Parsa Hosseinipour Rafsanjani (Parsa H. Rafsanjani)

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Education

B.Sc. in Computer Sciences — Tehran, Iran
Amirkabir University of Technology (Tehran Polytechnic) — *Nov. 2020 – Jan. 2025*

- GPA: 19.40 / 20.00 (4.00 / 4.00)
- Selected Coursework: Introduction to Probability (A+), Probability (I) (A+), Statistical Methods (A+), Stochastic Processes (I) (A+), Foundation of Mathematical Analysis (A+), Data Mining (A+), Fundamentals of Bioinformatics (A+), Database & Workshop (A), Advanced Programming (A+), Numerical Linear Algebra (A+), Artificial Intelligence & Workshop (A+)

High School Diploma in Mathematics and Physics — Tehran, Iran
Daneshmand High School — *Sept. 2017 – Sept. 2020*

- GPA: 19.76 / 20.00

Research Interests

- **Statistical Modeling**
- **Bioinformatics and Computational Biology**
- **Mathematical Statistics**
- **Collaboration across health, medicine, psychology, and economics**

Manuscripts

Parsa H. Rafsanjani, Adel Mohammadpour. Hypothesis Testing for the Scale Parameter of Exponential Family of Distributions

- We propose a unified framework for testing hypotheses within a general form of the exponential family, from which tests for other well-known special distributions can be derived.

Books

Introduction to Statistical Inquiry (In Progress)
Co-authored with Dr. Adel Mohammadpour for STAT205 students at University of Calgary

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Honors & Awards

Top Computer Sciences Student (2020 Cohort)

- Ranked #1 among over 60 students in the 2020 Computer Sciences cohort at Amirkabir University of Technology

Outstanding 10% student

- Consistently ranked in the top 10% of the 2020 Computer Sciences cohort at Amirkabir University of Technology across all semesters, surpassing the requirement of being in the top 10% for at least three out of the first four semesters

Outstanding university student

- Achieved a GPA exceeding 17.00 out of 20.00 across all semesters at Amirkabir University of Technology, surpassing the requirement of maintaining a GPA above 17.00 out of 20.00 in at least three out of the first four semesters

Teaching Experience

Teaching Assistant - Numerical Linear Algebra Jan. 2024 – Present
Amirkabir University of Technology *Course Instructor: Prof. Mehdi Dehghan*

- Develop project ideas and design course materials with theoretical and practical Python exercises
- Edit and proofread course lecture notes
- Administer oral examinations and evaluate student performance

Teaching Assistant - Artificial Intelligence Sept. 2023 – Feb. 2024
Amirkabir University of Technology *Course Instructor: Prof. Mehdi Ghatee*

- Selected as one of 10 team members out of 34 applicants
- Designed project guidelines (Persian) following syllabus requirements
- Delivered a lecture on probabilistic reasoning (Persian)
- Provided academic support to students for homework assignments

Teaching Assistant - Advanced Programming Jan. 2024 – July 2024
Amirkabir University of Technology *Course Instructor: Prof. Mehdi Ghatee*

- Designed lecture notes on Serialization and File I/O (Persian) and Classes (Persian) in Java
- Delivered weekly lectures in laboratory sessions
- Developed project ideas and exercises (Image Viewer, RSS Reader, etc.)
- Administered oral examinations and evaluated student performance

Teaching Assistant - Principles of Operating Systems Feb. 2023 – July 2023
Amirkabir University of Technology *Course Instructor: Dr. Mohammad Mahdi Bejani*

- Developed project ideas
- Administered oral examinations and evaluated student performance

Technical Skills

Languages: Python, R, Bash, C/C++, Java, SQL, JavaScript, HTML/CSS
Libraries: PyTorch, scikit-learn, TensorFlow, NumPy, Pandas, Matplotlib
Developer Tools: Git, VS Code, Positron, PyCharm, RapidMiner, Qt Creator, IntelliJ, Visual Studio
Operating Systems: GNU/Linux (Arch Linux, Pop_OS!, Ubuntu), Windows

References

Prof. Mehdi Dehghan
Professor of the Department of Applied Mathematics
Faculty of Mathematics and Computer Sciences
Amirkabir University of Technology (Tehran Polytechnic)
Email: mdehghan@aut.ac.ir

Dr. Adel Mohammadpour
Adjunct Assistant Professor of the Department of Mathematics and Statistics
Faculty of Science
University of Calgary
Email: adel.mohammadpour@ucalgary.ca

Educational Course Projects

Income Classification and Model Comparison using KNN, SVM and Decision Trees
Link to Project

- Utilized Pandas for missing value analysis and feature exploration
- Used Matplotlib for data visualization to further analyze and organize the dataset
- Created and evaluated models in scikit-learn

Breast Cancer Prediction with MLP
Link to Project

- Preprocessed and visualized data
- Built an MLP model with TensorFlow

- Created a confusion matrix and evaluated model performance using precision, recall, and F1-score

Job Search Database

Link to Project

- Created an ER diagram for a Job Search website
- Normalized the corresponding ER diagram to 1NF, 2NF, and 3NF levels
- Created a database in SQL Server
- Developed SQL queries and corresponding solutions for the database

Hybrid MPSO-CNN

Link to Project

- Implemented the hybrid MPSO-CNN model from *Hybrid MPSO-CNN: Multi-level Particle Swarm optimized hyperparameters of Convolutional Neural Network (Singh, Chaudhury & Panigrahi, 2021)*

Perceptron Implementation from scratch

Link to Project

- Implemented a perceptron from scratch and applied it to classify a toy dataset

MLP Implementation from scratch

Link to Project

- Implemented a multilayer perceptron (MLP) with layer and neuron classes from scratch
- Implemented learning process with automatic differentiation
- Created optimizer for the model

Kolmogorov-Arnold Network (KAN) Implementation from scratch

Link to Project

- Implemented a Kolmogorov-Arnold Network (KAN) based on *KAN: Kolmogorov-Arnold Networks (Liu et al., 2024)*