Mahdi Moghaddami

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Education

- **Oakland University** — Rochester, MI, USA
  Ph.D. student in Computer Science and Informatics; GPA: 3.96/4.00 — *May 2023 – May 2028 (Expected)*
- **Iran University of Science and Technology (IUST)** — Tehran, Iran
  Bachelor of Science in Computer Engineering; GPA: 3.68/4.00 — *Sep 2016 – Feb 2022*
- **Shahid Madani High school** — Tabriz, Iran
  GPA: 4.00/4.00 — *Sep 2012 – Jun 2016*

Programming Skills

- **Languages**: C (1 year), C++ (2 years), C# (3 years), Python (5 years), JavaScript (1 year), Java (1 year), Bash (2 years), PowerShell (1 year), SQL (1 year), HTML/CSS (2 years)
- **Frameworks and Libraries**: Git (5 years), PyTorch (3 years), NumPy (3 years), Matplotlib (3 years), pandas (3 years), scikit-learn (3 years), Gensim (1 year), NLTK (2 years), Keras (2 years), Angular (2 years), Node.js (1 year), Express (1 year)

Research Experience

- **Iran University of Science and Technology** — Tehran, Iran
  Natural Language Processing Lab — *Oct 2019 – Aug 2020*
  - **Stance Classification for Fake News Detection**:
    In this project, we build a new stance detection system for Persian utilizing transfer learning techniques and fine-tuning a BERT model for our task. We then complete our model by adding a classifying layer to it. The model is coded using Python and helpful libraries such as Keras and Transformers.
- **Oakland University** — Rochester, MI, USA
  Research Experiences for Undergraduates (REU) — *Apr 2024 – Jul 2024*
  - **Profit Maximization in Short-Term Trading with Transformer Value Forecasting**:
    During the REU project in Summer 2024, I worked with Dr. Mohammad-Reza Siadat and supervised two undergraduate students. We aimed to maximize the profit in short-term trading by predicting the value of stocks using a transformer model. We published a report of our findings and also had a poster presentation at Michigan State University showcasing our results.
- **Oakland University** — Rochester, MI, USA
  Biomedical Imaging Lab — *May 2023 – Present*
  - **Predicting Alzheimer's Disease Progression**:
    As the main focus of my Ph.D. degree, I'm working under the supervision of Dr. Mohammad-Reza Siadat, and we aim to predict the trajectory of progression of Alzheimer's disease in individuals using multi-modality data from the brain. We are using established state-of-the-art deep learning models such as Transformers, CNNs and RNNs while also developing new models to predict the progression of the disease.

Industry Experience

- **Avid Net Technology** — Tehran, Iran
  Front-End Web Development Intern — *May 2019 – Aug 2019*
- **Dadmatech** — Tehran, Iran
  ML/NLP Engineer — *Fall 2021 – Winter 2022*
  - **Robot Detection on Twitter and Instagram**:
    The main goal of this project was to identify automated accounts on Twitter and Instagram. As a baseline, I implemented different classification algorithms, such as Ada Boost and Random Forest. To improve the results, I implemented an MLP using PyTorch and Keras libraries. During this project, I worked with structured and unstructured data and learned more about feature extraction and CNN and RNN networks.

Teaching Assistance Experience

- **Advanced Computer Programming - C#** — Tehran, Iran
  Iran University of Science and Technology — *Spring 2019*
- **Foundations of Computers and Programming - Python** — Tehran, Iran
  Iran University of Science and Technology — *Fall 2019*
- **Data Structures** — Tehran, Iran
  Iran University of Science and Technology — *Fall 2019*
- **Algorithm Analysis and Design** — Tehran, Iran
  Iran University of Science and Technology — *Spring 2020*
- **Introduction to Unix and C Programming** — Rochester, MI, USA
  Oakland University — *Summer 2023, Fall 2023*
- **Visual Computing** — Rochester, MI, USA
  Oakland University — *Fall 2023*
- **Information Security** — Rochester, MI, USA
  Oakland University — *Summer 2024*
- **Design and Analysis of Algorithms** — Rochester, MI, USA
  Oakland University — *Winter 2025*
- **Object-Oriented Programming** — Rochester, MI, USA
  Oakland University — *Winter 2025*

Projects

- **Automatic License Plate Recognition (ALPR)** — IUST, Tehran, Iran
  Course: Artificial Intelligence and Expert Systems — *Fall 2018*
  - Detect license plates from images of cars using computer vision and decode it using a deep learning model.
- **Object-Oriented Design** — IUST, Tehran, Iran
  Course: Object-Oriented Systems Design — *Fall 2018*
  - Design and implement an object-oriented software system for a marketplace.
- **Tower Defense Game** — IUST, Tehran, Iran
  Course: Design of Computer Games — *Fall 2020*
  - We developed a tower defense game using Unity engine.
- **GPA Prediction** — IUST, Tehran, Iran
  Course: Foundations of Computational Intelligence — *Spring 2021*
  - Created models to predict the GPA of a group of students using various architectures such as MLP and RBF.
- **Text Summarizer** — Oakland University, Rochester, MI, USA
  Course: Natural Language Processing — *Fall 2023*
  - We implemented and trained a text summarizer using various deep learning models such as t5-base and flan-t5. The model is available online using this link.
- **Deep Learning Drone Control** — Oakland University, Rochester, MI, USA
  Course: Machine Learning — *Winter 2024*
  - We trained a CNN model to control a drone using a camera feed, determining its speed and direction at any moment. The model was tested on a physical drone and was able to navigate the drone through a maze.
- **Model Compression** — Oakland University, Rochester, MI, USA
  Course: Deep Learning and Applications — *Fall 2024*
  - We designed a CNN model and reduced its size using various techniques such as pruning, quantization and distillation. We successfully compressed the model by 92% while only losing 3 points of test accuracy.

Honors And Awards

- Ranked top 0.5% in Iran's national University Entrance Exam among more than 150,000 participants.
- Ranked 1st in the 2019 IUST Chillin Wars competition among 32 participating teams.
- Won an award for being the top student of the year among all Computer Engineering students.

Languages

- **English**: Proficient
- **Azerbaijani**: Native
- **Persian**: Native
- **Turkish**: Proficient
- **Japanese**: Intermediate

Publications

- Moghaddami, M., Siadat, M., Babajani, A., (2023). Comparative Study of Cognitive Impairment Modeling for Alzheimer's Disease - Longitudinal vs. Cross-Sectional. IEEE-EMBS International Conference on Biomedical and Health Informatics. October 18, 2023, University of Pittsburgh, Pittsburgh, Pennsylvania, USA - Abstract Accepted.
- Chunn, J., Keefer, I., Siadat, M., Moghaddami, M (2024). Profit Maximization In Short-Term Financial Instrument Trading with Transformer Value Forecasting. Mid-Michigan Symposium for Undergraduate Research Experiences, July 24, 2024, Michigan State University, East Lansing, Michigan, USA.
- Moghaddami, M., Schubring, C., Siadat, M., (2025). Transformer Model for Alzheimer's Disease Progression Prediction Using Longitudinal Visit Sequences. ACM Conference on Health, Inference, and Learning, June 25-27, 2025, Berkeley, California, USA - In Review.