Curriculum Vitae

Seyed Alireza Molavi

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Education

- **Master of Science in Computer Science**, School of Mathematics, Statistics and Computer Science, University of Tehran, Tehran, Iran, 2020-2024

  Thesis: Online Handwriting Recognition Using Deep Learning, Under the supervision of Prof. BabaAli

  - Total Average Score: 19.51/20.00 - GPA: 4.00/4.00

- **Bachelor of Science in Computer Science**, School of Mathematics, Statistics and Computer Science, Kharazmi University, Tehran, Iran, 2015-2019

  - Total Average Score: 15.99/20.00 - GPA: 3.33/4.00

- **High School Diploma, Physics and Mathematics**, Shahid Dastghib High School (NODET[1]), Marvdasht, Iran, 2011-2015

Research Interests

• Natural Language Processing • Speech Processing • Large Language Models • Time Series Analysis and Forecasting • Computer Vision • Anomaly Detection

Publications

- **Journal Articles:**
  - **Molavi, SA.** BabaAli, B. (2024) Self-Attention based Deep Architecture for Online Handwriting Recognition, Neural Computing and Applications (Recently Accepted)
- **Conference Proceedings:**
  - **Molavi, SA.** BabaAli, B. (2023) Arabic Handwriting Recognition Based on Self-Attention Mechanism and CTC Loss, Computer Society of Iran, Sharif University of Technology

Highlighted Research Projects

- **Supervised Anomaly Detection Framework for Parkinson's Disease Detection via Keystroke Dynamics**, 2024 - present
  - This ongoing research is focused on leveraging keystroke dynamics for the early detection of Parkinson's disease. By integrating traditional machine learning techniques such as Dynamic Time Warping and spectral analysis with deep learning methods, a supervised anomaly detection framework is being developed. Moving forward, my efforts will be more focused on utilizing deep learning techniques and designing metric loss functions to learn appropriate embeddings for distinguishing healthy subjects from those with Parkinson's disease. This approach aims to enhance the accuracy and robustness of the detection framework.

[1] National Organization for Development of Exceptional Talents

- **Identity Detection and Relapse Prediction Based on Medical Data**, University of Tehran, Supervised by Dr. BabaAli, 2023
  - I was involved in researching the identity detection of patients and the relapse prediction of psychotic disorders based on sequential biometric data. The dataset utilized for this purpose has been publicly released through the e-Prevention challenge. In the course of this research, I designed suitable supervised and unsupervised models for medical time series analysis, which helped me to develop a better understanding of anomaly detection approaches on time series.
- **Demographic Detection Based on Online Handwriting**, University of Tehran, Supervised by Dr. BabaAli, 2022-present
  - I conducted an investigation on gender and handedness detection based on online handwriting, which can be utilized for various purposes, including identity detection. Throughout this process, I enhanced my abilities in processing sequential data and gained experience in handling imbalanced datasets. At present, I am actively working on a research paper to document and report the findings of my study.
- **Online Handwriting Recognition**, University of Tehran, Supervised by Prof. BabaAli, 2021-2022
  - I conducted research on methods of online handwriting recognition, with a specialization in deep learning and self-attention approaches. I successfully designed a state-of-the-art model for this task, and the findings of my research have been documented in a research paper that has been submitted to a journal. Throughout the process, I gained a deeper understanding of sequence processing methods and their various use cases.

Teaching Experience

- **School of Mathematics, Statistics and Computer Science, College of Science, University of Tehran, Tehran, Iran**
  - **Natural Language Processing**
    — **Teacher Assistant** — Instructor: Prof. Bagher BabaAli
    — Graduate level — Spring 2024
  - **Machine Learning**
    — **Teacher Assistant** — Instructor: Prof. Bagher BabaAli
    — Graduate level — Fall 2023
  - **Natural Language Processing**
    — **Teacher Assistant** — Instructor: Prof. Bagher BabaAli
    — Graduate level — Spring 2023
  - **Machine Learning**
    — **Teacher Assistant** — Instructor: Prof. Bagher BabaAli
    — Graduate level — Fall 2022
  - **Machine Learning**
    — **Teacher Assistant** — Instructor: Prof. Bagher BabaAli
    — Undergraduate level — Fall 2022
  - **Machine Learning**
    — **Teacher Assistant** — Instructor: Prof. Bagher BabaAli
    — Graduate level — Fall 2021
- **Deep Learning School, Held by Kharazmi University, Tehran, Iran**
  - **Lecturer** on Deep Learning with Tensorflow/Keras Workshop, Deep Learning Summer School, Summer 2019
  - **Teacher Assistant** on Deep Learning and its techniques, Deep Learning Spring School, Lecturer: Dr. Nahid Taherian, Spring 2019

Languages

- Persian (Native), English (Fluent)

Language Certificates

- **English - IELTS Academic:** Overall Band Score: **8.0**, Listening: 8.5, Reading: 8.5, Writing: 7.5, Speaking: 7.0 (Summer 2023)

Skills

- **Programming Languages:** Python, R, Matlab, Java, Cython, Bash
- **Libraries and Tools:** PyTorch, TensorFlow, Huggingface, Pytorch Image Models (timm), Keras, Scikit-Learn, Numpy, Matplotlib, Pandas, Scipy, OpenCV, NLTK, spaCy, Dask, Numba, Seaborn, Cython · · ·
- **Software and Tools:** Latex, Linux, Git

Awards and Honors

- Accepted to the University of Tehran which is one the topest educational facility of Iran, 2020
- Achieved the 15th rank in the national university entrance exam for graduate level in Computer Science, 2020
- Graduated with high honors and ranked top 10% in bachelor's degree, 2019

References

- **Dr. Bagher BabaAli**

  Assistant Professor
  School of Mathematics, Statistics and Computer Science
  College of Science, University of Tehran, Tehran, Iran
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- **Dr. Alireza Hosseini**

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- **Dr. Nahid Taherian**

  Assistant Professor
  Former Faculty Member, School of Mathematics, Statistics and Computer Science
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Last updated: May 8, 2024