

Feraidoon Mehri

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EDUCATION

Sharif University of Technology

Master of Science (M.Sc.) in Artificial Intelligence

Tehran, Iran

9/2022 - ongoing

- Supervisors: *Dr. Mohammad Taher Pilehvar* and *Dr. Mahdieh Soleymani Baghshah*

Sharif University of Technology

Bachelor of Science (B.Sc.) in Computer Science

Tehran, Iran

9/2016 - 7/2021

- GPA: 17.1/20.0
- GPA of the last 64 credits: 19.0/20.0
- Notable courses:** (Graduate level courses are marked with +. The grades are from 20.)
Statistics (20). *Probability* (19.8). *Applied Stochastic Processes*⁺ (19). *Artificial Intelligence* (19.7). *Cryptography, Distributed Systems, and Blockchains*⁺ (18.9). *Advanced Programming* (20). *Data Transfer and Networks*⁺ (19.3). *Theory of Computation & Complexity* (18.4). *Mathematical Logic* (18.5). *Systems Theory*⁺ (18.6). *Big Data Engineering* (19). *Analysis of Algorithms*⁺ (20). *Engineering Mathematics* (20).

HONORS AND AWARDS

- Ranked **second** (out of at least 12k students) in the Iranian national graduate entrance exam in *AI & Robotics of 2022* (**≥99.98 percentile**)
- Ranked **fourth** (out of at least 1k students) in the Iranian national graduate entrance exam in *Computer Science of 2022* (**≥99.66 percentile**)
- Ranked **sixth** (out of 116k students) in the Iranian national undergraduate entrance exam in *Foreign Language Studies of 2016* (**99.99 percentile**)
- Ranked 331st (out of 163k students) in the Iranian national undergraduate entrance exam in *Mathematics & Physics of 2016* (**99.80 percentile**)
- Member of Iran's National Elites Foundation (INEF)

RESEARCH EXPERIENCE

Analysis and Interpretation of Big Language Models

Machine Learning Lab (MLL)

08/2022 - ongoing

Sharif University of Technology

Tehran Institute for Advanced Studies (TeIAS)

Under the supervision of *Dr. Mohammad Taher Pilehvar* and *Dr. Mahdieh Soleymani Baghshah*

Blockchain-Based Solutions to Privacy-Preserving Health Data

Under the supervision of *Dr. Parviz Rashidi Khazaei*

08/2022 - 09/2022

Urmia University of Technology

- health_blockchain** (Python): prototyped a blockchain for storing health data privately in a distributed manner

Manifold Learning and High-Dimensional Clustering

Sharif Optimization and Applications Laboratory (SOAL)

12/2021 - ongoing

Sharif University of Technology

Under the supervision of *Dr. Amir Daneshgar*, *Dr. Mohammad-Hadi Foroughmand*, and *Dr. Mojtaba Tefagh*

- Solved the Optimizer 2022 challenges around manifold learning and clustering in high-dimensional data with outliers and noise
- Visualized the high-dimensional input data, the detected manifolds, clusters, convex hulls, outliers, and noise, which was critical in diagnosing many bugs
- Developed, tested, and calibrated the automatic judge (the autograder) of the Optimizer 2022 challenges
- Designed and tested the data generation algorithms for the Optimizer 2022 challenges
- Created a modular benchmark system for clustering algorithms that measures memory usage, execution time, and various accuracy metrics, with support for big (~100GB) data (Dask, RAPIDS, scikit-learn)
- Created guidelines for documenting and organizing libraries for the lab
- Mentored teammates in Git and Jupyter
- Supervised four undergraduate students

TEACHING EXPERIENCE

Miscellaneous Workshops

Clustering in Python from Scratch Student Scientific Association (Hamband), Sharif University (Spring, 2022)

Head Teaching Assistant

Principles of Computer Systems Dr. Arshadi, Sharif University of Technology (Fall, 2022)

Teaching Assistant

Artificial Intelligence Dr. Rohban, Sharif University of Technology (Fall, 2022)

Formal Languages and Automata Theory Dr. Amir Daneshgar, Sharif University of Technology (Fall, 2022)

Big Data Engineering Prof. Ostovari, Prof. Boomari, Prof. Taheri, Sharif University of Technology (Spring, 2022)

Advanced Programming Dr. Fazli, Sharif University of Technology (Spring, 2022)

Digital Design (Logic Circuits) Dr. Arshadi, Sharif University of Technology (Spring, 2022)

Computer Networks Dr. Arshadi, Sharif University of Technology (Spring, 2022)

Principles of Computer Systems Dr. Arshadi, Sharif University of Technology (Fall, 2021)

Advanced Programming Prof. Boomari, Sharif University of Technology (Spring, 2018)

SKILLS

Programming languages I use frequently (in rough order of proficiency): Zsh (shell scripting), Python, Julia, Elisp, Common Lisp

Programming languages I have written some useful things in (in rough order of proficiency): Golang, Java, Perl, Clojure, Scala, Kotlin, Racket, Lua, Javascript, Node.js, CSS, HTML, LaTeX, SQL, Nim, Rust, VB.NET, C#, C++
ML/data libraries: Hugging Face, Google's JAX, Google's Flax, Deepmind's Haiku, Deepmind's Optax, Flux.jl, scikit-learn, NVIDIA's RAPIDS, Dask, conda, numpy, numba, pandas, einops, networkx, spaCy, Matplotlib, seaborn, plotly

Backend technologies: GNU/Linux, Docker, Caddy, Akka, Redis, FastAPI

Frontend technologies: Svelte, Hugo, Docusaurus

Developer tools: Git, tmux, emacs, vim, VSCode, Jupyter, Google Colab

Other technical skills: web scraping, blockchains, distributed systems, regex, documentation writing and note taking

NOTABLE OPENSOURCE PROJECTS

- Reported hundreds of bugs

Popular FOSS projects I have contributed to

- **ugrep:** suggested many design improvements which Dr. Robert van Engelen liked and subsequently implemented
- **emacs** (Elisp): added features
- **Doom emacs** (Elisp): added features and fixed bugs
- **Flux.jl** (Julia): fixed mistakes in the documentation and wrote more documentation
- **Zsh:** reported a critical bug which was promptly fixed
- **tldr:** wrote documentation
- **fzf-tab** (Zsh): fixed bugs
- **quil** (Clojure): added features
- **learnxinyminutes.com:** fixed mistakes
- **Anime4KCPP** (C++): added macOS support

My own FOSS projects

- **stochastic** (Julia): an infectious disease model (a grad course project of mine), a Poisson picture redrawing filter, a colorful animator of a 2D ising model, and more
- **fanfiction-classifier** (Python, JAX, Haiku, Optax): a character-level, variable-length text classifier using (optionally dilated) convolutional layers, dropout, layer normalization, and learning rate scheduling (runs on both TPUs and GPUs)
 - * A similar model in Julia's Flux.jl
- **twitter-scraper** (Python, Zsh, Docker): a fault-tolerant, distributed Twitter scraper which stores the data in Neo4j (a distributed graph database), plus a high-level CLI API for querying the data and load testing the system
- **distributed-prime-generator** (Scala, Docker): a fault-tolerant, distributed prime number generator using the actor model (Akka)
- **brish:** a thread-safe Python library using the metaprogramming API which lets the user embed and run Zsh code in Python via parallel processes, supporting safely interpolating Python variables into the Zsh code