ASHISH CHANDRA

Kran 538, Krannert School of Management, Purdue University, West Lafayette, IN 47907

aashishc@purdue.edu | LinkedIn | Github | +1 (765) 775-8682

EDUCATION

Purdue University, Krannert School of Management — West Lafayette
  PhD candidate in Management Science (Specialization - Quantitative Methods) — Aug. 2016 - current
  Minor in Electrical and Computer Engineering - **ECE** (GPA 3.89/4.0)

Indian Institute of Technology (IIT) - Bombay — Mumbai, India
  MS in Operations Research (GPA 9.15/10.0) — July 2013 - Dec. 2015

UM-DAE Centre for Excellence in Basic Sciences — Mumbai, India
  Bachelor of Science in Mathematics (GPA 8.54/10.0) — Aug. 2010 - July 2013

SKILLS

Optimization: Linear programming, Convex programming, Integer, and Mixed integer nonlinear programming

Stochastic Techniques: Uncertainty quantification; Stochastic, Robust, VaR, and CVaR optimization

Optimization Software: Gurobi, GAMS, CPLEX, and MOSEK

Algorithms Design: Graph algorithms, Knapsack counting and Sampling algorithms

Software: Minitab, AnyLogic, Optimization Modeling - Risk analysis & Monte Carlo Simulation in Microsoft Excel, LaTeX

Programming: Python (proficient), MATLAB, C/C++

Deep Learning: TensorFlow, Keras   **Certifications:** Deep Learning Specialization - Part 1, Part 2, Part 3

Data Science: R, SQL   **Certifications:** Introduction to Data Science Specialization

RESEARCH EXPERIENCE

Experience in Quantitative Analysis for real life data

Argonne National Laboratory - Mathematics and Computer Science Division — June 2021 - Ongoing
Quantifying Network Performances Using Importance Sampling

· Estimated Service Level Objectives (SLOs) for real-life telecommunication networks under random network failures.
· Proposed and implemented an Importance sampling technique in Python which outperformed the classical Monte Carlo sampling technique for estimating SLOs (Proposed method atleast 2X time faster than Monte Carlo technique).
· Preparing a manuscript to be submitted to a peer reviewed Network Optimization journal.

Experience in Optimization and Algorithm design

Krannert School of Management, Purdue University — June 2020 - Ongoing
Techniques for Minimizing Value at Risk (VaR) & Applications in Stochastic Programming

· Developed novel mathematical models to formulate VaR minimization problem as a convex optimization program.
· Formulated and complied the mathematical models to solve portfolio optimization and reliable system design problems.
· Applying these ideas to achieve approximations to Chance constrained optimization problems.

Optimization Techniques for Probability Estimation — Oct. 2018 - May 2020

· Developed unique mixed integer nonlinear optimization approaches for estimating rare event probability.
· Formulated and employed a novel polynomial time approximate Knapsack counting scheme for probability estimation.
· Applied ideas to network reliability which out performed the existing literature by achieving higher network performance.

Interdisciplinary work Experience in ECE and Computer Science

School of Electrical and Computer Engineering, Purdue University — Sept. 2017 - Aug. 2018
Designing Better Networks : Resilience to Uncertain Failures

· Collaborated with PhD students in ECE to build a system for verifying network performance SLOs under failures.
· Proposed system, outperformed the state of the art approaches based on worst case Network performance.
· Developed and implemented mathematical models to design networks, more resilient to random node failures.

INRIA Sophia Antipolis Méditerranée, France : Research Internship   May - July 2015
Random Walks with Restarts & **Applications in Non Convex Optimization**

· Proposed a scheme to combine Gradient-search & Random Walk with Restarts for convergence to global optima of functions.
· Derived and verified via simulations the expression for optimal restart probability, for which the scheme converged faster.

PRESENTATIONS AND PUBLICATIONS

Chandra, Ashish, Tawarmalani, Mohit. "Probability estimation via policy restrictions, convexification, and approximate sampling". Minor Revision to Mathematical Programming, August 2021.

Presentations	· **Session Chair** and Presenter, INFORMS Annual Meeting, 2021	- Upcoming in Oct.
	· Krannert Doctoral Research Symposium, 2021	- Upcoming in Oct.
	· IISE Annual Conference and Expo, 2021	
	· INFORMS Annual Meeting, 2020	
	· Best Paper Runner-up, Krannert Doctoral Research Symposium, 2020	
	· Invited session at INFORMS Optimization Society Conference 2020 - Postponed due to Covid	

Chang, Y., Jiang, C., **Chandra, Ashish**, Rao, S., & Tawarmalani, M. "Lancet:Better network resilience by designing for pruned failure sets", Proceedings of the ACM on Measurement and Analysis of Computing Systems, 2019.

MENTOR AND TEACHING EXPERIENCE

Course Instructor, MGMT 305 - Business Statistics, Purdue University.
Certificate for Distinguished Teaching (Highest teaching award for Krannert instructors)   Summer 2019

Teaching Assistant at Purdue University

MGMT 670 - Business Analytics - Part of MS in BAIM	(50 / 240) students	Spring / Fall 2021
MGMT 305 & 306 - Business Statistics & Management Science	(250 - 300) students	Fall 2016 - Fall 2018
IE 611 - Introduction to Stochastic Models, IIT Bombay		Fall 2015

Research Assistant at IIT Bombay
Department of Industrial Engineering & Operations Research   Spring 2016

HONORS AND AWARDS

· Givens Associate, Argonne National Laboratory	June - Aug 2021
· Graduate Assistantship, Purdue University	Aug. 2016 - current
· Charpak Scholarship, French Government	May - July 2015
· Summer Research Fellowship	
National Program on Differential Equations - Theory, Computation & Applications, India	May - June 2013
Indian Academy of Sciences, India	May - June 2012
· Innovation in Science Pursuit for Inspired Research - INSPIRE Fellowship, Govt. of India	Aug. 2010 - Apr. 2013

OUTREACH AND SERVICE

· Purdue Cricket Club: Member of the Runner-up Purdue team at the MidWest Cricket Tournament	2018
· Student companion program, IIT Bombay: Mentored first year incoming Master students	Aug. 2014 - July 2015
· Convener of sports and science clubs, IIT Bombay: Organised & participated at various competitions	2014 - 2015
· Volunteer at IIT Bombay techfest (Asia's largest Science and Technological fest)	2014