Amir Hossein **Karimi**

RESEARCHER · NLP ENGINEER

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Research Interests

My research interests focus on developing advanced techniques that allow machines to understand and analyze human communication in a multimodal context. In particular, I aim to develop machine learning models and algorithms that can accurately process multiple modalities, such as text and visual inputs. I also aim to explore topics such as sentiment analysis, topic modeling, and opinion mining, and how these techniques can be applied to social media data to understand public opinion, consumer behavior, and the spread of information on social media platforms.

Research Interests: Multi-modal Machine Learning, Natural Language Processing, Social Media Analysis

Education

Amirkabir University of Technology (Tehran Polytechnic)   *Tehran, Iran*

M.Sc. IN COMPUTER SCIENCE   *Sep. 2020 - Oct. 2022*

Thesis Topic: Multimodal Task-Oriented Dialogue System ✎
- This dialog system is developed to handle multiple modalities throughout a conversation, displaying visuals to the user depending on the semantics of text and image, and assisting the user in completing tasks.

Technology used: GPT-2, CLIP, Pytorch
Supervisor: Dr. Mohammad Akbari ✎

Institute for Advanced Studies in Basic Sciences (IASBS)   *Zanjan, Iran*

B.Sc. IN INFORMATION TECHNOLOGY   *Sep. 2015 - Jun. 2020*

Thesis Topic: Box Office forecasting using machine learning algorithms ✎
- The sales of new movies were forecasted using machine learning algorithms. The data was web scraped from multiple sources and then cleaned and wrangled.

Technology used: Caret, rvest, Dplyr, R
Supervisor: Dr. Mohammad Reza Faraji ✎

Work Experience

Amerandish Hooshmand Co. ✎   *Tehran, Iran*

NLP ENGINEER - FULL TIME   *Dec. 2021 - Present*

Projects: Offering chatbot and intelligent agents for call centers (We provided services for some of Iran's largest IT companies, including MTN, System Group, and MCI).
Key responsibilities: Training our language model for different subtasks, looking for ways to improve the models we already have, and making tools for our dialogue system.
Technology used: LLMs, Transformers, PyTorch

PaperScore ✎   *Austin, TX, USA*

NLP ENGINEER - PART TIME   *Mar. 2023 - Present*

Projects: The project is to create a decentralized system for academic peer review that leverages AI and human expertise
Key responsibilities: Conducting research and developing models for text grading methods and for identifying and assessing claims in scientific texts.
Technology used: Transformers, PyTorch

Publications

2023	**Comparative Analysis of Topic Modeling Algorithms for Short Texts in Persian Tweets** ✎, **[First Author]**, Knowledge and Information Systems (KAIS)	*Under Review*
2023	**A Persian Benchmark for Joint Intent Detection and Slot Filling** ✎, **[Second Author]**, IEEE/ACM Transactions on Audio, Speech, and Language Processing	*Under Review*
2023	**HPT4Rec: AutoML-based Hyperparameter Self-Tuning Framework for Session-based Recommender Systems** ✎, **[Second Author]**, The 34th workshop on basics of database systems (GVDB23)	*Accepted*

Research Experience

Natural Language Processing Innovation Center (NLPIC) ⌘   *Tehran Polytechnic*

RESEARCH ASSISTANT   *Feb. 2021 - Oct. 2022*

Implementing NLP techniques in Persian and releasing models and datasets to facilitate study for Persian researchers.
I was responsible for the chatbot for the Tehran municipality. In addition, I contributed to the development of a Persian dataset similar to ATIS.

Research Assistant at Data Science Lab (DSLab) ⌘   *Tehran Polytechnic*

RESEARCH ASSISTANT   *April 2021 - Oct. 2022*

Building NLP models, as well as services for analyzing social networks.
In addition to developing a topic modeling tool for social networks, I mentored undergrad students during their thesis research.

Teaching Experience

TEACHING ASSISTANT

2022	**Artificial Intelligence**, Undergrad course (Tehran Polytechnic). Instructor: Dr. Zeinab Saeedi	*One semester*
2021	**An introduction to programming**, Undergrad course(Tehran Polytechnic). Instructor: Dr. Mohammad Akbari	*Two semesters*

Duties: Organize and conduct weekly practice and tutorial sessions, and evaluate assignments.

Volunteer Works

2022	**Website admin and team manager**, Group meeting coordinator (DSLab).	*DSLab, Tehran*
2021	**Presenter**, NLPIC representative to present the dialogue system to Tehran Municipality.	*Tehran*
2019	**Backend Developer**, With a group of volunteer students, we developed a mobile app for Mehraneh cancer care charity to raise breast cancer awareness.	*Zanjan*
2018	**Presenter, Graphic Designer**, Representative of the Computer Science department at the research week symposium.	*Zanjan*
2017	**Presenter**, University representative at the 5th exhibition of ELECOMP fair.	*Zanjan*

Skills

Languages	English (CEFR: C2 Proficient) ⌘, Persian (Native), Azeri (Native)
Programming	Python (4+ years), R (1 Year), C++ (Elementary))
Frameworks & Libraries	PyTorch (3+ years), Huggingface, SimpleTransformers, SentenceTransformers, scikit-learn
Familiar with	Linux, Git, Jira, project management (Scrum, Kanban), Latex, EndNote
Soft Skills	Effective teamwork and time management skills

Hobbies

Blogging, Digital art design, Listening to podcasts, Hiking, Running

Referees

- **Dr. Mohammad Akbari** ⌘
  Assistant Professor,
  Computer Science Department,
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- **Dr. Ali Mohades** ⌘
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- **Dr. Mohammadreza Faraji** ⌘
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