# Mehrdad Rafiepour

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Address: Qom, Iran.
Website: rafiepour.github.io
Linkedin: linkedin.com/in/rafiepour
Email: mehrdad.rafie.p@gmail.com
Phone: +98 (913) 783-3798


## Summary


- Motivated researcher, with 3 years of experience in natural language processing, resulting in 2 publications.
- An experienced programmer with a 5-year history of publishing mobile applications.
- Strong communication skills in English, facilitating effective collaboration.


## Education

**M.Sc. in Computer Engineering - Software, University of Kashan** — Sep 2019 - Feb 2023
Thesis: Proposing a Model for Natural Language Understanding Using Deep Neural Networks
**GPA:** 19.2/20 **(4/4)**
Honor: Ranked First in the Cohort

**B.Sc. in Computer Engineering - Software, University of Qom** — Sep 2013 - Feb 2018
Project: Designing and Implementing an Assistant Program for the Visually Impaired in Android
**GPA:** 16.01/20 **(3.1/4)**
Honors: Awarded Full Tuition Scholarship
Ranked First in University-Wide Android Programming Competition

## Research Interests

- Large Language Models:
  - Explainability
  - Evaluation
  - Multilingual LLMs
  - Instruction-Following Capability
- Natural Language Processing for Social Good
- Dialogue Systems

## Publications

| Article | Citations | Year |
|---|---|---|
| **Rafiepour, Mehrdad**; Sartakhti, Javad Salimi "CTRAN: CNN-Transformer-based network for natural language understanding" Engineering Applications of Artificial Intelligence. Volume 126C. | 16 | 2023 |
| **Rafiepour, Mehrdad**; Abdolalizade, Zahra; Vahidipour, Seyed Mahdi "Distinguishing dense networks from pseudo-tree networks for link prediction based on homogeneity and heterogeneity criteria" The second national informatics conference of Iran, **In Farsi** | - | 2021 |

## Academic Projects

• NoSQL Query Generation for Answering Natural Language Questions Using Reinforcement Learning
Details: Designed a pointer network model to fill empty slots in an ElasticSearch query. Introduced a bounty reward that encouraged the agent to explore unchosen options of the batch and separated the reward for partial and full result matches.

• A Transformer-Based Network for Natural Language to SQL Conversion
Details: Implemented a modular model based on Transformers to generate an executable SQL query for the WikiSQL dataset.

• Simulating Multidimensional Markov Models Using Petri Nets for Game Map Generation
Details: Utilized the in-house PetriNet library to develop a Petri model based on a Multidimensional Markov Model for generating playable game maps in two-dimensional video games.

## Academic Service

- **Reviewer for the COLING 2025 Conference**
  - Evaluated submissions on the applications of large language models in healthcare

## Skills

**Natural Language Processing**: PyTorch, HuggingFace, NetworkX, Numpy, Pandas, Scikit-Learn, Keras

**Development Environments**: PyCharm, DataSpell, Jupyter, Eclipse, Android Studio, MatLab, VSCode

**Programming Languages**: Python, Java, PHP, Bash, C#, C++

**General Knowledge**: Ubuntu, Remote Development, Networking, LaTeX, Office Products

## English Proficiency

**IELTS (Academic)** January 2024 – January 2026

**Overall band score: 8.0**

Listening: 8.5 Reading: 8.5
Writing: 8.0 Speaking: 7.5

## Work Experience

- **Self-employed, Full-Stack Android Developer** **2014-2019**
  - Published over 10 Android applications targeting the Iranian local market, with 5 achieving significant success
  - Responsible for all aspects of development, including client-side and server-side implementations
  - Practical experience with concepts such as Object-Oriented Programming and Minimum Viable Product and the Model View Component design pattern
  - Hands-on experience with Java, Python and PHP

- **Highlighted Projects**
  - Hamyar
    Details: An accessibility app developed during my undergraduate final project that streamlined smartphones' functionality for the visually impaired who only understood Farsi. Hamyar was essentially a finite state machine functioning as a kiosk on top of the operating system, offering different possibilities, including making calls, getting informed of banking transactions, etc.
  - JourneyJotter
    Details: An app that provided people struggling with interpreting maps (Topographical Agnosia) with a detailed description of the path to their destination which they provide only as an address.
  - HandsFreeChat
    Details: Utilizing the latest Google voice-to-text API, this app provided an alternative to sending voice messages. Functioning as a finite state machine, this app enabled users to write text messages and navigate through conversations by their voice.
  - Saramad Antivirus
    Details: Saramad was an antivirus package that protected users' privacy, offering many ways to secure users against unsafe applications and social engineering. The analysis happened statically, sometimes requiring the analysis of arm-based assembly codes.

## References

**Provided upon request.**