

ASHUTOSH NAYAK

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Education

2014 - 2018	Purdue University, West Lafayette PhD, Industrial Engineering
2009 - 2014	Indian Institute of Technology, Kharagpur Integrated B. Tech and M. Tech, Industrial Engineering

Positions

2019 - present	Postdoctoral Scholar, Data Science in Marketing <i>University of California, Davis, Graduate School of Management</i>
2017 - 2018	Research Assistant <i>Indiana Advanced Manufacturing Center (InMAC), West Lafayette, Indiana</i>
2016 - 2016	Research Intern <i>General Electric (GE) Global Research Center, Niskayuna, New York</i>
2015 - 2017	Research Assistant <i>Purdue University and GE Global Research Center, West Lafayette, Indiana</i>

Research Interests

Conversational Artificial Intelligence	Dynamic Decisions using Real Time Optimization
Understanding Customer Journey	Applications of Machine Learning
Quantitative Marketing	Reinforcement Learning
Campaign Optimization	Optimal Control

Research

PUBLISHED (JOURNALS)

Aravindakshan, A., Boehnke, J., Gholami, E., **Nayak, A.** (2020) Preparing for a future COVID-19 wave: insights and limitations from a data-driven evaluation of non-pharmaceutical interventions in Germany, *Scientific Reports* 10 (1), 1-14 *

* equal contribution

Nayak, A., Lee, S., Sutherland J.W. (2018) Storage trade-offs and optimal load scheduling for cooperative consumers in a microgrid with different load types, IJSE Transactions 51 (4), 397-405

Nayak, A., Fang, K., Lee, S. (2016) Demand Response in Flow Shop with Job Due Dates Using Genetic Algorithm Approach, Smart and Sustainable Manufacturing Systems 1 (1), 100-120.

Pratap, S., **Nayak, A.,** Kumar, A, Cheikhrouhou, N, Tiwari, MK. (2016) An integrated decision support system for berth and ship unloader allocation in bulk material handling port, Computers & Industrial engineering 106, 386-399.

Nayak, A., Levalle, RR., Lee, S., Nof, SY (2015) Resource sharing in cyber- physical systems: modelling framework and case studies, International Journal of Production Research 54 (23), 6969-6983

Mohapatra, P., **Nayak, A.,** Kumar, SK., Tiwari, MK (2015) Multi-objective process planning and scheduling using controlled elitist non-dominated sorting genetic algorithm, International journal of production research 53 (6), 1712- 1735.

Raj, R., Wang, W., **Nayak, A.,** Tiwari, MK., Han, B., Liu, L., Zhang, M (2015) Measuring the resilience of supply chain systems using a survival model, IEEE Systems Journal 9 (2), 377-381.

Chan, FTS, **Nayak, A.,** Raj, R., Chong, AYL., Tiwari, MK. (2014) An innovative supply chain performance measurement system incorporating research and development (R&D) and marketing policy, Computers & Industrial Engineering 69, 64-70.

PUBLISHED (CONFERENCES)

Nayak, A., Lee, S., Sutherland J.W. (2019) Dynamic Load Scheduling for Energy Efficiency in a Job Shop with On-site Wind Mill for Energy Generation (2019) Procedia CIRP 80, 197-202.

Nayak, A., Kim, K., Lee, S. (2015) Modeling Job Shop Scheduling for Peak Electricity Load Constraint, Procedia IJSE, Anaheim.

Pratap, S. **Nayak, A.,** Kumar, A, Cheikhrouhou, N, Tiwari, MK. (2015) Decision support system for discrete robust berth allocation, IFAC-Papers OnLine 48 (3), 875-880.

WORKING/ UNDER REVIEW

Aravindakshan, A., Boehnke, J., Gholami, E., **Nayak, A.** Mask-Wearing During the COVID-19 Pandemic (under review: Scientific Reports) *

Nayak, A., Aravindakshan, A. Quantifying the Impact of Language Feature Updates in Conversational Mobile Commerce Platforms (under review: Marketing Science)

Building a machine learning model to understand consumer journey using recurrent auto-encoders for cold start problems (with Aravindakshan, A.)

