

ALI KERAMATI

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Education

University of California Irvine

Jan. 2025 – Now

Ph.D in Educational Data Science (GPA: 4/4)

Irvine, CA, USA

- Relevant Courses: NRL NTWKS&DEEP LRNG (4/4), LEARNING ANALYTICS FUNDAMENTALS (4/4), QUAL RSCH MTHDS (4/4), NEURAL ARCH OF LANGUAGE (4/4), LEARNING ANALYTICS PRACTICUM (4/4)

University of Tehran

Sep. 2019 – Jul. 2024

B.Sc. in Computer Engineering (GPA: 18.51/20) & Minor in Educational Science (GPA: 19.21/20)

Tehran, Iran

- Major Courses: Discrete Mathematics (20/20), Data Structures and Algorithms (20/20), Artificial Intelligence (19.1/20), Machines and Language Theory (18.9/20), Engineering Probability and Statistics (17.8/20), Internet Engineering (20/20), Foundations of IT (19.6/20), Large Language Models (20/20)
- Minor Courses: Educational Psychology (18.75/20), Instructional Design (19/20), Curriculum Development (20/20), Intro to Psychological Tests (20/20), Teaching Methods (20/20), Qualitative and Quantitative Research Methods (19/20)

Allame Helli 4 High School

Sep. 2016 – Jul. 2019

Diploma in Mathematics and Physics

Tehran, Iran

- Part of the National Organization for Development of Exceptional Talents (NODET)

Research Interests

- Learning Analytics
- Multi-Agent Debate/Role-playing
- LLM-as-judge
- Human-Computer Interaction
- PEFT, RAG, Alignment in MAS
- Cognitive Evaluation of LLMs

Work Experience

Graduate Student Researcher @ UC Irvine

Jan. 2025 – Present

Digital Learning Lab, PI: Prof. M. Warschauer

Irvine, CA, USA

- SWE Agent for Educational Tools — Research on Multi-Agent LLM Systems — Fine-tuned LLaMA and BERT for argumentative essay scoring and segmentation using the PERSUADE dataset (25k+ essays) — PapyrusAI, a GPT-4-based generative writing tutor for scaffolded feedback, deployed in university and K–12 settings.

Visiting Scholar @ Harvard University

Jul. 2025 - Sep. 2025

Learning Media Lab, PI: Prof. Y. Xu

Cambridge, MA

- Built web-based math learning experiments with LLM tutoring vs. no-AI to study effects on reasoning, achievement, and student attitudes — Developed *Curio 2*, a LangGraph-based science chatbot with scaffolded inquiry and graph-driven dialogue flow with state management — Aligned with *NGSS* and *BSCS 5E* to foster curiosity, question-asking, and conceptual learning.

AI/ML Engineer

Sep. 2022 - Jul. 2024

Tadvin Farayand Co.

Tehran, Iran

- Conducted data analysis on structured ERP records and unstructured industrial data — Applied research of AI solutions within ERP and industrial software ecosystems by designing multi-agentic LLM workflows to enable autonomous collaboration across modules for tasks such as inventory analysis, document processing, and predictive maintenance.

Teaching Assistant

Sep. 2020 - Jul. 2023

University of Tehran

Tehran, Iran

- Part-time on-campus TA for courses such as: *Discrete Mathematics* · *Data Structures and Algorithm Design* · *Software Engineering* · *Internet Engineering* · *Engineering Probability and Statistics* · *Electrical Circuits* · *Database Design* · *Unity Game Development*

Publications

Keramati A. and Warschauer M. (2025). "From General to Specific: Enhancing Automated Essay Scoring through Sequential Fine-Tuning", (Pre-print)

Keramati A., Zhou S., Mehrotra S., and Warschauer M. (2025). "MADEST: Multi-Agent Essay Scoring Triangulation", (Pre-print)

Shahhoseini N., Taghiyareh F., and Keramati A. (2025). "iTAG: Easy, Rapid, Automatic Intelligent Tagging for Educational Contents", 2025 29th International Computer Conference, Computer Society of Iran (CSICC)

Keramati A., Keramati M. R., and Arefian M. H. (2024). Students' Reflection on the Effect of Collaborative Learning on Learning Environment and Academic Achievement in Online Reflective Platforms, *Reflective Practice*

Fallah A., Keramati A., Nazari M., and Mirfazeli F. (2024). "Automating Theory of Mind Assessment with a LLaMA-3-Powered Chatbot: Enhancing Faux Pas Detection in Autism", 14th International Conference on Computer and Knowledge Engineering (ICCKE 2024)

Keramati M. R., Gillies R., Ansarizadeh F., and Keramati A. (2024). Challenges and Solutions of Implementing Cooperative Learning in Classroom Environments: Lived Experiences of Primary School Teachers in Iran, *International Journal of Early Years Education*

Vatandoust M., Mohajeri M. M., Keramati A., and Ahmadabadi M. N. (2024). "AI-powered Digital Framework for Personalized Economical Quality Learning at Scale", *Journal of Computer Assisted Learning* (Under Review)

Keramati M. R., Gillies R., Ansarizadeh F., and Keramati A. (2023). The Concept of Cooperative Learning in Australia and Iran, *Iranian Journal of Comparative Education*

