Nima Nilchian

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Education

Kharazmi University   Tehran, Iran
B.Sc. in Computer Engineering   *Sep 2020 – Jan 2025*
- Total GPA: 17.75/20 or 3.78/4 (Credits:136)
- Ranked top 10% among fellow Computer Engineering Students

Research Interests

- Natural Language Processing
- Large Language Models
- Health Informatics
- Deep Learning
- Applied Machine Learning
- Knowledge Graphs

Publications

O.K. Gargari, G. Habibi, **N. Nilchian**, A. Shafiee. *"Comparative Analysis of Large Language Models in Psychiatry and Mental Health: Focus on GPT, AYA, and Nemotron-3-8B"*, Asian Journal of Psychiatry, 2024.

Research Experiences

Farzan Clinical Research Institute   Apr 2024 – Present
Evaluating LLM's in Psychiatry and Mental Health,
- Involved in multiple research projects **evaluating LLMs in psychiatry and medical domains**.
- researching **prompt engineering** techniques to **optimize model output** for desired applications.
- Performed reviews on fine-tuning medical LLMs and their applications in electronic health records (EHR) - OCR lab tests and analyzing their results.

Research Assistant at University of Calgary   Jun 2023 – Sep 2023
UWB Real-time Locating Systems (RTLS), Supervisors: Dr. Askarian , Dr. Sadeghpour
- The Research project is in the field of Automation in Construction to increase the accuracy of Auto-Positioning with UWB-RTLS devices.
- Worked on **Object Detection**, **Dynamic Tracking** and **Position Estimation** - Data Analysis, **Visualization**, **Optimization** - Embedded Programming (C), **Raspberry Pi**.

Work Experiences

NLP Engineer
[*Farzan Institute*](Farzan Institute)*, Iran*   *Oct 2023 – Present*
- **Fine-tuning LLMs** for mental health use cases.
- Developed a **Chatbot** that acts as a therapist. It engages in multi-turn conversations, asks follow-up questions, and generates a comprehensive summary and recommendations at the end.
- Developed a **RAG system** with mental health sourcebooks for domain-specific questions.
- Developed a **Symptom Checker App**. It identifies the relevant survey title for a user query, connects to the survey questions via an API, and dynamically presents these questions to help diagnose the issue.

Machine Learning Engineer Intern
[*Roshan*](Roshan)*, Tehran, Iran*   *July 2023 – Aug 2023*
- **Key-Phrase Extraction**: Utilizing Statistical and Graph-Based Algorithms, Transition Toward Embed-Rank and Sentence Transformers for Persian Text as a Low-Resource Language.

President of Association

Kharazmi University, *March 2023 – May 2024*

- President of Student Scientific Association of Computer Engineering of Kharazmi University.
- Responsible for Holding Various Events/Workshops/Meetings.

Editor-in-Chief of Pointer Magazine

Kharazmi University, *Oct 2022 – Sep 2023*

- Author, Reviewer, and Organizer of Pointer Magazine Issue 19. (selected as an outstanding journal in the Titr Festival)

Teaching Assistant

Kharazmi University,

- Artificial Intelligence, Fall 2023.
- Advanced Programming, Spring 2024.
- Fundamentals of Programming, Fall 2021 - Fall 2023.

Selected Projects

Binary Stress Detection Summer 2023

IPM Summer Bootcamp *Github*

- **Fine-tuned**, evaluated and compared **LLMs** for binary stress detection and stress category classification.

Web Information Retrieval (3) Spring 2023

Modern Information Retrieval – Prof. Mahdieh Soleymani (Sharif University of Technology) *Notebook*

- **Crawled** and **Scraped** 2000 papers. **Link Analysis** using **PageRank** and **HITS** algorithms to determine the importance of papers. **Personalized PageRank** that considers users preferences.
- Implemented **Personalized Search Engine** and **Recommender System** for the system.

Machine Learning and Deep Learning Approach To Information Retrieval (2) Spring 2023

Modern Information Retrieval – Prof. Mahdieh Soleymani (Sharif University of Technology) *Notebook*

- Implemented and Evaluated **Naïve Bayes** Classifier (from scratch) - **Neural Network Model** and **Transformer Based** Classifier to classify documents labels.
- **Clustering** doucuments (**K-means** and **Hierarchical Clustering**), **visualizing** and **evaluating**.

