AKHILESH KUMAR, PH.D.

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QUALIFICATION

Ph. D. (3.64/4)	Industrial Engineering Wayne State University, Detroit, MI, USA	2005-2011
B. Tech (7.68/10)	Manufacturing Engineering NIFFT Ranchi, India	2001-2005

RESEARCH INTERESTS

- Business Analytics and Optimization, Applied Operational Research
- Supply Chain Management: Sustainability, Closed-loop Supply Chains, Product Returns and Remanufacturing, Pricing and Revenue Management,
- Industry 4.0: Predictive Maintenance, Autonomous Diagnostics & Prognostics, Internet of Things

TEACHING INTERESTS

- Supply Chain Management: Operations Management, Reverse Logistics and Closed Loop Supply Chain, Sustainable Freight Transportation
- Data Science and Business Analytics:
    - Operations Research: Linear Programming, Integer Programming, Non-Linear Programming, Stochastic programming, Dynamic Programming.
    - Statistical Modeling: Statistical Learning Theory, Applied Multivariate Modeling, Generalized Linear Models.
    - Applied Machine Learning: Regression, Classification, Clustering, Regularization Theory.

EMPLOYMENT HISTORY

Assistant Professor, Dept. of Industrial & Systems Engineering   Aug 2015-Present
Indian Institute of Technology Kharagpur, India

Visiting Researcher, Sheffield University Management School,   July 2018
The University of Sheffield, UK

Solution Architect (Operations Research Consultant), Pricing and Revenue Analytics   Jan 2013- Jul 2015
JDA Software Hyderabad/Bangalore/Tokyo

Assistant Professor, Dept. of Industrial Engineering and Management   Sep 2011-Jan 2013
Indian Institute of Technology, Kharagpur, India

Research Consultant, Reverse Logistics   Jan 2009- Dec 2010
Delphi Automotive LLP, Detroit, MI, USA

Research Intern, Advanced Manufacturing & Technology Department   Jan 2006- Dec 2006
Ford Motor Company, Detroit, MI, USA

JOURNALS PUBLICATIONS

1. Reddy, K.N., **Kumar, A.,** Capacity investment and Inventory planning for A Hybrid Manufacturing - Remanufacturing System in the Circular Economy (2020). International Journal of Production Research - (Accepted/In-Press) **[ABDC: A]**
2. Reddy, K.N., **Kumar, A.,** Sarkis, J., Tiwari, M.K. Effect of carbon tax on reverse logistics network design (2020) Computers and Industrial Engineering, 139, art. no. 106184. **[Impact Factor: 4.135]**
3. Reddy, K.N., **Kumar, A.**, Ballantyne, E.E.F. A three-phase heuristic approach for reverse logistics network design incorporating carbon footprint (2019) International Journal of Production Research, 57 (19), pp. 6090-6114. **[ABDC: A]**
4. Mahajan, K., Velaga, N.R., **Kumar, A.,** Choudhary, P. Effects of driver sleepiness and fatigue on violations among truck drivers in India (2019) International Journal of Injury Control and Safety Promotion, 26 (4), pp. 412-422. **[Impact Factor: 1.342]**
5. **Kumar, A.,** Calzavara, M., Velaga, N.R., Choudhary, A., Shankar, R. Modelling and analysis of sustainable freight transportation 2019) International Journal of Production Research, 57 (19), pp. 6086-6089. **[ABDC: A]**
6. Sharmila, R.B., Velaga, N.R., **Kumar, A.** SVM-based hybrid approach for corridor-level travel-time estimation (2019) IET Intelligent Transport Systems, 13 (9), pp. 1429-1439. **[Impact Factor: 2.05]**
7. **Kumar, A.**, Chinnam, R.B., Tseng, F. An HMM and polynomial regression based approach for remaining useful life and health state estimation of cutting tools (2019) Computers and Industrial Engineering, 128, pp. 1008-1014. **[Impact Factor: 4.135]**
8. Mahajan, K., Velaga, N.R., **Kumar, A.**, Choudhary, A., Choudhary, P. Effects of driver work-rest patterns, lifestyle and payment incentives on long-haul truck driver sleepiness (2019) Transportation Research Part F: Traffic Psychology and Behaviour, 60, pp. 366-382. **[ABDC: A]**
9. De, A., Pratap, S., **Kumar, A.**, Tiwari, M.K. A hybrid dynamic berth allocation planning problem with fuel costs considerations for container terminal port using chemical reaction optimization approach (2018) Annals of Operations Research, Article in Press. **[ABDC: A]**
10. Pratap, S., Nayak, A., **Kumar, A.**, Cheikhrouhou, N., Tiwari, M.K. An integrated decision support system for berth and ship unloader allocation in bulk material handling port (2017) Computers and Industrial Engineering, 106, pp. 386-399. **[Impact Factor: 4.135]**
11. **Kumar, A.**, Chinnam, R.B., Murat, A. Hazard rate models for core return modeling in auto parts remanufacturing (2017) International Journal of Production Economics, 183, pp. 354-361. **[ABDC: A*]**
12. **Kumar, A.**, Prakash, Tiwari, M.K., Shankar, R., Baveja, A. Solving machine-loading problem of a flexible manufacturing system with constraint-based genetic algorithm (2006) European Journal of Operational Research, 175 (2), pp. 1043-1069. **[ABDC: A*]**
13. **Kumar, A.**, Prakash, A., Shankar, R., Tiwari, M.K. Psycho-Clonal algorithm based approach to solve continuous flow shop scheduling problem (2006) Expert Systems with Applications, 31 (3), pp. 504-514. **[ABDC: C]**
14. Tiwari, M.K., Prakash, **Kumar, A.**, Mileham, A.R. Determination of an optimal assembly sequence using the psychoclonal algorithm (2005) Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture, 219 (1), pp. 137-149. **[Impact Factor: 0.661]**

