Yinuo Qin

Ph.D. candidate
Laboratory for Intelligent Imaging and Neural Computing Lab
Department of Biomedical Engineering
Columbia University

Website: http://www.yinuoqin.com/
Email: yinuo.qin@columbia.edu

Research Interests

Cognitive Neuroscience, Decision Neuroscience, Human-Centered AI, Teaming Intelligence, Multimodal AI/ML

My scientific mission is to understand **the fundamental principles of teaming intelligence** to design **scalable** and **practical** hybrid human-machine teams. Specifically, I aim to design intelligent agents that operate not just as tools but as cognitive collaborators: agents capable of understanding human team structures, reasoning about team dynamics, and adapting to support individual and team-level decision-making in high-stakes environments.

In my long-term goal, I am to build **"Proactive AI"** and augment humans to be **"Proactive Humans".**

Education

Columbia University Jan. 2020 – Present.

Ph.D., candidate, Biomedical Engineering

Advisor: Paul Sajda, Chair and Vikram S. Pandit Professor of Biomedical Engineering, Electrical Engineering and Radiology

University of California, Davis Sep. 2016 – Dec. 2019

B.S., Mathematics

Advisor: Lee Miller, Professor of Neurobiology, Physiology, and Behavior

Publications

11. **Yinuo Qin**, Richard Lee, Weijia Zhang, Xiaoxiao Sun, Paul Sajda
Physiologically-Informed Predictability of a Teammate's Future Actions Forecasts Team Performance
iScience, Cell Press, 2025

10. **Yinuo Qin**, Paul Sajda
Teaming with AI: A Multi-Modal Investigation of Human-AI Team Dynamics
2025 AAAI Spring Symposium (The Association for the Advancement of Artificial Intelligence)

9. **Yinuo Qin**, Richard Lee, Paul Sajda
Covert Perception of AI Adversely Impacts Team Performance and Changes Physiological Dynamics Despite Human-Level AI Competence
Communications Psychology (In submission), 2025

8. **Yinuo Qin**, Nina Lauharatanahirun, Paul Sajda
Electroencephalographic Insights into Decision-Making during Lottery Choice Tasks
Nature Human Behavior (Under preparation), 2025

7. **Yinuo Qin***, Michael Tolston*, Gregory Funke, Paul Sajda
Unraveling Team Dynamics: Multiplex Recurrence Network Analysis of Multimodal Physiological Synchrony and Communication in Team Performance
Scientific Reports (In submission), 2025

6. **Yinuo Qin**, Paul Sajda
Decoding Facial Expressions from Facial EMG in Virtual Reality
(Under preparation), 2025

5. **Yinuo Qin*,** Xiaoxiao Sun*, Paul Sajda
From Humans to Human-AI Teams: EEG-Based Insights into Team Coordination and Cognitive Load

Nature Neuroscience (Under preparation), 2025

4. **Yinuo Qin*,** Ankur Samanta*, Paul Sajda
   Modeling and Guiding Human Decision-Making in Lottery Tasks with Large Language Models
   Science Advances (Under preparation), 2025

3. **Yinuo Qin**, Weijia Zhang, Richard Lee, Xiaoxiao Sun, Paul Sajda
   Pupil-Linked Arousal is Predictive of Team Performance in a Virtual Reality (VR) Sensory-Motor Task
   Conference of the IEEE Engineering in Medicine & Biology Society (**EMBC**), 2024

2. Michael Tolston, **Yinuo Qin**, Gregory Funke, Paul Sajda
   Unraveling Team Dynamics: Decomposing Multilayer Networks for Insights into Joint Performance
   ASPIRE, Presented by HFES (**ASPIRE**), 2024

1. **Yinuo Qin**, Weijia Zhang, Richard Lee, Xiaoxiao Sun, Paul Sajda
   Predictive Power of Pupil Dynamics in a Team Based Virtual Reality Task
   IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (**IEEE VRW**), 2022

Teaching Experience

Deep Learning for Biomedical Signal Processing (Teaching Assistant)	Fall 2021
PhD-Level Special Topics in Biomedical Engineering (Teaching Assistant)	Fall 2020
Calculus for Biology and Medicine (over 300 students) (Teaching Assistant)	Fall 2017

