Xufei Liu

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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, 4.0 GPA

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 UPenn's research council

WHARTON DOCTORAL COUNCIL **Fall 2022 – Present**

Co-President, OIDD Representative

- Presided over the WDC council and organized 24 events for the Wharton Ph.D. community
- Created the Wharton GAPSA Fellowship through collaborating with administration

WHARTON-INSEAD DOCTORAL CONSORTIUM **Fall 2024**

Organizer

- Served on a committee of 6 to organize a doctoral consortium between Wharton and INSEAD
- Assigned and managed the review process for submitted papers
- Organized accommodations, travel, meals, and conference venues for the consortium
- Hosted two parallel tracks, 35 presenters, two panels, and two keynotes

GRADUATE RESEARCH

USING SENSOR DATA TO IMPROVE AVIATOR LEARNING

Collaborators: Gad Allon and Ken Moon

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. We outfit these aviators with wearable sensors to record the accelerations that their body withstands, along with biological responses such as heart rate. We create a semi-supervised model with importance sampling for targeted learning to monitor the health risks of training aviators and intervene before dangerous, and potentially deadly consequences. This methodology can be extended to any high-dimensional, complex setting where expert labels are costly, or impossible, to obtain.

IMPROVING MEMORY ABILITIES WITH STRUCTURAL ESTIMATION AND RL

Collaborators: Gad Allon and Ken Moon

We structurally model a student's learning and memory ability to uncover their underlying knowledge state. We empirically show the improvement in learning ability over time and the formation of knowledge graphs between related tasks for language learning. Then, we design a reinforcement learning system to create a novel algorithm that aims to improve the latent student's ability to learn. We aim to create a new methodology that can be used to improve a latent human's abilities, whether in the workforce or in education.

LLMS: DO THEY HELP OR HARM A THERAPIST'S DIAGNOSTIC WORKFLOW
Collaborators: Hummy Song and Christian Terswiesch
We run a field experiment on therapists specializing in adolescent treatment using CBT to find the impact of LLMs with a "human in the loop". We test for the impact of LLMs on generating diagnostic reports and find the heterogeneous impacts over different therapists. Then we evaluate the quality of generated reports to see if summaries and diagnoses have higher quality, lower quality, higher variance, or lower variance to see the long-term impact of LLMs in the mental health field.

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.
- Taught 40+ Ph.D students with all positive reviews over 2 years.

CONFERENCE ORAL PRESENTATIONS

INFORMS 2023, MIT Rising Scholars Conference, 2023, INFORMS MSOM 2024, INFORMS 2024, POMS 2025, INFORMS MSOM 2025, Purdue Supply Chain & Operations Management 2025, INFORMS 2025

GRADUATE AWARDS

- Mack Institute Research Fellowship 2023
- George James Award 2024
- George James Award 2025

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)

SKILLS

Skills: R, Python, App design, Industry Collaboration, LaTeX, Vim, Git, Qualtrics Survey Design