

SARVAGYA JHA

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RESEARCH INTERESTS

Operations research and management science; network modeling and network optimization; stochastic optimization and stochastic models; integer, linear, and multicriteria programming; supply chain networks and logistics; humanitarian logistics and health care operations; financial networks and risk management; quantitative finance and derivative pricing; machine learning for financial applications.

EDUCATION

University of Massachusetts Amherst — Isenberg School of Management, Amherst, MA 2025 – present
Ph.D. in Operations Management, expected 2031
Cumulative GPA: 4.00 / 4.00 · Advisor: Prof. Anna Nagurney

Rutgers Business School — Newark, NJ 2024
M.S. in Quantitative Finance

Chennai Mathematical Institute — Chennai, India
B.Sc. with Honors in Physics and Mathematics

DOCTORAL COURSEWORK

Cumulative GPA: 4.00 / 4.00 (28 credits completed; a grade of A in all graded coursework)

Course	Title	Term	Grade	Credits
STATISC 607	Mathematical Statistics I	Fall 2025	A	3
MI-ENG 620	Linear Programming	Fall 2025	A	3
MI-ENG 686X	Multi-Criteria Decision Making	Fall 2025	A	3
SCH-MGMT 752	Business Process Optimization	Fall 2025	A	3
SCH-MGMT 877TA	Teaching Seminar, First Year	Fall 2025	SAT	1
SCH-MGMT 788	Stochastic Models	Spring 2026	A	3
SCH-MGMT 825X	Integer Programming	Spring 2026	A	3
SCH-MGMT 533	Humanitarian Logistics and Health Care	Spring 2026	A	3
SCH-MGMT 895Q	Introduction to Organizational and Social Network Analysis	Spring 2026	A	3
SCH-MGMT 825	Seminar in Management Science	Spring 2026	A	3

Currently registered: GRADSCH 999, Continuous Enrollment (Summer 2026).

RESEARCH EXPERIENCE

Rutgers Business School — Graduate Researcher Feb 2023 – May 2024

Numerical Analysis and Valuation of Callable Bonds via the Hull-White Model

- Built a quantitative valuation framework for callable bonds using the Hull-White short-rate model, improving pricing accuracy by 12% relative to the existing benchmark model.
- Implemented Monte Carlo simulations generating over 15,000 future interest-rate paths to support yield forecasting and portfolio strategy.

Machine Learning Framework for Credit Card Fraud Detection

- Developed a fraud-detection model reaching 99% accuracy on a 10-million-transaction dataset, applying SMOTE to correct severe class imbalance.
- Performed feature engineering and selection on large transaction datasets, and used Bayesian optimization to reduce hyperparameter tuning time by roughly 75%.
- Prototyped a real-time alerting component that reduced detection-to-action latency from approximately 5 minutes to 1 minute per flagged transaction.

Markowitz Portfolio Optimization and Risk Assessment Using VaR

- Constructed a mean-variance optimized equity portfolio achieving an 8.5% return at 11.3% volatility (Sharpe ratio 1.62) under Modern Portfolio Theory.
- Estimated 1-day 95% VaR of \$15,000 and CVaR of \$19,500 on a \$1M portfolio using the historical method.
- Applied dynamic conditional correlation (DCC) models to forecast portfolio risk metrics, improving predictive accuracy by 8% as measured by backtesting hit rates and mean absolute error.

PUBLIC SERVICE AND COMMUNITY DEVELOPMENT

Rural Organization for Social Establishment — Program Manager

- Rescued 100 children from bonded labour in Palamu district, Jharkhand, and placed them in formal education.
- Introduced a Mobile Medical Facility across Palamu and Latehar districts, serving approximately 5,000 people, and brought 3,000 residents under the Mission Indradhanush immunization program.
- Launched a skilling initiative under the Skill India Mission in Amnour and Saran districts, training 150 people.
- Organized awareness camps on education and health for Scheduled Castes and Scheduled Tribes in Palamu, and an AIDS control program reaching roughly 270 people.
- Established a human-resource outsourcing program placing trained personnel with district officials, providing 89 technical and non-technical support engagements to the District Health Society.

TECHNICAL SKILLS

Optimization and Modeling: AMPL, Gurobi, CPLEX, MATLAB

Programming and Tools: Python, R, MATLAB, SQL (MySQL, PostgreSQL), Stata, Excel VBA, Git/GitHub, Tableau, LaTeX

Quantitative Methods: Linear, integer, and multicriteria programming; stochastic models and Monte Carlo simulation; stochastic processes (Markov chains, geometric Brownian motion, Poisson processes); network and social network analysis; time-series modeling (ARIMA, DCC-GARCH); mathematical statistics; predictive analytics (ANOVA, multiple regression, cluster analysis, PCA); machine learning (random forests, logistic regression, Bayesian optimization)

Financial Mathematics: Option pricing, binomial tree models, Hull-White and other short-rate models, futures and forwards, swaps, Greeks (delta, gamma, rho, theta, vega), duration and convexity, VaR / CVaR / expected shortfall, PD / LGD / EAD

HONORS AND AWARDS

Outstanding Applicant Award in Management Science
Isenberg School of Management, University of Massachusetts Amherst

2025

CERTIFICATIONS

- Financial Risk Manager (FRM) Program — passed Part I, GARP
- Bloomberg Market Concepts

PROFESSIONAL AFFILIATIONS

INFORMS — member, UMass Amherst INFORMS Student Chapter

2025 – present