Xufei Liu

(678)431-0374 • xufei@upenn.edu

EDUCATION

University of Pennsylvania **Philadelphia, PA**
- Ph.D. Student in Operations Management **Fall 2022 – Spring 2027**

Georgia Institute of Technology **Atlanta, GA**
- Industrial and Systems Engineering Bachelor's Degree **Fall 2019 – May 2022**
- Honors Program
- GPA: 4.0

GRADUATE LEADERSHIP

GRADUATE AND PROFESSIONAL STUDENT ASSEMBLY **Fall 2022 – Spring 2023**
Wharton Doctoral Student Representative, Research Council
- Represented all Wharton Ph.D. students in the graduate student assembly
- Allocated travel grant funding and evaluated Ph.D. student applications
- Served on budget committee to allocated resources for future years
- Served on UPenn's research council

WHARTON DOCTORAL COUNCIL **Fall 2022 – Present**
Co-President, OIDD Representative
- Ran the WDC council and increased membership by 150% from past years.
- Planned various socials for all doctoral students in Wharton
- Relaunched and managed the council website for all students

GRADUATE RESEARCH

USING SENSOR DATA TO IMPROVE AVIATOR LEARNING
Collaborators: Gad Allon and Ken Moon

Abstract: For military aviators, functioning within a high-stress, no-fail work environment is a given. They have to make split-second decisions in the air, piloting 44,000 lbs of machinery while experiencing up to 9G's of acceleration. The learning curve is steep and potentially deadly - aviators may be affected by hypoxia under these intense stressors, which can lead to loss of consciousness or death. We outfit these aviators with wearable sensors to record the accelerations that their body withstands, along with biological responses such as heart rate. Using a deep state space model, we generate latent states that can be used in tandem with traditional operations methods such as dynamic programming.

TEACHING EXPERIENCE

Wharton Math Camp Instructor
- Sole instructor of Wharton's Math Camp for incoming Ph.D. students
- Designed, created, and implemented syllabus covering analysis, optimization, and probability.

CONFERENCE TALKS

- INFORMS 2023, October 14
- MIT Rising Scholars Conference, October 26

GRADUATE AWARDS

- Mack Institute Research Fellowship 2023

UNDERGRADUATE LEADERSHIP

UNDERGRADUATE RESEARCH AMBASSADORS **Fall 2020 - Current**

Vice President of Internal Affairs for URA

- Helped host undergraduate research fairs that 100+ people attended
- Created and coded automatic spreadsheets for tracking points and attendance
- Attended and planned diversity in research panels for undergraduate students

DELTA PHI LAMBDA SORORITY INC. **Fall 2020 - Current**

Vice President of Records/Academic Chair

- Created and coded automatic spreadsheets for tracking points and attendance
- Created study sessions and academic plans for the rest of the sisters
- Volunteered at the animal shelter, food pantry, and tree planting events
- Helped host events for Asian Awareness and fundraisers to "Stop AAPI Hate"

HONORS PROGRAM LEADERSHIP COUNCIL **Fall 2020 – Spring 2021**

Worked on the student development committee and as honors program retreat guide

- Hosted undergraduate research events between the honors program and undergraduate research ambassadors
- Led students through a two-day event and introduce them to Georgia Tech and the Honors Program

PUBLICATIONS

1. Joshua Harrington, Xuwen Hua, Xufei Liu, Alex Nash, Rodrigo Rios, Tony W.H. Wong, "Probabilistic chip-collecting games with modulo winning conditions", Discrete Applied Mathematics, Volume 324, 2023, Pages 93-98, ISSN 0166-218X.
2. Glassband, J., Koch, G., Lebiere, S., Liu, X., & Sabini, E. (2021). On the Assignment Graphs of Oriented Graphs. *ArXiv*. https://doi.org/10.48550/arXiv.2111.04882
3. https://doi.org/10.1016/j.dam.2022.08.031.OEIS Sequences with authors Eugene Fiorini, Jared Glassband, Garrison Lee Koch, Sophia Lebiere, Xufei Liu, Evan Sabini, Nathan B. Shank, Andrew Woldar, 2021.
    a. A346189 (Permutations with no strong fixed points or small descents)
    b. A346198 (Permutations with no strong fixed points but has small descents)
    c. A346199 (Permutations with strong fixed points but has no small descents)
    d. A346204 (Permutations with strong fixed points and small descents)