Traditional Information Retrieval (1) Winter 2023

Modern Information Retrieval – Prof. Mahdieh Soleymani (Sharif University of Technology) *Notebook*

- **Positional Inverted Index** for documents and **Index Compression** using Variable Byte Encoding.
- **Scoring Documents** and **Search system** using **BM25** and **TF-IDF** and **Evaluating** the system.

Username Generator Summer 2022

Hamrah Aval Summer AI Bootcamp *Notebook*

- Implemented **Encoder-Decoder Sequence Models** for translating English usernames to equivalent Persian names, using Deep Learning Models with Pytorch.

Machine Learning Projects Spring 2023

Quera ML Bootcamp *Github*

- **Search analysis** - **Auto Suggest** (intelligent Search System) - **Polarity Detection** of sentences.

Karamoozesh Backend Fall 2022

Software Engineering and Testing – Prof. Leili Mirtaheri *Github*

- **Project Manager** of a 9 member team in both Software Engineering and Testing courses. **Developed Back-end** with **Django-Rest Framework**. performed **Unit-Tests** and **Integration-Tests**.
- selected as the **First Project** among all projects in both courses by Prof. Mirtaheri.

Selected Courses

- Modern Information Retrieval: 19.7/20
- Signals and Systems: 20/20
- Research and Presentation Skills: 19.9/20
- Software Engineering: 20/20
- Artificial intelligence: 17.3
- Linear Algebra: 17.75/20
- Algorithm Design: 18/20
- Software Testing: 19.85/20

Certifications

- **Artificial Intelligence Summer Camp** | IPM   Summer 2023
  Four-month Project-Based hybrid course. (ranked 3 out of 140)
  Deep Learning, Computer Vision, NLP, Tensorflow, Pytorch.

- **AI and Python Summer Bootcamp** | Hamrah Aval   Summer 2022
  Python, Pytorch, Machine Learning, Deep Learning, NLP, Huggingface.

- **Proffesional Project-Based Course in Machine Learning** | Quera   Spring 2023
  Python, Scikit-Learn, Machine Learning, Superviesed and Unsupervised Learning, Neural Networks.

- **Scrum Foundation Course** | Scrum Alliance   Fall 2024
  Scrum/Agile, Project Management, Leadership, Communication.

- **Task-Oriented Course in Data Analysis** | Quera   Spring 2022
  Python, Numpy, Pandas, Matplotlib, Seaborn.

- **Advanced Algorithm Thinking and Data Structure** | Quera   Summer 2021
  C++/Python , Time Complexity, Recurrent, Greedy, Backtrack, divide and conquer and Graph Algorithms, Dynamic Programming, Optimization, Data Structures. Solved more than 100 training examples.

Technical Skills and Interests

- **Programming/Scripting languages**: Python, C/C++, Java, LaTeX.
- **Open Libraries**: Pytorch, Huggingface, Langchain, OpenCV.
- **Frameworks**: Django-Rest, FastAPI.
- **Tools**: Git/Github, Unix Shell, Anaconda, Colab.
- **Soft Skills**: Project Management, Responsibilty, Fast-Learner, Flexibility, Hard Working.
- **Languages**: Persian(Native), English(Advance), Turkish(Basic).
- **Interests & Hobbies**: Playing Music (Hangdrum & Setar) - Yoga - Running - Mountain Climbing.

Volunteer Jobs

Social Media Manager & Translator Of Conscious Planet Movement for Persian Language
This Movement was initiated by Sadhguru for a 100-day ride journey to raise awareness about Soil Extinction.
Volunteer at Isha Foundation For Persian Language
Isha Foundation is a nonprofit, spiritual organization that was founded by Sadhguru which offers yoga programs.

References

- Leili Mirtaheri, Assistant Professor, Kharazmi University, Tehran, Iran; mirtaheri@khu.ac.ir
- Iman Askarian, Assistant Professor, Sharif University, Tehran, Iran; iman.askarian@sharif.edu
- Azadeh Mansouri, Assistant Professor, Kharazmi University, Tehran, Iran; a_mansouri@khu.ac.ir
- Gholam Reza Habibi, CEO of Farzan Institute; grhabibi@gmail.com