Ali **Keramati**

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Education

College of Electric and Computer Engineering, University of Tehran
Tehran, Iran

B.Sc. in Computer Engineering (Major Study) — *Sep. 2019 - present*

- Last Year GPA: 4/4 · CGPA: 18.27/20 (3.83/4)
- Related Courses: Discrete Mathematics(20/20) · Engineering Probability and Statistics(17.8/20) Data Structures and Algorithms(20/20) · Machines and Language Theory(18.9/20) · Artificial Intelligence(19.1/20) Foundations of Information Technology(19.6/20) . Internet Engineering(20/20)

College of Psychology and Education, University of Tehran
Tehran, Iran

Minor Study in Educational Science — *Sep. 2021 - Jul. 2023*

- CGPA: 19.3/20 (4/4)
- Related Courses: Educational Psychology(18.75/20) · Introduction to Psychological Tests (20/20) Patterns and Teaching Methods(20/20) · Basics of Qualitative and Quantitative Research Methods(19/20) The Principles of Curriculum Development(20/20) · Instructional Design(19/20)

Allame Helli 4 High School
Tehran, Iran

Diploma in Mathematics and Physics — *Sep 2016 - Jul. 2019*

- CGPA: 19.66/20
- As a part of the National Organization for Development of Exceptional Talents (NODET)

Research Interests

- **Education Technology (EdTech)**
- **AI in Education**
- **CSCL**
- **RL4Ed & ML4Ed & LLMEd**
- **E-Learning**
- **Collaborative Learning**

Publications

Vatandoust M., Mohajeri M. M., Keramati A., and Ahmadabadi M. N. (2024, expected). **"Bridging the Educational Divide: Scaling Deep Learning with AI"**. (in preparation)

Keramati, A., Keramati, M. R., and Arefian, M. H. (2023). **"Students' Reflection on the Effect of Collaborative Learning on Learning Environment and Academic Achievement in Online Reflective Platforms"**. *Reflective Practice.* (under review)

Keramati, M. R., Gillies, R., Ansarizadeh, F., and Keramati, A. (2023). **"Challenges and Solutions in Implementing Cooperative Learning in Classroom Environments: A Case Study of Primary School Teachers' Lived Experiences"**. *International Journal of Early Years Education.* (under review)

Keramati, M. R., Arefian, M. H., Majd, Y., Lavasani, M, G., and Keramati, A. (2023). **"The effect of cooperative learning on students' social-self-efficacy in science course: A mixed-methods design."**. *International Journal of Science Education.* (under review)

Keramati A., Fallah A., and Taghiyareh F. (2023). **"Enhanced Iranian Integrated Healthcare System Through Root Cause Analysis"**. *Iranian Conference on Advances in Enterprise Architecture. Affiliated with IEEE Xplore.* (under review)

Keramati M. R., Majd Y., and Keramati A. (2023). **"Competition Is the Killer of Cooperation"**. *International Conference on Education and E-Learning (ICEEL-23).*

Research Experience

Under the supervision of Prof. M. Nili Ahmad Abadi
University of Tehran

Research Assistant at Cognitive Systems Lab — *May. 2023 - present*

Focused on revolutionizing education, we developed a new pedagogy model for Deep Learning. Utilizing advanced AI tools and platforms like Google Classroom and Discord, collaborative learning environments were significantly enriched. The integration of AI-based robots further enhanced the learning experience, offering personalized education solutions. For more details, you can explore our website

Under the supervision of Prof. F. Taghiyareh *University of Tehran*

Research Assistant at E-Learning Lab *Mar. 2023 - present*

Engaged in the study of transforming static educational resources into interactive content, my focus lies on meticulous alignment with educational standards such as Bloom's Taxonomy. Utilizing the Avida-ED project, we extract IEEE-LOMs from learning objects and apply genetic algorithms to create highly valuable learning resources.

Teaching Experience

University of Tehran ACM Student Chapter

Game Development Course Mentor Summer of Code *Jul. 2022 - Oct. 2022*

University of Tehran

Head Teaching Assistant Introduction to Software Testing, Prof. E. Khamespanah *Aug. 2023 - Present*
Instructional Designer Discrete Mathematics, Prof. S. Mohammadi *Aug. 2023 - Present*
Teaching Assistant Database Design, Prof. A. Shakeri *Feb. 2023 - Present*
Teaching Assistant Algorithm Design, Prof. M. Asadpour *Feb. 2023 - Aug. 2023*
Teaching Assistant Software Engineering, Mrs. F. Halatae *Feb. 2023 - Aug. 2023*
Head Teaching Assistant Discrete Mathematics, Prof. S. Mohammadi *Aug. 2022 - Aug. 2023*
Supervising Teaching Assistant Data Structures and Algorithms, Prof. H. Faili *Aug. 2022 - Present*
Teaching Assistant Engineering Probability and Statistics, Prof. B. Bahrak *Aug. 2021 - Feb. 2023*
Teaching Assistant Electrical Circuit, Mr. M. Seyfipoor *Aug. 2021 - Feb. 2022*
Teaching Assistant Data Structures and Algorithms, Prof. H. Faili *Feb. 2021 - Aug. 2021*
Teaching Assistant Discrete Mathematics, Prof. S. Mohammadi *Aug. 2020 - Aug. 2022*