1. Mahajan, K., Velaga N.R., **Kumar, A.**, Choudhary, P., (2019) "Traffic Violations Among Truck Drivers Due To Fatigue And Sleepiness" TRANSPORTATION RESEARCH BOARD 98TH ANNUAL MEETING, JAN 13-17, 2019, WASHINGTON DC, USA

2. Nageswara Reddy, K., **Kumar, A.** Heuristic approaches for optimizing multi-echelon multi-facility green reverse logistics network design (2019) Proceedings of the International Conference on Industrial Engineering and Operations Management, 2019 (MAR), pp. 251-251.

3. Saha, M., Agrawal, V., **Kumar, A.** Managing production and sales of refurbished products under capacity limitations (2019) Proceedings of the International Conference on Industrial Engineering and Operations Management, 2019 (MAR), pp. 390-391.

4. Agarwal, P., Nirmal, K.S., Reddy, K.N., **Kumar, A.** Hidden Markov Models to detect early equipment failure (2019) Proceedings of the International Conference on Industrial Engineering and Operations Management, 2019 (MAR), pp. 1322-1323.

5. **Kumar, A.**, Reddy, KN., Tiwari, M., (2018) "Multi-period reverse logistic network design with vehicle allocation" ICDSST – PROMETHEE DAYS 2018 May 22-25 2018, Heraklion, Greece

6. Ballantyne, E.E.F., **Kumar, A.**, and Velaga, N. R., (2018) "Towards a Benchmarking Tool for Sustainable Freight Transportation" ICDSST – PROMETHEE DAYS 2018

7. Pratap, S., De, A., **Kumar, A.**, Tiwari, M., and Cheikhrouhou, N., (2016) "Chemical Reaction Optimization approach to solve Dynamic Berth Allocation Problem in a Terminal Port" IEEE International Conference on Industrial Engineering and Engineering Management (IEEM), Dec 4-7, 2016, Bali Indonesia

8. **Kumar, A.**, and Chinnam, RB. (2012) "Strategic Capacity Planning and Management of Remanufactured Products," 16th Annual International Conference of the Society of Operations Management (SOM) Dec 21-23, 2012, IIT Delhi, India

