Benjamin Melchior Kacso Panny

Ph.D. Student in Intelligent Systems
University of Pittsburgh

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Education

University of Pittsburgh, Pittsburgh, PA   2024 - 2028 (Expected)
Ph.D. in Intelligent Systems (Sociotechnical Systems Lab)
Advisor: Dr. Amin Rahimian

University of Pittsburgh, Pittsburgh, PA   2024
M.S. in Biostatistics: Health Data Science Concentration
Thesis: Continuous-Time Structural Equation Modelling of Fatigue and Physical Activity with Missing Data
during Chemotherapy Treatment
GPA: 3.98/4.0
Committee: Drs. Chaeryon Kang, Gong Tang, and Carissa Low

University of Rochester, Rochester, NY   2017
B.S., B.A., Neuroscience, Psychology
GPA: 3.7/4.0

Selected Research Experience

Sociotechnical Systems Lab, University of Pittsburgh   2024 - Present
Graduate Student Researcher
- Developing a national-scale stochastic metapopulation model (SEIRV) to evaluate the cost-effectiveness of vaccination reminders, strictly adhering to CHEERS 2022 and Epidemic Scenario Modeling Hub guidelines.
- Formulating novel topological stopping rules for epidemic modeling hubs using Wasserstein distances and functional boxplot stability to optimize simulation convergence.
- Engineered a closed-loop Bayesian Optimization framework for rational polymer design, utilizing Gaussian Process surrogates to accelerate Liquid Crystal Elastomer discovery.

AI-READI Consortium, National Institutes of Health   2025 - Present
Research Intern
- Authoring a manuscript analyzing data access requests for the AI-READI dataset to evaluate the alignment between stated research purposes and dataset licensing terms.
- Evaluating data standards and ethical frameworks for large-scale medical datasets, specifically focusing on Privacy Enhancing Technologies (PETs) such as Differential Privacy and Synthetic Data.
- Leveraging multimodal AI and health economic analyses to assess the cost-effectiveness of AI-driven predictions and interventions for Type 2 Diabetes.

Honda Research Institute   2025
Multi-Agent Systems Research Intern
- Developed an agent-based model (ABM) to simulate ad-hoc collaboration in a complex, physically-grounded environment.
- Designed and implemented heterogeneous agent "personas" with social traits (e.g., skill assertion, collaboration initiative) to study emergent team dynamics.
- Identified the "specialist's dilemma," demonstrating how rigid specialization creates system-level bottlenecks, workload inequality, and fragmented, homophilous social networks.
- Synthesized findings into a first-author extended abstract accepted to AAMAS 2026.

Clinical Application of Neuroscience Lab, University of Pittsburgh Medical Center   2023 - Present
Systems Programmer/Analyst
- Published experiment inferring neural substrates of negative reinforcement learning in OCD patients
- Created database and data processing pipelines with R for multi-site clinical trial

Selected Publications

1. Panny B, Zahedi Z, Mehrotra S, Akash K (2026). **Too Many Specialists: Emergent Inefficiencies and Bottlenecks for Multi-Agent Ad-Hoc Collaboration** (Extended Abstract). *Proceedings of the 25th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2026).* [To appear]

2. Rahimian MA, Panny B, & Joshi JBD (2026). **Privacy at Scale in Networked Healthcare**. *7th IEEE International Conference on Trust, Privacy and Security in Intelligent Systems (TPS)*. [PDF]
3. Panny B, Rahimian MA (2025). **Modeling the Public Health Impact of Vaccination Reminders and Misinformation**. *EAAMO 2025 Conference*.
4. Panny B, Price RB, Wears A, Ahmari SE (2024). **Altered Neural Activity During Negative Reinforcement in People with Obsessive-Compulsive Disorder**. *Cognitive Therapy and Research*. [Link]
5. Kopelman J, Keller TA, Panny B et al. (2023). **Rapid Neuroplasticity Changes and Response to Intravenous Ketamine: A Randomized Controlled Trial in Treatment-Resistant Depression**. *Transl Psychiatry* 13, 159. [Link]
6. Price RB, Spotts C, Panny B, et al. (2022). **A Novel, Brief, Fully Automated Intervention to Extend the Antidepressant Effect of a Single Ketamine Infusion: A Randomized Clinical Trial**. *The American Journal of Psychiatry*. [Link]

Presentations & Seminars

Honda Research Institute October 2025
Too Many Specialists: Emergent Inefficiencies and Bottlenecks for Multi-Agent Ad-Hoc Collaboration

University of Pittsburgh, Intelligent Systems Program April 2025
The Cost-Effectiveness of Vaccination Interventions in Increasing and Decreasing Infectious Disease Burden

Honors and Awards

- Delta Omega Dissertation Award (2024)
- Biostatistics Chairman's Excellence Award (2021 - 2023)
- Travel Award, University of Wisconsin Symposium on Emotion (2023)