

Mohammad Amin Samadi

Researcher: Learning Sciences, Human-AI Interaction & Learning Analytics

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SUMMARY

Mixed-methods researcher studying how people learn and build capability with AI. PhD candidate in Education (HCI / Learning Analytics) at UC Irvine; dissertation on human-AI collaboration in teams. I build the instruments and platforms my research questions require: I designed and lead TRAIL, a controlled-study platform for human-AI teaming with randomized assignment, survey instrumentation, and automated data capture. I also ship production LLM systems (currently a Claude-based agent with full evaluation infrastructure at ROI-AI).

EDUCATION

Ph.D. Candidate, Education (HCI / Learning Analytics)

2021 – Present

University of California, Irvine. Advisor: Nia Nixon

Irvine, CA

- Dissertation (in progress): human-AI collaboration in teams, built on the TRAIL platform.
- UCI School of Education Vandell Dissertation Research Award; Best Short Paper Award, EDM 2025.

B.Sc., Computer Engineering

2015 – 2019

Isfahan University of Technology. Advisor: Mohammad Hossein Manshaei

Isfahan, Iran

INDUSTRY EXPERIENCE

AI Scientist Intern

Jan 2026 – Present

ROI-AI (agentic systems for retail chargeback management)

San Francisco, CA

- Built the core dispute-automation agent (Claude tool use) that processes a chargeback end-to-end (claim extraction, evidence gathering from ERP systems and email, verification against shipment records, dispute drafting), replacing a manual analyst workflow.
- Stood up the evaluation and observability infrastructure that lets the team ship agent changes against production-sampled cases without disrupting live workflows.
- Designed the root-cause analysis system that explains *why* each chargeback happened, with interactive per-case reports analysts use to brief suppliers on prevention.
- Researched GRPO and SFT post-training to distill the production agent's reasoning into smaller, deployable models.
- Owned cross-cutting infrastructure: prompt caching, LLM cost tracking, queue-based workers, OCR ingestion, AWS deployment.

Research Intern

Summer 2024

Lettercast.ai (AI-generated podcasts from long-form research)

San Francisco, CA

- Designed an agentic workflow (CrewAI) converting arXiv papers into podcast scripts with multimodal LLMs, including a claim-verification stage to catch hallucinated content before audio synthesis.
- Contributed to NSF SBIR and Llama 3.1 Impact Grant proposals on LLM output-verification benchmarks for responsible AI.

RESEARCH EXPERIENCE

TRAIL: Team Research and AI Integration Lab

May 2023 – Present

Lead researcher and engineer, Nixon Lab, UC Irvine

Irvine, CA

- Designed and lead TRAIL, a research platform that embeds configurable LLM teammates into real-time, multi-party chatrooms for controlled studies of human-AI collaboration; deployed on AWS and used across multiple lab studies with 50+ concurrent participants.
- Built the measurement toolkit the lab's studies run on: a self-hosted survey module, an A/B framework with randomized team assignment and automated data capture, RAG-grounded study materials, and collaborative experiment sharing with role-based permissions and version history.
- Led qualitative coding of team discourse data: developed coding schemes, trained and managed coder teams, and established inter-rater reliability before analysis.

- Designed and administered survey instruments for studies of team dynamics and perceptions of AI teammates.
- Analyzed team interaction data with mixed-effects models, ANOVA, and psycholinguistic methods (LIWC, discourse analysis), linking team discourse dynamics to collaboration outcomes; complemented statistical findings with qualitative analysis of chat transcripts.
- Publish public-facing research writeups of TRAIL studies at aminsamadi.org/blog.
- Architected the AI teammate as a multi-agent pipeline (hierarchical memory, Big-Five persona compiler, turn-taking rules calibrated against real chat data) with a simulation/replay tool for testing behavior changes against past experiments before deployment.
- Managed a cross-disciplinary team of research interns and MSWE capstone developers.

Multimodal Classroom Video Understanding Pipeline

Jan 2025 – Dec 2025

github.com/aminsamd/multimodal-transcription, UC Irvine

Irvine, CA

- Built an AI pipeline that transcribes and semantically segments classroom video to support research on teacher-student interaction quality; multimodal (audio + visual) transcription via Gemini 2.5 Pro, segmentation via temporal embedding similarity, deployed at scale on AWS ECS.
- Led the design of a qualitative coding framework for teacher actions, then operationalized it in a multi-agent system that codes classroom video automatically.
- Built a human-coded evaluation set from the framework and used it to validate the multi-agent system's coding against expert judgments. Work published in two 2026 papers (see Selected Publications).

SKILLS

Research methods: mixed-methods research, experimental design, A/B testing, survey design, qualitative coding and inter-rater reliability, instrument development and validation, statistical modeling (mixed-effects models, ANOVA), psycholinguistic analysis (LIWC), discourse analysis, learning analytics, LLM evals and benchmark construction, UX research (HCI)

ML & LLMs: AI agents and multi-agent systems, Claude Agent SDK workflows, tool use / function calling, RAG, memory systems, prompt engineering, prompt caching, post-training (SFT, GRPO), reward modeling, LLM observability, multimodal LLMs (Claude, Gemini, OpenAI, Qwen)

Engineering: Python, R, TypeScript, SQL; PyTorch, Hugging Face Transformers, TRL, LangChain, CrewAI; Django, Flask, FastAPI, Next.js/React, Socket.IO; AWS (ECS, Fargate, S3, Textract), Docker, Terraform, PostgreSQL, GitHub Actions

SELECTED PUBLICATIONS

- J. Choi, **M. A. Samadi**, S. Jaquay, S. Park, N. Nixon. "Read the Room or Lead the Room: Understanding Socio-Cognitive Dynamics in Human-AI Teaming." *Learning Analytics and Knowledge (LAK '26)*.
- **M. A. Samadi**, N. Nixon. "Personalities at Play: Probing Alignment in AI Teammates." Preprint, 2026.
- J. Wu, L. Li, **M. A. Samadi**, et al. "Validating High-Inference Pedagogical Constructs: Preliminary Evidence from a Multi-agent Architecture for Equity-Focused Mathematics." *International Conference on Artificial Intelligence in Education (AIED '26)*.
- L. Li, **M. A. Samadi**, J. Wu, et al. "Automated Multimodal Transcription for Belonging-Centered Classroom Interaction Analysis: Opportunities and Challenges." *International Conference on Artificial Intelligence in Education (AIED '26)*.
- **M. A. Samadi**, S. JaQuay, J. Gu, N. Nixon. "The AI Collaborator: Bridging Human-AI Interaction in Educational and Professional Settings." Preprint, arxiv.org/abs/2405.10460.
- **M. A. Samadi**, S. JaQuay, Y. Lin, E. Tajik, S. Park, N. Nixon. "Minds and Machines Unite: Deciphering Team Social and Cognitive Dynamics with AI." *Learning Analytics and Knowledge (LAK '24)*.
- **M. A. Samadi**, D. Shariff, R. Ibarra, N. Nixon. "Balancing the Scales: Using GPT-4 for Robust Data Augmentation." *Companion Proceedings of LAK '25*.
- S. Park, D. Shariff, **M. A. Samadi**, N. Nixon, S. D'Mello. "From Discourse to Dynamics: Understanding Team Interactions Through Temporally Sensitive NLP." *Educational Data Mining (EDM '25)*. **Best Short Paper Award**.
- K. Karbasi, K. Hong, **M. A. Samadi**, G. Pottie. "Multi-Agent Collaborative Framework for Math Problem Generation." *Educational Data Mining (EDM '25)*.