Taha Rostami

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Research Interest

I'm very interested in the world of computational intelligence. When it comes to the fundamentals, I'd love to work on designing algorithms in machine learning and automated reasoning, or analyzing algorithms in general. I'm always keeping an eye on advancements in both conventional and unconventional computers.

As for engineering, I'm excited to merge and apply state-of-the-art machine learning and automated reasoning to tackle software engineering problems. While there haven't been many opportunities, I would also love to explore the use of cutting-edge machine learning and automated reasoning in areas like board games, sports, music, and more.

Education

M.Sc., Software Engineering, Tarbiat Modares University (TMU), Iran, GPA: 3.88/4.0, ranked 1st outstanding student **2019 - 2022**

B.Sc., Software Engineering, Babol Noshirvani University of Technology (BNUT), Iran, GPA: 3.55/4.0 **2014 - 2019**

Relevant Experience

Research Assistant, Safety-Critical Software & Systems lab, TMU **(Sep 2020 - Oct 2022)**

- Did research under Dr. Jalili's supervision on applied machine learning for software testing

Tutor, Faradars [link] **(Jan 2021 - Mar 2021)**

- Created and taught a C# course on Consuming Web Services

Teaching Assistant, Advanced Programming course, BNUT **(Feb 2017 - Jun 2017)**

- Designed and oversaw a project, and delegated tasks to students

Web Developer Intern, Radman **(Jul 2018 - Sep 2018)**

- Developed a website using C#, ASP.NET Core, and SQL Server

Software Developer Intern, Behineh System **(Jul 2015 - Sep 2015)**

- Developed a management software using C#, and SQL server

Selected Academic Projects (see website for full list)

Gross Domestic Product (GDP) Estimator **2023**

- Estimating GDP in absence of historical GDP data using SMT solvers and machine learning clustering algorithms

Deep Emotion [link] **2021**

- EEG-based emotion recognition using deep reinforcement learning

Harif - B.Sc Final Project [link] **2018**

- A graph-based automatic course-selection software that recommends schedules based on students' preferences

Tati Studio **2017**

- A compiler + IDE for TSLANG.

Computer Skills

- **Highly skilled in Microsoft technologies**, with 6+ years of expertise in C#, SQL Server, ASP.NET Core, ML.NET, SignalR, and more

- **Highly experienced in data science tools**, with 3+ years of experience in Python, PyTorch, TensorFlow, LightGBM, Optuna, and more
- **Familiar with** Z3, LLVM, Hugging Face, NLTK, PyG, Stable Baselines, PyGad, JavaScript, Java, C, R, Hadoop, Docker, Git, and more

Selected Courses

- **Advanced Programming:** 20/20 (read the whole Java: How to Program by Deitel)
- **Data Structures:** 20/20 (read CLRS in parts)
- **Advanced Algorithms:** 19.5/20 (read the whole CLRS)
- **Introduction to Programming Contests:** 19.3/20 (used available materials from Stanford's CS 97SI)
- **Data Analysis:** 18.5/20 (read most parts of the Introduction to Machine Learning by E. Alpaydin)
- **Discrete Mathematics:** 18/20 (read the whole Discrete Mathematics by H. Yousefi)

Standard Data Structures, Algorithms, and Games Implemented From Scratch

- **Machine Learning-** Linear & Logistic Regression, Decision Tree, KNN, Random Forest, AdaBoost, Naïve Bayes, and KMeans in Python
- **AI -** Monte Carlo Tree Search in Python
- **Nature-Inspired Optimization Algorithms -** Genetic, Tribe Particle Swarm Optimization, and Discrete Grey Wolf in C# and Python
- **Graph Algorithms -** DFS, BFS, Prim, and Kruskal in C#
- **Sort Algorithms -** Bubble Sort, Merge Sort, Quick Sort, Insertion Sort, Heap Sort, and Counting Sort in C#
- **Games –** Tic-Tac-Toe, Chess, Raichu, Poker Squares, Puzzle, Snake Game, and Typing Game in C#, Java, C and Python
- **Signal Processing Algorithms -** Pan–Tompkins algorithm in MATLAB
- **Data Structures -** singly, doubly, circular array based and pointer based linked list, stack, and queue; binary, binomial and Fibonacci heap; disjoint-set forests; binary search tree; adjacent matrix and adjacent link list graph in C#

Languages

- **Persian - Native**
- **English - TOEFL iBT: Total 93, Reading 28, Listening 21, Speaking 22, Writing 22, April 01, 2023**

Publications

[1] **T. Rostami**, S. Jalili, "FrMi: Fault-revealing Mutant Identification using Killability Severity," en, Information and Software Technology, In Press, 2023 [link]

[2] **T. Rostami**, "Simpler machine learning models for predicting non-trivial equivalent mutants," en, The Journal of Systems & Software, Under Review, 2023 [link]

[3] **T. Rostami**, S. Jalili, "A heuristic function for improving the prediction accuracy of fault revealing mutants," fa, in 9th Iranian Joint Congress on Fuzzy and Intelligent Systems, Published, 2022 [link]

[4] **T. Rostami**, S. Jalili, "A method for improving predictive mutation testing that considers the impacts of missing data," fa, in 12th International Conference on Information and Knowledge Technology, Published, 2021 [link]

References

References Available Upon Request