Awards and Honors

Columbia/AFRL Center of Excellence in the Neuroscience of Decision Making Young Scientist	Mar.2025
1st Place in the Paradigm Challenge on Human-Guided System Adaptation (HSA) ARL Hackathon	Aug. 2023
1st Place in the Experimentation Challenge on Human-Guided System Adaptation (HSA) ARL Hackathon	Aug. 2023
Air Force Center of Excellence in the Neuroscience of Decision-Making Newsletter Vol. 1	Jan. 2023
1st Place in the Experimentation Challenge on Human-Guided System Adaptation (HSA) ARL Hackathon	Aug. 2022
1st Place in the Signal Modeling Course Project, Columbia University	Spring 2020
Dean's Mentorship Award, UC Davis	2019-2020

Invited Talks and Posters

Jun. 2025: Multi-human and Human-AI Decision Making and Lottery Choice.
Systems Intelligence Lab (Columbia University)

Jun. 2025: Biomarkers of Collaboration in Human-AI Teams Performing Joint Control Tasks.
Air Force Center of Excellence in the Neuroscience of Decision-Making (NeuroCoE)

Mar. 2025: Biomarkers of Collaboration and Performance in Heterogeneous Human-Machine Teams.
AAAI Spring Symposium 2025: Current and Future Varieties of Human-AI Collaboration

Feb. 2025: Teaming with AI: A Multi-Modal Investigation of Human-AI Team Dynamics.
Columbia University 9th Annual Engineering in Medicine Symposium

Sep. 2024: Unraveling Team Dynamics: Decomposing Multilayer Networks for Insights into Joint Performance.
Air Force Center of Excellence in the Neuroscience of Decision-Making (NeuroCoE)

Sep. 2024: Unpredictability of Team Member Actions as a Biomarker Indexing Human Team Performance.
Air Force Center of Excellence in the Neuroscience of Decision-Making (NeuroCoE)

Sep. 2024: Behavior and Performance in Heterogeneous Human-Machine Teams.
Army Research Lab Innovation Summit

Mar. 2024: Biomarkers of Team Performance.
Army Research Lab Paradigm Symposium

Nov. 2023: Deciphering Future: How Teammates' Physiological and Behavioral Signals Predict Individual Actions.

Air Force Center of Excellence in the Neuroscience of Decision-Making (NeuroCoE)

May 2023: How do humans make decisions in a group.

Human Machine Teaming Paradigm Development Meeting.

Aug. 2022: Multi-human teaming in VR.

Human-Guided System Adaptation (HSA) Science Challenge.

Academic Services

Reviewer:

IEEE Engineering in Medicine and Biology Conference (EMBC)

Student Mentorship

Weijia Zheng (Master student, next: Ph.D. candidate at Columbia University)
Richard Lee (Undergrad Student, next: Master student at Stanford University)
Joanna Qiao (Master student, next: AI Engineer at VoiceOut)
Jess Quinones (Undergrad Student, next: Master student at Yale University)
Emma Sombers (Master student, present student)
Tommy Lu (Master student, present student)
Nikos Kapsampelis (High school student)
John Wei (Master student, next: Harvard Medical School)
Chongkun Zhao (Master student, next: Ph.D. student at Columbia University)

Research Founded by

Air Force Research Laboratory (Center of Excellence)

- Lead PI Lab, $5M, 09/2022 – 09/2026

Army Research Laboratory

- Junior Investigator (Sole developer of the project prototype for the winning proposal)
- ~$2M, 09/2019 – Present

National Science Foundation

Vannevar Bush Faculty Fellowship, US Department of Defense, awarded to Ph.D. Advisor

Senior Research Collaborators

David Boothe (Program Manager, Branch Chief, Army Research Laboratory)
Nicholas Waytowich (AI Research Scientist, Army Research Laboratory)
Michael Tolston (Core Research Area Lead, Air Force Research Laboratory)
Gregory Funke (Team Lead, Air Force Research Laboratory)
Nina Lauharatanahirun (Assistant Professor, Pennsylvania State University)
Nuttida Rungratsameetaweemana (Assistant Professor, Columbia University)