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EDUCATION

Georgia Institute of Technology ***Expected Dec. 2022***

- Bachelor of Science, Industrial and Systems Engineering, Concentration in Analytics and Data Science
- Minor in Scientific and Engineering Computing **GPA: 3.93/4.00**

RESEARCH INTERESTS

Computational optimization and machine learning to innovate transportation or energy systems

RESEARCH

Undergraduate Research Assistant, Georgia Institute of Technology
Supervisor: Dr. Pascal Van Hentenryck

Dedicated Bus Lanes in On-Demand Multimodal Transit Systems (ODMTS)

- Assessed congestion levels and potential travel time savings from dedicated bus lanes (DBLs) along I-85 in the Metro Atlanta area
- Designed a method to implement congestion and dedicated bus lanes into ODMTS
- Tested ODMTS in Metro Atlanta area using ridership data; assessed travel times, ridership levels, and transit system net costs from a baseline ODMTS design and then ODMTS redesigned with DBLs

Bus Line Modeling in ODMTS

- Created path evaluation formulation on ridership in the current system to assess ridership choices along bus routes; used path evaluation formulation to test current system on initial bus line model
- Developing a pricing problem method for bus line modeling in ODMTS
- Developing a column generation approach for bus line modeling in ODMTS

WORKING PAPERS

Dedicated Bus Lanes in On-Demand Multimodal Transit Systems

PROJECTS

Senior Design Capstone Project: *Spring 2022*
Convoy Shipment Process Improvement

- Undertook root cause analysis to identify main causes of conflicting appointment time errors from Convoy's internal processes
- Created a machine learning model in Python and SQL that predicts when CATs may occur in shipments
- Created an SOP to audit predicted CAT shipments from machine learning model
- Provided Convoy recommendations on improvements to load confirmation updates, additional data to collect, and changes to UI used by operators
- The project saved Convoy approximately $1 million annually, 4.3 driving hours per shipment, and 190000 driving miles per year

Investigating the Effectiveness of Ramp Metering on *Spring 2021*

Traffic Flow in Complex Traffic Systems

- Designed a discrete-based simulation in Python to evaluate effects of ramp metering on I-75/I-285 interchange through two different ramp metering strategies: ALINEA and a modified ALINEA
- Undertook empirical evaluation to assess effectiveness of ramp metering policies on the case study

Machine Learning for Wildfire Susceptibility Mapping *Spring 2021*

- Collected and cleaned data on 12 features to predict wildfire levels across the contiguous U.S. states for the year 2020
- Implemented correlation matrix to initially visualize most useful features and PCA to reduce dimensions to most relevant features
- Implemented Naïve Bayes and wildfire levels and linear/logistic regression to train data and predict or classify wildfire levels

Minimum Vertex Cover Problem *Fall 2020*

- Designed a branch and bound algorithm, approximation algorithm, stochastic local search algorithm, and simulated annealing local search algorithm, each to solve the minimum vertex cover problem
- Tested algorithms coded in Python on datasets from the 10th DIMACS challenge and undertook empirical evaluation to assess effectiveness of each algorithm on the datasets

INDUSTRY

Industrial Engineering Co-op, Yokogawa *May 2021-Dec. 2021*

- Automated recording and display processes from 100 engineering data files, eliminating errors in manual reporting and saving 300 hours annually
- Created a sheet to generate automated product numbers, saving 200 hours annually and eliminating manual reporting
- Improved an existing UI to include additional products and lines, saving an additional 300 hours annually and eliminating fines

Industrial Engineering Co-op, Yokogawa *May 2020-Jul. 2020*

- Created a UI software application in VB and SQL that transformed all manufacturing line boards across the plant to a digital format with real-time display, moving the company to a more paperless model.
- UI saves 1500 hours annually and eliminates fines for insufficient displays; was also selected for Yokogawa's Global Manufacturing Engineering Competition

TEACHING

Undergraduate Teaching Assistant, Georgia Institute of Technology

ISYE 3044 – Simulation Analysis and Design *Summer 2022*

- Graded homeworks, labs, a midterm project, and a final project; held open and individual office hours for midterm and final project; answered questions by email and on Piazza forum

ISYE 4034 – Decision and Data Analytics *Spring 2022*

- Advised three semester-project teams by guiding model formulation, monitoring progress, and answering questions; graded exams, projects, and homeworks; answered questions by email

ISYE 3770 – Statistics and Applications *Spring 2021*

- Graded homeworks, quizzes, and exams; held open office hours; answered questions by email and on Piazza forum

Head Teaching Instructor, The Seth Bonder Camp *Summer 2022*

- Led two week-long camps 9 AM – 5 PM daily, organizing logistics and managing other teaching assistants; helped students learn computer and data science principles through Snap!, a visual programming language; organized and guided interactive activities of the camp

COURSEWORK **Georgia Institute of Technology**

- Computational Modeling Algorithms (CX 4140)
- Computational Problem Solving (CX 4010)
- Computer Organization and Programming (CS 2110)
- Computer Simulation (CX 4230)
- Constraint Programming (ISYE 4134)
- Differential Equations (MATH 2552)
- Discrete Mathematics (MATH 2603)
- Decision and Data Analytics (ISYE 4034)
- Engineering Optimization (ISYE 3133)
- Introduction to Database Systems (CS 4400)
- Introduction to High Performance Computing (CX 4220)
- Machine Learning (CS 4641)
- Multivariable Calculus (MATH 2551)
- Numerical Analysis (CX 4640)
- Online Learning and Decision Making (ISYE 4803)
- Probabilistic Operations Research (ISYE 3232)
- Regression and Forecasting (ISYE 4031)
- Simulation Analysis and Design (ISYE 3044)

HONORS **ISyE Senior Design Capstone Finalist** *Spring 2022*

- Top 3 team out of 29 total undergraduate ISyE senior design teams

SKILLS **Programming**

- Python, SQL, C/C++, R, LaTeX, Java, OPL, MATLAB, HTML/CSS, VB

Packages

- Gurobi, Numpy, Pandas, Matplotlib, OpenMP

Software

- Microsoft Office, Jupyter Notebook, CPLEX, Visual Studio, Simio, Minitab, Linux, Windows, Mac

Qualitative

- Written Communication, Oral Communication, Consulting, Teamwork