RITESH OJHA

Curriculum Vitae

Email : riteshojha8@gatech.edu
Mobile : +1-404-921-4097

Education

Georgia Institute of Technology — **Atlanta, USA**
PhD in Operations Research, Industrial and Systems Engineering; GPA: 3.71/4.00 — *Aug. 2018 – Expected 2023*

Indian Institute of Technology — **Kharagpur, India**
Bachelor of Technology, Industrial and Systems Engineering; GPA: 8.62/10.00 — *Aug. 2013 – July. 2017*

Publications

- Ghadge, A., Dani, S., Ojha, R., & Caldwell, N. (2017). Using risk sharing contracts for Supply Chain Risk Mitigation: A buyer-supplier power and dependence perspective. **Computers & Industrial Engineering**, 103, 262-270.
- Ojha, R.,Tiwari, M.K.,Ghadge, A.& Bittici, U. (2018) Bayesian Network Modelling for Supply Chain Risk Propagation. **International Journal of Production Research**.

Research Interests

- Integer Programming with a focus on Cut Generation & Decomposition Techniques
- Data Science and Heuristic Algorithms in Logistics and Supply Chain Network Optimzation

Graduate Project

Graduate Research Assistant — *Sep 2019 —- Present*
Advisor: Prof. M. Savelsbergh, Prof. N. Boland, Prof. A. Erera

- Working on re-formulating an integrated version of Empty re-positioning problem

Data-Driven design and operation of City Logistics Service Networks — *Jan 2019 —- April 2019*
Advisor: Prof. M. Savelsbergh

- Developed a matching tool for truck movements of a logistics company to maximize cost savings with an average **savings of 39%**
- Tested **greedy randomized adaptive search procedure (GRASP)** based heuristic on the service network design problem

Patrol Officer Scheduling and Dispatch for Denver Public Schools — *Jan 2019 —- Present*
Advisor: Prof. P. Keskinocak

- Developed an ILP model to find optimal shift schedule for 18 officers to meet call demand
- Created a time-based sequencing model to allocate and dispatch officers to call demands of varying priority while minimizing the response time of each officer
- Analysed the incremental effect of officers on response time through simulation of the problem scenario

Large Scale Service Network Design over Time Expanded Network — *Oct 2018 —- Present*
Advisor: Prof. N. Boland

- Developed an **Integer Programming** formulation for a large network design problem with business-specific linear constraints
- Created a **Time Space Network Optimization** framework in **Xpress** Optimizer with Python interface
- Applied data science principles to define priority rules on developing **Variable Priority heuristic** with day of the week and busy markets as determining factors

Under-Graduate Projects

Services in Indian Automobile Industry *Jan 2017 —- April 2017*

Advisor: Prof. M.K.Tiwari

- Studied the impact of service attributes on consumer demand in the Indian automobile industry examining the complementarities or substitution between service attributes and product quality.
- Created an optimization framework to maximize consumer utility with respect to business constraints and performed sensitivity analysis to demonstrate the economic role of warranty.

Sustainable Facility Location-Allocation Decision Optimization *June 2016 —- Oct 2016*

Advisors: Prof. M.K.Tiwari, Prof A. Ghadge

- Formulated a multi-objective mixed integer mathematical model for multi-echelon forward/reverse logistics **Closed Loop Supply Chain** network
- Conducted **sensistivity analysis** to assess trade-off between the conflicting objectives of minimization of total cost of closed loop supply chain and emissions from transportation and opened facilities operations.
- Developed a heuristic based on ant colony optimization framework to model the distribution of returned items at the collection center and refurbished items from the distribution center back to customer zones

Multi-Agent based Decision Models to support Logistics Network *May 2015 —- July 2015*

Advisor: Prof. M.K.Tiwari

- Developed a multi-agent based system to model logistics and supply chain network.
- Evaluated the effectiveness of model using **ant colony** optimization and **particle swarm** optimization.
- Implemented the use of auxiliary vehicles to incorporate flexibility into the framework while improving service level by 1.16 % and reducing cost by 22.11 %

Work Experience

The Home Depot: Data Scientist **Atlanta, USA**

Space Optimization *May 2019 — July 2019*

- Developed a machine learning framework to derive the impact of bay count and facing changes on inventory levels
- Optimized the **Gross Margin Return on Inventory (GMROI)** and integrated the framework in the current tool

TCG Digital: Operations Research Consultant **Kolkata, India**

HealthCare Analytics *Mar 2018 — July 2018*

- Analyzed data from **SQL database** for multiple KPIs, to develop a **ground-up** approach of validating the product and worked closely with client to statistically test and automate the validation process
- **Forecasted** the KPI values over a horizon based on **simulation** of **exponential** and **poisson** distributed variables.

Catering Forecasting in Airline Industry *Jan 2018 — Apr 2018*

- Delivered a **predictive model** to forecast the **uplift quantity of perishable food** items at the flight level using an **ensemble approach** of machine learning algorithms like **random forest, neural nets**
- Formulated heuristics to reduce the average **wastage** of food items by **25**% and **stock-outs** by **5**%

Demand Forecasting for Retail Chain *Nov 2017 — Mar 2018*

- Developed a **statistical model** to forecast product demand while considering **seasonality**, trend and spiky demand and provided a **brand level analysis** of SKUs
- Formulated a **Binary Integer Linear Program** to maximize **weighted order fill rate** while limiting **inventory** and using weights assigned to differentiate customers based on profit margin

Large Scale Optimization in Petrochemical Vertical *July 2017 — Dec 2017*

- Modelled business constraints in a large scale **Mixed-Integer Linear Programming** (MILP) model.
- Coded **column generation** technique and heuristics to reduce stock outs or excess inventory
- **Optimized** the **production quantity and sequence of each polymer grade** that maximizes net contribution for the planning period of one month on **CPLEX** and used the **concert technology** in Java
- Implemented the **Rolling Horizon Optimzation** framework and **time scaling** feature to develop a good approximation to the optimal solution within the planning period
- Convinced client that results were consistent with company constraints of cost & computational time

Awards

- Received "**Excellent**" grade on the module "**Supply Chain Network: Modelling and Analysis**" the International Summer and Winter term held at IIT Kharagpur in June 2015

Extra Curricular Activities

- Student Mentor, Student Welfare Group: Mentored 5 freshmen through numerous facets of college
- Cleared the B-Certificate exam as a National Cadet Corp of 1 Bengal EME COY 2013-2015 at IIT
- Pivotal member of the hockey team of MMM Hall of Residence at the general championship 2013-2014
- Member of the playing XI of the runner-up team in 2009 and winning team in 2008 at The Maj. R.K.Von Goldstein Memorial Inter-school cricket tournament

SKILLS

- **Coursework**: Linear Optimization, Probabilistic Models, Mathematics of OR, Regression and Time Series Modeling, Supply Chain Optimization, Predicitve Modelling, Economic Decision Analysis, Risk Management
- **Softwares**: IBM ILOG CPLEX (Concert Technology, Callable Libraries), GUROBI, XPRESS, MATLAB, Python, R