UNDERGRADUATE CONFERENCE SPEAKING ENGAGEMENTS

1. Young Mathematicians Conference by Ohio State – Talk **Aug 20, 2021 – Aug 22, 2021**
    a. Counting Permutations Without Strong Fixed Points nor Small Descents
2. Northeast Combinatorics Network Combinatorics Klatch – Poster Presentation **Aug 3, 2021**
    a. Counting Permutations Without Strong Fixed Points nor Small Descents
3. CUR's Research Experience for Undergraduates – Talk **Oct 25, 2021**
    a. On the Girth of Assignment Graphs Generated from Diagraphs
4. Joint Mathematics Meeting – Poster Presentation **Jan 5, 2022 – Jan 8, 2022**
    a. On the Girth of Assignment Graphs Generated from Digraphs
5. Nebraska Conference for Undergraduate Women in Mathematics - Talk **Jan 21, 2022 – Jan 23, 2022**
    a. On the Girth of Assignment Graphs Generated from Digraphs

UNDERGRADUATE RESEARCH EXPERIENCE

Moravian Computational Mathematics REU **Summer 2021**

Worked as undergraduate researcher on random races and assignment graphs

- Gave poster presentation at the NCN Combinatorics Klatch on assignment graphs
- Gave recorded talks at the Young Mathematicians Conference on random races and assignment graphs
- Coded recursive python programs to generate assignment graphs and calculate valid permutations
- Created python visualization tool for assignment graph research
- Led the drafting and submission of 4 sequences to OEIS

Undergraduate Research Assistant **Fall 2019 – Spring 2020**

Conducted Literature Review of Various Sources with Valerie Thomas

- Worked with Professor Valerie Thomas on the Impact of Rural Electrification for Women in Africa
- Submitted proposal and final draft on meta-analysis of current literature available

Researched Optimization of Bucket Brigades with Robert Foley **Summer 2020 – Summer 2021**

- Worked with Professor Robert Foley on Bartholdi's Bucket Brigade Conjecture
- Created various generator and transition matrices for state spaces of stations and workers
- Proved a stationary vector for 2 stations and any number of workers

Vertically Integrated Research Project Involvement **Fall 2020**

Chronic Disease and Diabetes Project with a focus on cost and comorbidities

- Modified an AnyLogic model to model treatment costs for those with chronic diseases
- Gave presentation on importance of comorbidity development and its effect on cost

Automated Algorithm Design **Fall 2020 – Current**

- Stored and queried for valid individuals in an SQL database
- Worked with creating automatically defined functions for machine learning models
- Worked with auto machine learning codebase to analyze stocks datasets
- Used git to work on larger codebase to create modular subsets of machine learning models

UNDERGRADUATE WORK EXPERIENCE

Undergraduate Teaching Assistant **Spring 2020 - Current**

Teaching Assistant for various classes

- Physics I: Helped run labs and graded quizzes
- Applied Probability: Head TA that created assignments, holds office hours, and grades homework
- Probability and Statistics: Head TA that held office hours and graded homework
- Simulation: Head TA that held office hours and graded homework

Industrial and System Engineers (IISE) Tutor **Spring 2020 – Summer 2021**

Tutor for probability courses for IISE group

- Held weekly office hours on probability and stochastics courses

UNDERGRADUATE ACADEMIC AWARDS AND HONORS

- Southern Management Association Pre-Doctoral Consortium Finalist
- Georgia Institute of Technology STAMPS Semifinalist
- Georgia Tech ISyE Alpha Pi Mu Academic Excellence Award

SKILLS

Languages: English – Fluent, Chinese – Basic, French - Basic

Skills: R, Python (Pandas, NumPy, Matplotlib, Seaborn, Scikit-Learn), LaTeX, Glowscript, Anylogic, Microsoft Suite, Presentation and Conference Experience, Vim, Git, HTML Certified