Research Experience

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| LLMs as Novice Programmers — Simulating Student Coding Mistakes <i>ICE Lab – Researcher under Prof. Yang Shi</i> <ul style="list-style-type: none">Continuing the LearnLab project by building a multi-agent “student-simulator + verifier” pipeline to generate Java solutions with realistic <i>logic</i> errors and stated misconceptions; benchmarked against CodeWorkout student submissions | Jul. 2025 – Present <i>LearnLab Summer School</i> |
| Student Learning Analytics and LLMs Benchmarking <i>Mathe Lab – Researcher under Prof. Shayan Doroudi</i> <ul style="list-style-type: none">Analyzed score trends on matched UCI quizzes across years, comparing pre- vs. post-LLM adoption, to estimate impact on student performance — benchmarked LLMs on the same quizzes to assess their actual capabilities. | Jan. 2025 – Present <i>UC Irvine</i> |
| Collaborative AI Classmates <i>LaLA-Lab – Researcher under Prof. Nia Nixon</i> <ul style="list-style-type: none">Built collaborative LLM-powered classmates with parameterized response controls to deliver human-like dialogue in a problem-solving chatbot environment. | Apr. 2025 – Sep. 2025 <i>UC Irvine</i> |
| Computer-Supported Collaborative Learning Environments <i>Remote Project – Researcher under Prof. Robyn M. Gillies</i> <ul style="list-style-type: none">Evaluated CSCL environments using mixed methods: coded classroom discourse in ATLAS.ti and triangulated with surveys, activity logs, and performance metrics — Built quantitative models to link interaction patterns to learning outcomes | Sep. 2021 – Dec. 2024 <i>University of Queensland</i> |
| Personalized Learning via OLM <i>Cognitive Systems Lab – Researcher under Prof. M. Nili Ahmad Abadi</i> <ul style="list-style-type: none">Developed a customized GPT tutor (RLHF-fine-tuned) within our LMS (aiedut.ir) — Designed an Open Learner Model (OLM) to drive personalized learning via cognitive-aware hints and feedback. | May 2023 – Dec. 2024 <i>University of Tehran</i> |
| LLM Optimization for Domain Reasoning <i>UT NLP Group – Researcher under Prof. M. J. Dousti & Prof. H. Faili</i> <ul style="list-style-type: none">Specialized LLMs with parameter-efficient tuning (LoRA/Adapters) and a LangChain-based RAG stack (chunking, vector search, re-ranking, context compression) to improve knowledge-grounded reasoning | Feb. 2024 – Dec. 2024 <i>University of Tehran</i> |
| Automated Interactive Learning Objects <i>Technology Enhanced Learning Lab — Researcher under Prof. F. Taghiyareh (Internship)</i> <ul style="list-style-type: none">Automated creation of interactive learning objects by extracting/normalizing IEEE LOM metadata and integrating Avida-ED simulations; applied genetic algorithms to personalize activity parameters | Jul. 2023 – Aug. 2023 <i>University of Tehran</i> |
| Rehabilitation Chatbot for Autism Spectrum Disorder <i>National Brain Centre — Researcher under Prof. F. S. Mirfazeli (Internship)</i> <ul style="list-style-type: none">Built a LLaMA-3 chatbot to administer the FPRT — Ran a non-interactive assessment followed by an interactive rehabilitation dialogue with hints and a reassessment added an automated scoring module (LLM-as-judge) to produce final reports | Jul. 2024 – Sep. 2024 <i>Iran Univ. of Medical Sciences</i> |

Academic Projects

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| Handwriting Recognition Neural Network <i>Keras, TensorFlow</i> <ul style="list-style-type: none">Built Feed-Forward Neural Network from scratch — Developed model with Keras and TensorFlow | Artificial Intelligence |
| Baloot Online Shop Website <i>Java, JavaScript, Spring, Tomcat, React</i> <ul style="list-style-type: none">Fully functioning Amazon clone — Used CI/CD pipelines, JDBC, JUnit, and Github OAuth | Internet Engineering |
| Pong Game Using Mobile Sensors <i>Java, Android Studio, Canvas</i> <ul style="list-style-type: none">Implemented accelerometer and gyroscope sensors — Applied real-world physics for ball and paddle movement | Real-time Embedded Systems |

Technical Skills

Programming Languages: C/C++/C#, Python, Java, JavaScript, R, HTML/CSS, Verilog, Assembly, Stata, SQL
Frameworks & Libraries: LangChain, CrewAI, ReAct, PyTorch, TensorFlow, React, Spring
Technologies & Tools: CUDA, Git, Docker, Kubernetes, Maven, Makefile, Tomcat
Databases: MySQL, Postgres, MongoDB, Neo4j, Redis, Elasticsearch
Operating Systems: Linux, Windows, macOS, Unix
Qualitative Analysis Tools: ATLAS.ti, Dedoose

Honors & Awards

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| Scholarship Recipient, LearnLab Summer School @ Carnegie Mellon University <i>Awarded funding to attend a 1-week program on technology-enhanced learning and intelligent tutoring systems</i> | Jul. 2025 <i>Pittsburgh, PA</i> |
| TPC Mentor Fellowship (Graduate Mentor) @ UC Irvine <i>Mentored 4 undergraduates with individual & group meetings</i> | Jan. 2025 – Jul. 2025 <i>Irvine, CA</i> |
| Top 10 — B.Sc. Computer Engineering (2019 cohort) @ University of Tehran <i>Ranked within the top 10 of the graduating cohort based on cumulative GPA</i> | Jul. 2024 <i>Tehran, Iran</i> |
| Top 0.1%, Konkour — National University Entrance Exam <i>Ranked among hundreds of thousands of examinees; admitted to B.Sc. in CE at Iran's top-ranked university</i> | Aug. 2019 <i>Iran</i> |