TINGHAN (JOE) YE

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EDUCATION

Cornell University *Ithaca, NY*
B.S. Operations Research and Engineering (*Honors*) *Aug. 2021 - May 2023 (expected)*
University of Illinois at Urbana - Champaign *Champaign, IL*
Major: Civil & Environmental Engineering *Aug. 2019 - May 2021*
Minor: Computer Science, Business, Economics
Coursework: Stochastic Processes (PhD level), Algorithms, Simulation, Optimization, Engineering Probability & Stats., Real Analysis, Linear Algebra, Combinatorics, Differential Equations, Database Systems, Data Structures, Discrete Structures, Systems Engineering & Economics, Finance, Accounting

PUBLICATIONS & MANUSCRIPTS

- **Tinghan Ye**, Shanshan Liu, Eleftheria Kontou, "Managed Residential Electric Vehicle Charging Minimizes Electricity Bills while Meeting Driver and Community Preferences". Under Review at *Transport Policy*.
  - Poster won second place for the undergraduate level INFORMS Mini Poster Competition (2021).
  - Presented at University of Illinois Undergraduate Research Symposium, Apr. 2021.
- Shaohua Wang, [...], **Tinghan Ye**, "Attention Dynamic Model for Solving Threshold Covering Location Problem of Siting COVID-19 Vaccine Sites". Under Review at *International Journal of Geographical Information Science*.
  - Contributed to the literature review of COVID-19 related spatial optimization models.
- **Tinghan Ye** and Hanyi Wang, "Regional Disparities of Electric Vehicle Marginal Emissions - Evidence from China Market," Journal of Advanced Management Science, Vol. 10, No. 2, pp. 36-43, June 2022. doi: 10.18178/joams.10.2.36-43
  - Presented at 11th International Conference on Economics, Business and Marketing Management, Singapore, Feb. 2022.
- **Tinghan Ye**, "Understanding College Students' Motivation to Take COVID-19 Vaccination Shots from College Subreddit Comments". Working paper.

PRESENTATIONS

- **Tinghan Ye** and David Shmoys, "Taxi Routing Optimization," to be presented at *INFORMS Annual Meeting*, Oct. 2022.
  - Poster presented at *Young Researchers Workshop*, Ithaca, NY, Oct. 2022
- **Tinghan Ye** et al., "Simulation Analysis for CVS Health Supply Chain," Cornell Undergraduate Research Board Spring Symposium, May 2022.
- **Tinghan Ye** et al., "Johnson Museum of Art Analytics," Cornell Undergraduate Research Board Spring Symposium, May 2022.
- Ja Young Byun, Jolene Mei, Bennett Miller, Willem van Osselaer, **Tinghan Ye**, Eva Zhang, Jody Zhu, "Optimizing Cornell's Final Exam Schedule," Cornell Undergraduate Research Board Spring Symposium, May 2022.
- **Tinghan Ye** et al., "SimOpt - A Library of Simulation Optimization Problems and Solvers", Cornell Engineering Learning Initiatives Poster Session, Apr. 2022.
  - Work acknowledged in Eckman, D., Henderson, S., & Shashaani, S. (2021).

RESEARCH EXPERIENCE

Scheduling for Cornell Registrar and Engineering Advising Aug. 2021 - Present
Supervisor: David Shmoys *Department of Operations Research and Engineering, Cornell*

· Develop heuristics and new constraints to efficiently solve an exam scheduling optimization model using Python and Gurobi; the new model ensures zero conflicts and reduces the number of back-to-back finals by 36%.
· Revamp an optimization model for matching faculty advisors with freshmen in engineering via OR-Tools; the new model considers room capacity and ensures that international students are not singled out.
· Work reflected in the schedules of FA 22 & SP 22 final exams and FA 22 ENGRG 1050-Engineering Seminar.

Taxi Routing Optimization May 2022 - Present
Supervisor: David Shmoys *Department of Operations Research and Engineering, Cornell*

· A taxi routing problem can be solved via bipartite matching, where a maximum cardinality matching corresponds to the minimum number of taxis needed to cover all trips.
· Prove a min-max theorem: the maximum number of pairwise incompatible trips equals the minimum number of taxis needed.
· Demonstrate on an NYC taxi dataset and obtain a 35% reduction in the total number of taxis needed.
· Computational results are integrated into a lab of ENGRI 1101-Engineering Applications of OR.
· Work partially sponsored by ELI Undergraduate Research Funds.