Understanding the effect of voice technology in mobile commerce platform - how does consumer behavior change when interacting with voice technology (with Aravindakshan, A.)

* equal contribution

Teaching Experience

University of California, Davis (Instructor)	<ul style="list-style-type: none">• Operations Research Methods (Spring 2022)• Workshops on Different topics in Data Science
Purdue University (Teaching Assistant)	<ul style="list-style-type: none">• Introduction to Statistics• Industrial Application of Statistics• Design and Control of Production and Manufacturing Systems
IIT Kharagpur (Instructor)	<ul style="list-style-type: none">• Big Data Analytics (Short course on SAS)• Optimization and Heuristics Lab (Short course on CPLEX)
Naval Operation Analysis Course for the Indian Navy (IIT Delhi, 2014)	<ul style="list-style-type: none">• Introduction and tutorial on Game Theory• Developed a graphic user interface for optimal resource allocation based on computer aided search

Industry Projects

General Electric Niskayuna, NY, USA	Built simulation models for different General Electric manufacturing facilities across the world to improve throughput and reduce makespan time. (Research Assistant)
General Electric Niskayuna, NY, USA	Built simulation model for an aircraft manufacturing facility owned by General Electric to identify and resolve bottlenecks in the system. (Research Intern, 2016)
Evonics, Lafayette, IN, USA	Delivered a software for optimal fermentation scheduling module aimed at minimizing the total electricity cost with maximum projected annual saving of \$385,000. The model is currently deployed for capacity planning.
Batesville Products, West Lafayette, IN, USA	Delivered a flexible machine shop module for scheduling orders. This model is currently deployed and used by the company for automation of scheduling orders in the shop floor based on different objective functions.
Pulmodyne, Indianapolis, IN, USA	Delivered an inventory management system for 48 medical supplies. The module is currently deployed for automation of purchase decisions.
Indian Oil Corporation Limited, Mumbai	Developed an optimization model for optimal oil vessel scheduling across Indian ports. The project was continued as Master's Thesis. (Research Intern, 2013)
Warwick Manufacturing Group, UK	Part of the team working on building a root cause analysis model for detecting field failures to improve post purchase service in automobiles. (Research Intern, 2012)

Skills

Programming	Python, R, JAVA, MATLAB, Ruby
Optimization	GuRoBi, CPLEX, AMPL, AnyLogic
Visualization	Tableau, D3JS
Big Data	Hadoop, Spark, AWS, Azure
Machine Learning	tensorFlow, Keras, PyTorch

Awards

2017	Blosser Environment Travel Grant, Graduate School, Purdue University
2017	INFORMS Travel Grant, Industrial Professional Colloquium
2015	Winner of DOW Big Data Challenge by INFORMS (with Dr. M.M. Javadi)
2014	Silver Medal, for Academic Excellence and Department Rank 01/48
2013	Proficiency Award, for best Bachelor's Thesis Project
2012	J.C. Ghosh Memorial Award, for Academic Excellence

Leadership Experience

<i>President</i> INFORMS Purdue Chapter, 2016	Led a team of 8 members to organize different events including research talks and social events
<i>Vice President, Academic</i> INFORMS Purdue Chapter, 2015	Led a team of 3 members to organize academic events including research talks and career development seminars
<i>Head, Events</i> OPTIMA, 2013	Lead a team of 4 members responsible for different events in Annual Industrial Engineering Student Symposium

References

Academic

Dr. Ashwin Aravindakshan	aaravind@ucdavis.edu	Postdoc Advisor
Dr. Seokcheon Lee	Lee46@purdue.edu	PhD Advisor
Dr. Manoj Kumar Tiwari	director@nitie.ac.in	B.Tech + M.Tech Advisor

Industrial

Dhananjay Sewak	dsewak@prf.org	InMAC Manager
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