Mohammadreza Ghobakhlou

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EDUCATION

Master's Degree in Data Science Tehran, Iran
Tehran Institute for Advanced Studies (TeIAS) - GPA: 4/4 - 18.2/20 2021 - Present
Thesis: Predicting Faults in Software Defined Networks (SDNs)

B.Sc. in Computer Engineering Tehran, Iran
Sharif University of Technology (SUT) 2015 - 2020
Thesis: Implementation of Single Sign-On (SSO) Protocols

PROJECTS

Development of a Firewall for the POX SDN Controller
- Designed and implemented a Python-based firewall module tailored for the POX SDN controller, with comprehensive testing conducted within the Mininet simulation environment.

Automata Learning using the LearnLib Framework
- Experienced in automata learning using the LearnLib framework, specifically employing the L* and TTT algorithms for active learning and system verification.

COMPAS Recidivism Racial Bias and Model Explainability with LIME and SHAP (Ethics in Data Sciences course project)
- Demonstrated that the algorithm exhibits bias in favor of white defendants and against black inmates.

Reimplementation of the paper "Synthesis and Machine Learning for Heterogeneous Extraction" (Software Synthesis course project)
- Combined techniques from the Software Synthesis and Machine Learning to extract structured information from heterogeneous data.

Extension and Further Analysis of Contrastive Framework in the Task of Text Summarization (Natural Language Processing course project)
- Investigated the performance of the contrastive framework in the task of summarization, making the representation space of the language model more isotropic, which was then leveraged to generate more diverse texts.

Tested Java Source Code using the Randoop and EvoSuite (Software Testing course project)
- Evaluated Java source code using the Randoop and EvoSuite tools, harnessing their automated testing capabilities to ensure code robustness and functionality.

Microsoft Malware Prediction (Machine Learning course project)
- Predicted if a machine will soon be hit with malware or not using Machine Learning.

New York City Taxi Trip Duration Prediction using XGBoost (Applied Data Analysis course project)
- Built a model that predicts the total ride duration of taxi trips in New York City.

Real-time Augmented Reality
- The transformation is derived from the homography between the reference surface coordinate system and the target image coordinate system, allowing for the projection of the 3D model into the image's pixel space.

HONORS

- **Ranked 3^{rd}** in cumulative GPA at TeIAS Computer Engineering department among 2021 entrants.
- **TeIAS Graduate Scholarship** for Data Science, Tehran, Iran.
- **Ranked 62^{nd}** among 100,000 participants in the Iranian Nationwide University Entrance Exam for M.Sc..
- **Ranked 130^{th}** among 240,000 participants in the Iranian Nationwide University Entrance Exam for B.Sc.

EXPERIENCES

Research Assistant

- Predicting Faults in SDNs — February 2023 - Present
Description: Extracting SDN controller behavioral specifications from real SDNs log datasets and identifying their potential faulty behaviors.
Supervisors: Dr. Hossein Hojjat

- Active Model Learning — August 2022 - January 2023
Description: Tried to Develop a methodology for learning about complex automata models that can be large and complicated by independently learning each subsystem and then integrating them to construct the entire system's model.
Supervisors: Dr. Hossein Hojjat and Dr. Mohammad Reza Mousavi

- SSO Protocols Research and Implementation — 2020 - 2021
Description: Implemented secure SSO authentication using SAML, OIDC, and OAuth protocols.

Teaching Assistant

Head TA of Python Programming for Economics and Finance - TeIAS	2023
Software Synthesis - TeIAS	2023
Applied Data Analysis - TeIAS	2022
Signals & Systems - SUT	2018
Head TA of Fundamentals of Programming (Python) - SUT	2018
Fundamentals of Programming (Python) - SUT	2017
Advanced Programming (Java) - SUT	2016

Lecturer

Teached Python and Java programming to bachelor's students	2020-2022
Teached Iranian nationwide university Entrance courses	2015-2021

Computing Systems Administrator

Constructed the server configuration settings for the TeIAS computing center's infrastructure. — 2023-Present

SUMMER-SCHOOL EXPERIENCES

Summer School in Engineering Trustworthy Data-Intensive Systems at TeIAS — August 2022
- Deep insights into various aspects of dealing with massive amounts of data.

Summer School in Theoretical Aspects of Data Science and Machine Learning at TeIAS — July 2022
- Studied theoretical aspects of Data Science and Machine Learning. This area of research is a rich and vibrant field within theoretical Computer Science that draws from deep connections to statistics, geometry, and combinatorics.

TECHNICAL SKILLS

Programming Languages:	Python, SQL, Scala, Java, Matlab, Julia, C/C++, R
Machine Learning Frameworks:	PyTorch, Keras, TensorFlow, SciKit-Learn, networkx
Python Packages:	Numpy, Pandas, SciPy, Matplotlib, Seaborn
Operating Systems:	Linux, Windows
Miscellaneous:	Git, LaTeX, Mininet, SDN, Maude Language

LANGUAGES

English: Fluent (TOEFL Score: 89 - R:29, L:20, S:18, W:22)

Persian: Native

SELECTED COURSES

- Ethics in Data Sciences (Dr. Mohammad Reza Mousavi)	A+
- Software Synthesis (Dr. Hossein Hojjat)	A+
- Natural Language Processing (Dr. Mohammad Taher Pilehvar)	A
- Machine Learning (Dr. Mohammad Haft-Javaherian)	A+
- Software Testing (Dr. Ramtin Khosravi)	A+
- Applied Data Analysis (Dr. Amir Hesam Salavati)	A+
- Advanced Algorithms (Dr. Hossein Hojjat)	A
- Theory of Machines and Languages (Prof. Ali Movaghar)	A

Online Courses

- Functional Programming Principles in Scala (EPFL)	Coursera
- Machine Learning (Stanford University)	Coursera
- Pandas, Data Visualization, Data Cleaning, and Feature Engineering	Kaggle