RAHUL ROY

Ph.D. Student (Operations) | UNC Kenan-Flagler Business School

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Education

Present
Aug 2020

Ph.D. in Operations (Business Administration), UNC Kenan-Flagler Business School, US

- **Advisors :** Jayashankar Swaminathan, Nur Sunar
- **Key Modules :** Foundations of Optimization, Advanced Optimization, Stochastic Models in Operations Research, Econometric Theory, Applied Econometric Analysis, Advanced Machine Learning
- **Research Interests :** Nonlinear Optimization, Machine Learning, Sequential Decision Analytics

Mar 2020
Oct 2018

M.Sc. by Research in Innovation (Class - Distinction), Lancaster University Management School, UK

- **Advisors :** Trivikram Dokka, David A. Ellis
- Investigated the attributes that affect energy demand when clusters of electric vehicles (EVs) draw power from low-voltage (LV) distribution networks
- Evaluated statistical models, scalable machine learning systems, and artificial neural networks for scenario-based forecasting of energy consumption by EVs from electricity grids

Sep 2018
Oct 2017

M.Sc. in Business Analytics (Class - Distinction), Lancaster University Management School, UK

- **Advisors** : Trivikram Dokka, Marc Goerigk
- **Key Modules :** Applying Statistical Models in Business, Stochastic Modeling, Optimization & Heuristics, Forecasting, Data Mining, SAS
- **Research Project :** Proposed the novel idea of *Mixed Uncertainty Sets* to increase the breadth of parameter uncertainty in robust optimization problems. Explored better out-of-sample performance than classical approaches via an extensive computational study using a shortest-path problem based on real-world data

June 2013
May 2009

B.Tech. in Electrical Engineering (GPA - 9.34/10), National Institute of Technology, Patna, India

- **Advisor :** Jayanti Choudhary
- **Key Modules :** Mathematics - I/II/III, Electrical Machines, Power System (Operations, Design & Control), Network & Control Theory, Microprocessors, Electrical Instruments, Power Electronics
- **Academic Project (Coupled Resonators) :** Led a team of 6 to design and construct a wireless system capable of transferring non-radiative electric power via resonance magnetic coupling
- **Academic Project (Solar Power Satellite) :** Led a team of 6 to design and construct a synchronously rotating solar-powered system for point-to-point wireless transfer of electric power via microwaves

Experience

Jan 2020
June 2019

Data Scientist, BT, UK

- Project Manager (*Optimizing Customer Interactions*) as part of Knowledge Transfer Partnership (KTP) program in collaboration with Innovate UK, University of Essex and BT
- Explored and developed machine learning models that leveraged data across BT's broadband channel to optimize interactions with customers
- Increased BT's revenue savings by an estimated 160% by developing and proposing a robust machine learning modeling framework for churn prediction of BT's broadband consumers
- Optimized feature space in churn model by 85% by proposing customizable feature selection using L1 regularization

Sep 2019 – Oct 2018 | **Graduate Researcher, Centre for Global Eco-Innovation (Lancaster University), UK**

- Developed a suite of models (statistical models, scalable machine learning systems, and LSTMs) for scenario-based forecasting of energy consumption by EVs as part of the Electric Nation trials
- Evaluated and proposed different variants of LSTM Networks (Vanilla vs Stacked, Unidirectional vs Bidirectional, and Encoder-Decoder vs Vector-Output) across 3 distinct clusters of EVs based on their battery ratings for single-step and multi-step scenario-based forecasting of energy consumption by EVs from electricity grids

May 2017 – May 2015 | **Assistant Manager (Retail Operations) | Executive (Retail Operations), BPCL, India**

- Led supply chain strategy and planning in retail operations for the distribution of petroleum oil
- Improved the supply chain lead time by 33% by persuading the central management to implement VTS in the entire transportation fleet for lead time optimization
- Led BPCL's Patna retail territory to highest pan-India sales in branded gasoline in 2015-16

May 2015 – June 2013 | **Officer (Pipeline Operations) | GET (Pipeline Operations), BPCL, India**

- Supervised supply chain strategy and planning in petroleum pipeline operations
- Achieved nil operational loss time for Mathura pipeline section in 2014-15

Publications

Understanding controlled EV charging impacts using scenario-based forecasting models : Poster — June 2021
e-Energy '21 : Proceedings of the Twelfth ACM International Conference on Future Energy Systems
Rahul Roy, Trivikram Dokka, David A. Ellis, Esther Dudek, Paul Barnfather
https://doi.org/10.1145/3447555.3466573

Mixed uncertainty sets for robust combinatorial optimization — July 2019
Optimization Letters
Trivikram Dokka, Marc Goerigk, Rahul Roy
https://doi.org/10.1007/s11590-019-01456-3

Skills

Programming	Python, R
Frameworks	TensorFlow, Shiny
Version Control	Git
Specializations	Machine Learning, Deep Learning, Forecasting, Operations Research

Awards | Honors

Research Scholar — 2018 - 19
M.Sc. by Research in Innovation, Lancaster University Management School, UK

Academic Excellence Scholar — 2017 - 18
M.Sc. in Business Analytics, Lancaster University Management School, UK

Gold Medalist — 2013
B.Tech. in Electrical Engineering, National Institute of Technology, Patna, India

ONGC Scholar — 2012 - 13
B.Tech. in Electrical Engineering, National Institute of Technology, Patna, India