Notable Academic Projects

Discord Bot *Cognitive Systems Lab*

TA Agent

Our Discord bot, created with Discord.py and Discord.js, is an essential tool for educational Discord classrooms. It meticulously records student activity, creating a detailed log within specific servers to foster an engaging learning environment. Additionally, the bot can make further interventions to incentivize students to cooperate and be more active on Discord.

Discord Classroom *Cognitive Systems Lab*

Collaborative Learning Environment

We've created a tailored Discord classroom template that promotes active student engagement and collaboration, following the jigsaw model. Specifically structured voice channels and chatrooms ensure that each student group has exclusive access to their respective spaces, maintaining the privacy of their discussions. Click here to see the template.

aiedut.com *Cognitive Systems Lab*

Learning Management System

We've developed our customized Learning Management System (LMS) that incorporates a highly optimized Chat GPT and integration with Google Classroom features, aiming to deliver an enhanced learning experience. This project was crafted using Python and Django for the back-end, while the front-end was built using Bootstrap and JavaScript. Our database utilizes Postgres with Redis for optimal performance.

IEEE-LOM Extractor *E-Learning Lab*

compatible with pptx, docx, pdf

This project implements a system that uses Python libraries, such as TexStat and NLTK, and other NLP algorithms to automatically generate IEEE-LOM metadata for each learning object, with high accuracy.

Music Genre Prediction *Artificial Intelligence*

Machine Learning

This project used machine learning methods, particularly the Scikit-Learn library, to predict music's genre. We implemented K-Nearest Neighbors, decision tree, and random forest models and optimized them to improve prediction efficiency.

Handwriting Recognition (HWR) *Artificial Intelligence*

Neural Network

This project consists two phases: first, implementing a feed-forward neural network from scratch for handwritten numbers, and second, building a neural network model using Keras and TensorFlow libraries for handwritten alphabets.

Decoding Encoded Text *Artificial Intelligence*

Genetic Algorithm

This project aims to decode an encoded text using a genetic algorithm by generating a population of candidate keys and then iteratively improving the population through crossover and mutation.

Baloot *Internet Engineering*

A fully functioning Amazon clone

A complete implementation of a website from scratch by me and my teammate. This project was developed using Java and Spring for the back-end, and React for its front-end. We have used tools like CI/CD pipelines, JDBC, JUnit, Github Oauth apps, etc.

Pong Game *Real-time Embedded Systems*

Android OS and Mobile Phone Sesnors

This game is created for single-user gameplay, operated through the accelerometer and gyroscope sensors of an Android smartphone. The project utilizes the Canvas library to display 2D elements on the screen and incorporates real-world formulas to replicate the movement of the ball and paddle.

Image Filtering *Operating Systems*

Serial vs. Multi-thread Methods

This project implements both a serial and multi-threaded image filtering program and optimizes it for performance by identifying and parallelizing the hotspot functions.

Congestion Control *Computer Networks*

Slinding Window Protocol

This project implements TCP congestion control using UDP sockets, using the Go-Back-N variant of the sliding-window mechanism and RED mechanisms to ensure reliable and efficient data transfer in a network environment.

XV6 Kernel *Operating Systems Lab*

Modified XV6 Kernel

Enhancing xv6 by adding Additional Features and Functionalities such as new system calls, three new custom task schedulers, and a process synchronization (using semaphore) to xv6 kernel.

Certifications

Introduction to EdTech EDHEC Business School *Sep. 2023*

Generative AI with Large Language Models DeepLearning.AI *Jul. 2022*

Fundamentals of Reinforcement Learning University of Alberta *Aug. 2023*

Game Theory Stanford University, The University of British Columbia *In Progress*

Skills

Programming	Advanced: C/C++, Python, Java High Intermediate: C#, SQL, Javascript Intermediate: LaTeX, Verilog, HTML/CSS Familiar: GoLang, R
Technologies	Git, Docker, Kubernetes, Maven, Makefile
Software Engineering	Familiar with multiple design patterns.
Web Development	React, TomCat, Spring
Database	MySQL, Postgres, MongoDB, Neo4j, Redis, ElasticSearch
Operating Systems	Linux (Ubuntu), Microsoft Windows, MacOS

Interests

- **Art: Movies, Music, Painting**
- **Workingout**

Languages

Persian	Native
English	Proficient
Turkish	Fluent
Arabic	Basic