Simulation Optimization Library Aug. 2021 - Present
Supervisor: Shane Henderson *Department of Operations Research and Engineering, Cornell*

· Create and implement simulation optimization problems, e.g. a COVID-19 testing frequency problem and an emergency medical service volunteer problem.
· Design, test, and compare simulation optimization solvers, e.g. stochastic line search and projected gradient (for problems with linear constraints).
· Work sponsored by Meyer A. Gross '58 (Cornell Engineering Learning Initiatives).

Residential Electric Vehicle Charging Patterns and Management Nov. 2020 - June 2022
Supervisor: Eleftheria Kontou *Department of Civil and Environmental Engineering, UIUC*

· Clustered and analyzed large time-series residential energy data; developed Gurobi optimization models for residential electric vehicle charging that minimizes electricity costs while meeting driver and community preferences.
· The optimal charging schedule reduces daily total electricity costs by 38.27% on a summer weekday and by 44.3% on a winter weekday.
· Sponsored by Research Support Grant from Illinois Office of Undergraduate Research.

Spatial Optimization of COVID-19 Testing and Vaccination Planning July 2022 - Present
Supervisor: Shaohua Wang *Chinese Academy of Sciences*

· Working on developing deep reinforcement learning models for spatial optimization problems with applications to COVID-19 testing and vaccination sites location in China.

CVS Health Supply Chain Simulation Analysis Sep. 2021 - Present
Supervisor: David Goldberg & Mark Lewis *ORIE, Cornell*

· Coordinate with CVS contacts and lead a team of 20 to design and build a discrete-event simulation model in Python that simulates the life cycles of totes (containers that move products around) in the supply chain of CVS Health.
· The model assesses the costs and effectiveness of implementing RFID technology in the stores and distribution centers, which can potentially address the existing tote shrinkage problem in CVS.

Understand College Students' Motivation to Take COVID-19 Vaccination through Reddit Comments Jan. 2022 - Present
Independent Research

· Employed sentiment analysis on Reddit comments via TextBlob and NRCLex NLP packages and ran a multiple linear regression with interactions to investigate the relationship between students' fear level towards COVID-19 and their motivation to take vaccination shots.

Museum Artwork and Philanthropy Data Analytics Sep. 2021 - Present
Supervisor: David Goldberg and Mark Lewis *ORIE, Cornell*

· Collaborate with contacts from the Johnson Museum of Art to revamp the museum's internal database and analyze donation information, which aims to enhance visitor engagement and increase museum donation in the long run.

· Piloting a QR-code initiative that collects and analyzes visitor and donor information; clustering the museum's annual fund-giving data to identify key donors.

AWARDS AND RECOGNITION

· CRA Outstanding Undergraduate Researchers Award Cornell ORIE Nominee (2022)

- This award program recognizes undergraduate students in North American colleges and universities who show outstanding potential in an area of computing research.

· Tau Beta Pi Scholarship (2022-23)

- Awarded to junior Tau Beta Pi members on a competitive basis of high scholarship, campus leadership and service, and promise of future contributions to the engineering profession.

· Dean's List (2020-22)

· Honorable Mention in the Mathematical Contest In Modeling (2021)

- Developed an ARIMA model for forecasting Asian Hornet spread; performed sentiment analysis on laboratory comments and formulated an SVM model for classifying Asian Hornet based on geolocation and sentiment scores; developed a deep-learning image recognition model to distinguish between wasp species.

· James Scholar in Grainger College of Engineering (2020-21)

- An honors program that recognizes academically outstanding students.

· Wilson H. Tang CEE International Scholarship (2020)

- Awarded to one international student per year in the CEE department with outstanding academic achievement.

CAMPUS INVOLVEMENT

Cornell ORIE Undergraduate Society Aug. 2021 - Present
Co-President & Team Lead *Ithaca, NY*

· Coordinate external meetings with university offices, industry (CVS Health) and non-profit partners (Johnson Museum of Art) and internal meetings with the Cornell teams and professors.

· Assist in planning and organizing social and academic events.

Teaching Assistant / Course Assistant 2020 - 2022
Cornell ORIE & UIUC CS

· ORIE 4580\5580\5581: Simulation Modeling and Analysis in FA 22

· SYSEN 5200: Systems Analysis Behavior and Optimization in SP 22

· CS 125: Introduction to Computer Science (OOP in Java) in FA 20

Chinese Union - Illinois Chinese Student Organization Apr. 2020 - June 2021
Project Management Director & Executive Board Member *Champaign, IL*