AKHILESH SONI

soni6@wisc.edu, 608-572-9982, 721 North Midvale Blvd, #3, Madison,WI, 53705

Career Summary

Akhilesh is a Ph.D. student at UW-Madison. His expertise lie in Mathematical Optimization, Stochastic Modeling, and Machine Learning. His research interests are Discrete and Stochastic Optimization.

Education

University of Wisconsin Madison *August 2023 (expected)*
Ph.D. in Industrial Engineering (Operations Research)

University of Wisconsin Madison *May 2022*
M.S. in Computer Science

University of Wisconsin Madison *December 2019*
M.S. in Industrial Engineering

Indian Institute of Technology (IIT) Dhanbad, India *May 2017*
Bachelor of Technology in Mechanical Engineering
Minor: Financial Management

Work Experience

University of Wisconsin Madison

- *Research Assistant* *September 2018-Present*
    - Integer Programming approach to Mixture Matrix Completion
    - Mixed Integer Linear Programming for crew scheduling in an unconventional oil field development.
- *Teaching Assistant* *Spring, 2020*
    - ISyE 323: Operations Research-Determinsitic Modeling

Amazon.com

- *Research Scientist Intern* *June 2021-Aug 2021*
    - Graph neural net based learning approach for reducing search space of a network design model based on mixed integer programming
- *Research Scientist Intern* *May 2020-Aug 2020*
    - Worked on a mixed integer programming model for network design in middle mile domain; Developed a decomposition based solution approach using existing state of the art algorithms.

Schneider National

- *Supply Chain Engineering Intern* *June 2019-Aug 2019*
    - Cost forecasting model to predict carrier truckload freight rates in spot market in USA.

Publications

- Soni, A., Linderoth, J., Luedtke, J., Pimentel-Alarcón, D. (2021) Integer Programming Approaches To Subspace Clustering With Missing Data, *OPT2021: 13th Annual Workshop on Optimization for Machine Learning, NeurIPS*
- Soni, A., Linderoth, J., Luedtke, J., Rigterink,F. (2020) Mixed-Integer Linear Programming for Scheduling Unconventional Oil Field Development, *Optimization and Engineering,*

Conference Presentation

Mixed Integer Programming Workshop
- Integer programming approach to high rank matrix completion *May 2021*
- Mixed Integer Programming for Unconventional Oil Field Development. *May 2020*

INFORMS Optimization Society
- Integer programming approach to subspace clustering with missing data *March 2022*

NeurIPS
Optimization and Machine Learning workshop
- Integer programming approach to subspace clustering with missing data *December, 2021*

Technical Strengths and Software Skills

- Mathematical Programming, Large scale and data driven optimization, Predictive Analytics, Transportation Modeling, Network Optimization, Time-series forecasting, Data Visualization,
- Java, Python, Julia, AMPL, Matlab, Gurobi, CPLEX, Sklearn, SQL, MS Office, UNIX, Version Control, LaTeX

Coursework

Introduction to Optimization, Linear Programming, Integer Programming, Nonlinear Programming, Real Analysis, Stochastic Modeling, Simulation Modeling, Stochastic Programming, Matrix Methods for Machine Learning, Mathematical Foundations of Machine Learning, Engineering Models for Supply Chain, Dynamic Programming, Health Systems and Engineering, Introduction to Combinatorial Optimization, Introduction to Algorithms

Academic Achievements

- Spotlight presentation, Optimization and machine learning workshop, NeurIPS, 2021
- Travel grant for mixed integer programming workshop, 2021
- Recipient of Vinod K J. Gail Sahney Scholarship at UW-Madison, 2020
- Awarded with Mitacs Fellowship in 2016 to intern at University of Windsor, Canada in junior year

Service

- Reviewer: Annals of Operations Research
- Vice-President of INFORMS UW-Madison Chapter, 2020-2021
- President of INFORMS UW-Madison Chapter, 2021-2022

References

- Prof. Jeff Linderoth: linderoth@wisc.edu
- Prof. Jim Luedtke: jim.luedtke@wisc.edu
- Semih Atakan: atakans@amazon.com