9. **Kumar, A.**, Tseng, F., and Chinnam, R. B., (2011) "Role of Hidden-Markov Models for Autonomous Diagnostics," Proc. of IEEE International Symposium on INnovations in Intelligent SysTems and Applications (INISTA), June 15-18, 2011, Istanbul, Turkey

10. **Kumar, A.**, Tseng, F., and Chinnam, R. B., "Hidden-Markov Model based Sequential Clustering for Autonomous Diagnostics and Prognostics" Finalist for Best Student Paper Award in Data Mining Section at INFORMS Annual Meeting Nov 7-10, 2010, Austin, TX, USA

RESEARCH PROJECTS AND INDUSTRIAL CONSULTANCY

1. **Grant Approved**
   1.1. "A Data-Driven Decision Support System for Covid-19 Vaccine Supply Chain" PI for a research project funded by **Cisco Research Center, USA** ($10,440.00); *Yet to start*

2. **Ongoing**
   2.1. "Digital Manufacturing and Industrial Internet of Things for Enhanced Supply Chain Co-ordination, Quality and Maintenance" Joint-PI for a research project funded by **Tata Sons** and **Department of Heavy Industry, Government of India** (INR 3.34 Crores); Jan 2018- Feb 2023
   2.2. "Analytics And Optimization Driven Decision Support Models for Dynamic Freight Network Optimization" PI for a consultancy project funded by **TM International Logistics Ltd. (A subsidiary of TATA Steel Ltd.)** (INR 7.67 Lakhs) July 2019- Apr 2020

3. Completed
    3.1. "Mean time to failure and early failure detection" Co-PI (Equal Share) for a consultancy project funded by Computational Data Analytics Group, **Shell Technology Centre Bangalore** (INR 33 Lakhs) Feb 2018-Feb 2019
    3.2. "EU - India Research and Innovation Partnership for Efficient and Sustainable Freight Transportation (REINVEST)" Co-PI (Equal share) at for a project for **European Union**, Delegation of the European Union to India (IIT KGP Share: INR 29 Lakhs) Jan 2015-Dec 2018
    3.3. "Decision Support Model to Optimize Bulk Material Handling Operations at Dhamra Port" Co-Principal Investigator (equal share)for a consultancy project **for Dhamra Port Construction Limited (DPCL- A Tata and L&T joint Venture)**, India (INR 11 Lakhs) May 2012-May 2013

RESEARCH SUPERVISION

Ph.D: 2 (ongoing 5)
M. Tech: 15
B. Tech: 30

TEACHING FEEDBACK

Courses Designed and Taught (As Assistant Professor)	University	Level	Average Feedback (/5)
IM 21003: Operations Research-I	IIT KGP	UG	4.27
IM 61011: Stochastic Modelling Of Business	IIT KGP	PG	4.12
IM 60002: Advanced Decision Modeling	IIT KGP	PG	4.29
IM 60056: Generalized Linear Models	IIT KGP	PG	4.18
IM 60061: Applied Multivariate Statistical Modeling-I	IIT KGP	PG	4.15

COMPUTING SKILLS

R, Python, MATLAB, SAS, CPLEX, SQL/Toad for ORACLE, SPSS, Minitab, Maple, Logical Decisions

SHORT TERM PROGRAMS/WORKSHOPS ORGANIZED

1. Short term Course (5 Days) Machine Learning for Cyber Physical Systems" for executives from Tata Group Sep 16-23, 2018.
2. Short Term Course (3 Days) on "Analytics in Security" for industry professionals at Cyber Security Technology Division CDAC Mohali Nov 30-Dec 2, 2017
3. Short Term Course (5 Days) on "Applied Machine Learning" for Faculty from tier-2 Institutions and working professionals, Sep 12- 16, 2016, Department of Industrial & Systems Engineering, IIT Kharagpur, Kharagpur India
4. Short Term Course (2 Days) on "Project Management" for working professionals, Feb 24-26, 2012, IIT Extension Centre, Kolkata, India

CONFERENCE/INVITED PRESENTATIONS

1. "Timing the launch and capacity to install for automotive aftermarket remanufacturing program" at Sheffield University Management School, The University of Sheffield, UK July 11, 2018
2. "An Excel VBA based Sustainability Index Calculator Toolkit" at REINVEST Workshop at Crete, Greece, May 24, 2018
3. "Time Series Forecasting" for industry professional at ZS Associate, Pune, India, Mar 28-29, 2018.

