhada, M., Parlikad, A. K. & Lad, B. K., 18 Dec 2020, *4th IFAC Workshop on Advanced Maintenance Engineering, Services and Technologies AMEST 2020*. Parlikad, A., Emmanouilidis, C., Lung, B. & Macchi, M. (eds.). 3 ed.

International Federation of Automatic Control (IFAC), Vol. 53. p. 78-83 6 p. (IFAC PapersOnline).

Secure and communications-efficient collaborative prognosis

Dhada, M., Jain, A. K., Herrera, M., Hernandez, M. P. & Parlikad, A. K., Dec 2020, In: IET Collaborative Intelligent Manufacturing. 2, 4, p. 164-173 10 p.

Prognosticating RULs while exploiting the future characteristics of operating profiles

Jain, A. K. & Lad, B. K., Oct 2020, In: Reliability Engineering and System Safety. 202, 107031.

Critical link analysis of a national internet backbone via dynamic perturbation

Herrera, M., Pérez-Hernández, M., Jain, A. K. & Parlikad, A. K., 2020, In: IFAC-PapersOnLine. 53, 3, p. 155-160 6 p.

Influence of imperfect prognostics on maintenance decisions

Jain, A. K., Dhada, M., Hernandez, M. P., Herrera, M. & Parlikad, A. K., 14 Dec 2019. 6 p.

A novel integrated tool condition monitoring system

Jain, A. K. & Lad, B. K., 15 Mar 2019, In: Journal of Intelligent Manufacturing. 30, 3, p. 1423-1436 14 p.

Dynamic optimization of process quality control and maintenance planning

Jain, A. K. & Lad, B. K., Jun 2017, In: IEEE Transactions on Reliability. 66, 2, p. 502-517 16 p.

Data driven models for prognostics of high speed milling cutters

Jain, A. K. & Lad, B. K., Jan 2016, In: International Journal of Performability Engineering. 12, 1, p. 3-12 10 p.

Quality control based tool condition monitoring

Jain, A. K. & Lad, B. K., 18 Oct 2015, *Proceedings of the Annual Conference of the PHM Society 2015*. 1 ed. Prognostics and Health Management Society, Vol. 7. 10 p. (Proceedings of the Annual Conference of the Prognostics and Health Management Society, PHM).

Predicting remaining useful life of high speed milling cutters based on artificial neural network

Jain, A. K. & Lad, B. K., 30 Apr 2015, *2015 International Conference on Robotics, Automation, Control and Embedded Systems (RACE)*. IEEE, 5 p.

Investigation of tribological characteristics of non edible castor and mahua oils as bio lubricant for maintenance applications

Jain, A. K. & Suhane, A., 2014, *Proceedings of the 5th International and 26th All India Manufacturing Technology, Design and Research Conference AIMTDR 2014*. Dixit, U. S., Narayanan, R. G. & Sankar, M. R. (eds.). Indian Institute of Technology, 6 p.

Prediction of remaining useful life of an aircraft engine under unknown initial wear

Jain, A. K., Lad, B. K. & Kundu, P., 2014, *Proceedings of the 5th International and 26th All India Manufacturing Technology, Design and Research Conference AIMTDR 2014*. Indian Institute of Technology, 5 p.

Maintenance applications of castor oil based bio lubricant

Jain, A. K. & Suhane, A., 31 Aug 2013, p. 223-225. 3 p.

Activities

Operations and Digital Maintenance

Jain, A. K. (Speaker)

2 Nov 2023

Faculty Research Seminar Series

Jain, A. K. (Speaker)
Oct 2021

Research Seminar

Jain, A. K. (Speaker)
Oct 2021

Corporate Tech-talks

Jain, A. K. (Invited speaker)
Sept 2021

Faculty Development Program on 3D Printing and Design for Academicians and Entrepreneurs

Jain, A. K. (Speaker)
Jun 2021

Faculty Development Program on Advanced Manufacturing Technology

Jain, A. K. (Speaker)
Jun 2021

Technology Innovation on Mechanical Engineering 2021

Jain, A. K. (Chair)
May 2021

Workshop on Futuristic Techniques in Maintenance and Manufacturing Systems

Jain, A. K. (Invited speaker)
Mar 2021

Frontiers in Manufacturing Technology (Journal)

Jain, A. (Guest editor)
2021 → 2022

Frontiers in Manufacturing Technology (Journal)

Jain, A. K. (Peer reviewer)
2021

Taylor and Francis Group (Publisher)

Jain, A. K. (Editor)
2021

IEEE Transactions on Industrial Electronics (Journal)

Jain, A. K. (Peer reviewer)
2020

IET Collaborative Intelligent Manufacturing (Journal)

Jain, A. K. (Peer reviewer)
2020

Wind Energy (Journal)

Jain, A. K. (Peer reviewer)
2020

Reliability Engineering & Asset Management

Jain, A. K. (Invited speaker)
Mar 2018

DIAL Seminars

Jain, A. K. (Invited speaker)
Feb 2018

International Journal of Prognostics and Health Management (Journal)

Jain, A. K. (Peer reviewer)
2018

Reliability Engineering and System Safety (Journal)

Jain, A. K. (Peer reviewer)
2018

Prizes**Best Paper Award**

Jain, A. (Recipient), 19 Dec 2019

Teaching Assistant Fellowship

Jain, A. K. (Recipient), 2011