

Chinmoy Mohapatra, Ph.D.

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Research Summary

Operations research scientist specializing in large-scale forecasting, stochastic optimization, and machine learning for global logistics and transportation systems. Leads the development of production-grade optimization and forecasting systems operating across multi-country delivery and freight networks, with demonstrated impact exceeding \$200M annually.

Recipient of the **INFORMS Prize (2018)** as part of the BNSF Railway operations research team — the highest honor in operations research practice. Author of peer-reviewed research in *Production and Operations Management* and named inventor on ten U.S. patent filings in logistics optimization and forecasting systems.

Selected Scientific Contributions

- **Large-Scale Hierarchical Forecasting for Logistics Networks**

Architected unified forecasting systems supporting over **1M concurrent time-series models** across six global regions, with hierarchical reconciliation ensuring consistency from polygon-level to network-level predictions.

- **Granular Cost Estimation at Scale**

Invented a delivery cost estimation framework achieving **600,000× improvement in geographic granularity** with $O(1)$ computational complexity, enabling real-time package routing decisions across 50M+ geographic blocks.

- **Stochastic Optimization for Capacity Planning**

Designed ADMM-based consensus planning frameworks coordinating capacity decisions across multiple resource dimensions at thousands of operational nodes.

- **Network Optimization for Freight Systems**

Developed capacitated trip planning, block re-design, and ML-based freight ETA prediction systems for large-scale railroad networks.

Professional Experience

Senior Research Scientist

Amazon

2020 – Present

Bellevue, WA

Technical architect and domain owner for demand planning and optimization science across a global last-mile delivery network spanning 1,000+ stations in six regions.

- Domain owner for forecasting and optimization systems supporting capacity planning, labor scheduling, and infrastructure investment decisions across multiple VP organizations
- Production systems generating **\$200M+ in annual operational savings** through improved forecast accuracy, cost estimation, and network optimization
- Mentor to 14+ research scientists, applied scientists, and data scientists across multiple teams
- Ten U.S. patent filings (2 granted) protecting original innovations in forecasting and logistics optimization

Lead Operations Research Scientist

BNSF Railway

2017 – 2020

Fort Worth, TX

Lead scientist on the operations research team awarded the **INFORMS Prize (2018)** — the most prestigious award in operations research practice.

- Developed capacitated trip planning and block re-design systems optimizing train routing and scheduling across a 32,500-mile freight network spanning 28 U.S. states and 3 Canadian provinces
- Developed ML algorithms to predict freight ETAs by service levels and detect sensor failures across the entire network
- Led research supervision of four university Research Fellows, translating algorithmic research into production-ready optimization systems
- Optimization systems collectively delivered **\$50M+ in annual savings**

Software Developer

Amdocs

2007 – 2009

Pune, India

Enterprise software systems for telecommunications service management platforms.

Education

University of Texas at Austin

Ph.D., Information, Risk, and Operations Management

2009 – 2018

M.S., Operations Research and Industrial Engineering

National Institute of Technology Rourkela

B.Tech (Honors), Electronics and Instrumentation Engineering

2003 – 2007

Publications

Mohapatra, C., Balakrishnan, A., & Sundaresan, S. (2024). Subscription Pricing for Free Delivery Services. *Production and Operations Management*, 33(4), 943–961.

Patents

Granted

- Mohapatra, C., Malshe, R., Mahdih, A. Enhanced Batch Computing Architecture for Consensus Planning in Large-Scale Supply Chains. U.S. Patent 12,499,399. [Link](#)
- Mohapatra, C., et al. Designing Storage Pods with Layered Bins or Slots. U.S. Patent 12,504,281. [Link](#)

Pending

Eight additional U.S. patent applications in forecasting architectures, route optimization, multi-agent coordination, cost estimation, and warehouse operations.

Awards and Honors

- **INFORMS Prize**, 2018 — Highest honor in operations research practice
- Top 2 Operations Research Paper Award — Amazon Machine Learning Conference (AMLC), 2022
- Best PhD Research Award — University of Texas at Austin
- Dean's Fellowship — University of Texas at Austin

Conference Presentations

- **INFORMS Annual Meeting** — 10+ presentations (2014–2025), including invited panelist (2024)

- **POMS Annual Conference** — 5 presentations (2018, 2022–2025), including invited speaker
- **MSOM Conference** — 2016, 2019
- **INFORMS Revenue Management and Pricing Conference** — 2015
- **INFORMS Railway Applications Section** — 2018

30+ total peer-reviewed and invited presentations across major international venues in operations research and analytics.

Industry Research Presentations

10+ peer-reviewed presentations at internal Amazon research conferences:

- Amazon Machine Learning Conference (AMLC) <20% acceptance rate
- Amazon Consumer Science Summit (CSS) <10% acceptance rate

Professional Service

Peer Review

- *Networks*
- *International Transactions in Operational Research* (ITOR)
- *Association for Computational Linguistics* (ACL)
- *Production and Operations Management* (POMS)
- *European Journal of Operational Research* (EJOR)

Internal Conference Review

- Amazon Machine Learning Conference (AMLC) — Paper Reviewer, 2022–2025 (10+ papers reviewed)
- Amazon Consumer Science Summit (CSS) — Paper Reviewer, 2022–2025 (10+ papers reviewed)

Session Chair

- POMS Annual Conference (2024, 2025)
- INFORMS Annual Meeting (2023)
- INFORMS Revenue Management and Pricing Conference (2015)

Competition Judge

- INFORMS Railway Applications Section Problem Solving Competition (2018–2019)

Academic Engagement

- Guest lectures and academic collaborations on applied operations research and logistics systems
- Mentor to graduate students and early-career researchers through industry–academic partnerships
- Active collaborations with faculty at leading research universities

Professional Memberships

- Institute for Operations Research and the Management Sciences (INFORMS)
- Production and Operations Management Society (POMS)