XIANG LI

(+1) 608-422-9214 | xiang.li2@wisc.edu
205 Eagle Heights, Apt. H, Madison, Wisconsin, 53705

RESEARCH INTERESTS

Methodological areas Applied Probability and Stochastic Processes, Optimization
Application areas Healthcare Decision Making, Analysis of Machine Learning Algorithms

EDUCATION

Department of Industrial and Systems Engineering, University of Wisconsin-Madison
M.S. in Industrial Engineering *Aug. 2021 - Present*
Relevant Coursework: Stochastic Modeling Techniques, Introduction to Optimization, Advanced Algorithms, Decision Making in Health Care, Theory of Probability

Department of Mathematics, National Central University, Taiwan
Exchange student in Mathematics; GPA: 4.10/5.0 *Feb. - Jul. 2017*
Relevant Coursework: Functions of One Complex Variable, Methods of Numerical Computation

School of Applied Mathematics, Beijing Normal University, Zhuhai
B.A. in Financial Mathematics; GPA: 3.52/5.0, [top 15%] *Sept. 2015 - Jul. 2019*
Relevant Coursework: Mathematical Analysis, Probability and Mathematical Statistics, Ordinary Differential Equations, Stochastic Processes

PUBLICATION

Xie, W., Liu, T., **Li, X.**, Zheng, C., **Robust Homecare Service Capacity Planning**
Submitted to *Computers and Operations Research*, received on *Oct. 14, 2022,* currently under review.

RESEARCH EXPERIENCE

Agent-Based Modeling and Simulation on Implementation Science *Madison, US*
Department of Family Medicine and Community Health, University of Wisconsin-Madison *Aug. 2022 - Present*
Implementation Science and Engineering Lab, PI: Prof. Andrew Quanbeck
Research Assistant - 50% graduate assistantship

- Research goal: Use simulation theory-based modeling to improve the quality of life of patients facing addiction and a range of chronic conditions.
- Responsibilities:
  - Lead in designing and developing agent-based models/simulation algorithms for implementation science projects in the healthcare field.
  - Conduct cost-effectiveness analysis of planned papers for ongoing projects in the lab.

Stationary Diagnostic for Stochastic Gradient Descent with Constant Step-Size *Madison, US*
Department of Industrial and Systems Engineering, University of Wisconsin-Madison *Jan. 2022 - Present*
MLOPT research group, Advisor: Prof. Qiaomin Xie
Independent Researcher

- Research goal: The iterates of SGD with constant step-size behave as a homogeneous Markov Chain, this study intends to detect the stationary phase for constant SGD to improve its performance by diminishing its step-size after detecting its stationary phase.
- Responsibilities:
  - Reproduce experiments and algorithms in classic papers, *e.g., Chee and Toulis [2018]*; Realize their statistical method could have delays in detecting convergence because of the use of criteria related to successive gradients.
  - Combine the Markov Chain theory and statistical tools into the analysis of constant step-size SGD.
  - Propose a diagnostic algorithm to detect phase transition for such SGD, currently gaining a robust empirical result on simulated datasets.

Home Health Care (HHC) Resource Planning *Beijing, China*
School of Economics and Management, University of Chinese Academy of Sciences *Mar. 2020 - May. 2021*
PI: Prof. Shuming Wang
Research Assistant

- Research goal: Schedule the optimal allocation solution of the HHC service system under the uncertain service demand.
- Responsibilities:
  - Participated in the algorithm development to solve a large-scale mixed-integer programming problem; Implemented the algorithm using Gurobi.
  - Conducted experiments to evaluate the performance of proposed models, *e.g.,* compared it to the sample average approximation (SAA) approach and our proposed algorithm outperforms the SAA.
  - Engaged in the writing of the computational section of the final paper.
- Achievement: The research paper, *Robust Homecare Service Capacity Planning*, has been submitted for publication.

PROFESSIONAL EXPERIENCE

Oracle (China) Software Systems Co., Ltd. *Beijing, China*
Data Analyst, Data Camp *Nov. 2019 - Feb. 2020*

- Explored Oracle 19c Autonomous Database, Oracle SQL, and PL/SQL through internal training programs.
- Collaborated with the director Mr. Alexander Jing to map out the schematic schedule of a 1,200 KTA ethylene plant using Primavera P6.

Orient Overseas Container Line Co., Ltd. *Zhuhai, China*
Assistant Technical Engineer (Intern) & Data Analyst *Jan. - Apr. 2019 & Jul. - Nov. 2019*

- Collaborated with the team to develop an online delivery platform called E-DO with Java Spring Framework.
- Implemented Mask R-CNN algorithm to segment the front door of container using Python; Achieved AP[.50:.05:.95]:0.900.

TEACHING EXPERIENCE

ISyE 210-INTRODUCTION TO INDUSTRIAL STATISTICS *Madison, US*
Teaching Assistant *Jun. - Aug. 2022*
Department of Industrial and Systems Engineering, University of Wisconsin-Madison

- Undertook assistant workload, including developing homework and quiz questions, grading course projects.

HONORS AND AWARDS

First Prize Scholarship in Major *2018*
Third prize of Guangdong Province in the Contemporary Undergraduate Mathematical Contest in Modeling *2017*
Individual Scholarship (The C Programming Language, [*rank 1/85*]) *2016*

SKILLS

Programming Languages: Python, Julia, NetLogo, SQL, Java
Software Tools: Gurobi Solver, MATLAB, Tableau
Libraries: Numpy, TensorFlow, OpenCV
Others: TOEFL: 107 (Speaking-27), GRE: 326 (Q-169)