Sarvagya Jha

Operations Research | Data Science | Optimization | AI & Supply Chain Analytics
PhD Student, Business & Operations Management, University of Massachusetts Amherst
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Professional Summary

Quantitative researcher and data scientist with strong training in operations research, optimization, and applied machine learning. My work focuses on developing scalable decision-support models for supply chains, financial risk systems, and equity-focused resource allocation problems. I specialize in translating mathematical optimization, stochastic modeling, and data-driven analytics into actionable insights for policy, nonprofit, and industry applications.

Education

University of Massachusetts Amherst, Isenberg School of Management
PhD in Business and Operations Management   2025–Present
GPA: 4.00 / 4.00 | Outstanding Applicant Award

Rutgers Business School, Newark, NJ
Master of Quantitative Finance   2024

Technical Skills

Programming: Python, R, SQL, MATLAB
Operations Research & Optimization: Linear Programming, Multi-Objective Optimization, Stochastic Optimization, Simulation Modeling, Sensitivity and Scenario Analysis
Data Science & Machine Learning: Supervised Learning, Anomaly Detection, Predictive Modeling, Monte Carlo Methods, Model Evaluation and Validation
Tools & Platforms: GitHub, Tableau, Excel, LaTeX

Research & Projects

Equity-Oriented Optimization for Food Bank Supply Chains

- Developed multi-period linear programming models to optimize food distribution across regions under demand uncertainty, supply variability, and transportation capacity constraints
- Introduced explicit equity and fairness constraints to reduce disparities in access among vulnerable populations while maintaining operational feasibility
- Formulated multi-objective optimization frameworks to evaluate trade-offs between efficiency, equity, cost, and service-level guarantees
- Conducted scenario and sensitivity analyses to assess robustness of allocation policies under supply disruptions, demand surges, and funding shocks
- Generated policy-relevant insights for U.S. food banks and humanitarian organizations on balancing efficiency with fairness in resource allocation

Machine Learning–Based Fraud Detection System

- Built an end-to-end Python-based fraud detection pipeline using large-scale transactional datasets
- Performed data cleaning, feature engineering, and supervised model training for rare-event classification
- Addressed severe class imbalance using resampling techniques and threshold optimization
- Evaluated models using precision, recall, F1-score, and cost-sensitive metrics to balance detection accuracy and false-positive risk

Quantitative Financial Modeling Projects

- Implemented Monte Carlo simulation and short-rate interest rate models (Hull–White) for pricing callable

fixed-income instruments

- Developed portfolio risk and optimization models incorporating volatility, correlation, Value-at-Risk, and downside risk measures
- Applied stochastic modeling techniques to assess risk exposure and portfolio performance across multiple market scenarios

Professional Experience

Reserve Bank of India (India's Central Bank)
Data Science Intern   Apr 2020–Jun 2020

- Conducted applied economic and data analysis on international trade flows, balance of payments, and cross-border financial systems
- Supported policy-oriented research related to financial stability, trade regulation, and macroeconomic risk assessment
- Synthesized quantitative findings into analytical briefs used in internal economic research and policy discussions

Rural Organization for Social Establishment (NGO), India
Program Manager   Jul 2014–Jun 2022

- Led large-scale health, education, and workforce development programs serving over 5,000 beneficiaries across multiple districts
- Designed data-informed resource allocation, scheduling, and evaluation frameworks to improve operational efficiency under budget constraints
- Coordinated with government agencies and stakeholders to align service delivery with policy objectives and reporting requirements

Publications & Leadership (Selected)

- **The Role of Artificial Intelligence in Enhancing Business Efficiency and Supply Chain Management**. *Journal of Information Systems Engineering and Management*, 2025.
- **AI and IoT in Supply Chains: Creating Intelligent and Autonomous Business Operations**. *Journal of Information Systems Engineering and Management*, 2025.
- **Game Theory in Legal Disputes Over Financial Contracts**. *Indian Journal of Law and Legal Research*, 2024.
- **Financial Derivatives and Legal Risk: Regulatory Challenges in Over-the-Counter (OTC) Markets**. *Indian Journal of Integrated Research in Law*, 2024.
- **Callable Bond Pricing Using the Hull–White Model: A Comprehensive Analysis**. *Indian Journal of Economics and Finance*, 2025 (to appear).
- **The Impact of Internet of Things (IoT) on Legal Liability and Regulation**. *Proceedings of the International Conference on Frontier Technologies and Solutions (ICFTS)*, 2025.
- **Addressing Ethical Challenges in AI-Powered Cybersecurity Solutions for Cloud Computing in Healthcare**. In *Transforming Healthcare with Artificial Intelligence*, Springer Nature, 2025.
- **Efficient Cybersecurity Threat Analysis Through Anomaly Detection and Graph Summarization**. In *Graph Mining: Practical Uses and Instruments for Exploring Complex Networks*, Springer Nature, 2025.
- **AI-Driven Predictive Analytics for Enhancing Automotive Safety in Financial Risk Assessments in Cloud Data**. In *Embracing the Cloud as a Business Essential*, IGI Global, 2025.
- Social Media Manager, INFORMS Student Chapter, University of Massachusetts Amherst.

Certifications

Financial Risk Manager (FRM) – Part I
Bloomberg Market Concepts