4. "Multi Period Green Reverse Logistics Network Design with Vehicle Routing" at REINVEST Workshop at University of Padua, Italy December 19-21 2018
5. "Analytics in Security" for industry professionals at Cyber Security Technology Division CDAC Mohali Nov 30-Dec 2, 2017
6. "A sustainable Omni-channel delivery" at REINVEST Workshop at University of Sheffield, UK December 5-7 2016
7. "Hyper about Hyperlocal: Hyper about Hyperlocal: Towards a Sustainable Last Mile Delivery" at REINVEST Workshop at IIT Delhi and IIT Bombay January 7-9 2016
8. "Strategic Capacity Planning and Management of Remanufactured Products" at
   8.1. Optimization Summit 2014, JDA Software, Hyderabad, March 4-6 2013
   8.2. 16th Annual International Conference of the Society of Operations Management (SOM 2012), IIT Delhi, India, December 21-23, 2012.
9. "Conditioned Based Maintenance" at
   9.1. TELCO Construction Equipment Co. Ltd (TELCON- A Tata-Hitachi Joint Venture) Kharagpur June 25th 2012
   9.2. Hindustan Aeronautics Limited (HAL) Koraput Aug 27th 2012
10. "Quantification of Flow-time Cost in Aircraft Manufacturing" at Hindustan Aeronautics Limited (HAL) Koraput Aug 27th 2012
11. "Project Management: PERT-CPM Techniques" at McNally Bharat Engineering Co. Ltd. Kolkata Sept 5th 2012
12. "Framework for Core Returns Forecasting of Auto Parts Remanufacturing" at INFORMS Annual Meeting 2009, San Diego

PROFESSIONAL OUTREACH

1. **Associate Editor OPSEARCH (SPRINGER)**. OPSEARCH is the official publication of the Operational Research Society of India (ORSI).
2. **Principle Guest Editor** for Special Issue on Modelling and Analysis of Sustainable Freight Transportation in **International Journal of Production Research (Jun 2017-Jun 2019)**
3. **Reviewer:** International Journal of Production Economics, Journal of Cleaner production, International Journal of Production Research, Computers and Industrial Engineering, IEEE SMC A. Annals of Operations Research.

AWARDS, HONORS AND AFFILIATIONS

1. Faculty Excellence Award, IIT Kharagpur 2020
2. Won round 1 of Innovative Implementable Idea (I3) Award for SAMHAR-COVID19 Hackathon organized by Centre for Development of Advanced Computing under the aegis of the National Supercomputing Mission (NSM), a Ministry of Electronics & Information Technology and Department of Science & Technology, Government of India initiative, in association with NVIDIA & OpenACC 2020
3. Awarded outstanding reviewer by International Journal of Production Economics 2018
4. Listed in The Marquis Who's Who in World 2017
5. Nominated for JDA Performer for excellence 2014
6. Awarded JDA SPOT Award for excellence in JRE Project 2014
7. Recognized by CEO JDA Software for excellence in innovation program 2013
8. Best Paper Award, Society of Operations Management, 2012 titled "Strategic Capacity Planning and Management of Remanufactured Products," 16th Annual International Conference of the Society of Operations Management (SOM 2012), IIT Delhi, India, December 21-23, 2012.
9. Listed in The Marquis Who's Who in America 2011
10. Finalist for Best Student Paper Award in Data Mining Section at INFORMS Annual Meeting, Austin, TX, USA 2010

11. Awarded Graduate Research and Teaching Assistantship, Wayne State University 2006-2011
12. Awarded for Successful completion of course on Kawasaki D Series Controller Operation Orientation 2006
13. Awarded the Rumble Scholarship, a competitive university-wide academic scholarship, Wayne State University 2005-2006
14. Won Silver Jubilee Scholarship, Awarded by TATA Motors (Jamshedpur, India) for excellence in engineering academics 2002-2009

References: Available Upon request

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