**Research Interest**

I want to know how we can build problem-solving agents that take advantage of both automated reasoning and machine learning worlds. More precisely, currently, I am interested to investigate the following scenarios (in no particular order):

1. ML for improving SMT solvers,
2. SMT solvers for improving ML,
3. ML for knowledge representation + (search and SMT for making better decisions)

As for engineering, I'm excited to merge and apply state-of-the-art machine learning and automated reasoning to tackle software engineering and code-related tasks. While there haven't been many opportunities, I would love to explore cutting-edge machine learning and automated reasoning in board games (especially chess), education, social science, mental health, 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](https://scholar.google.com/citations?hl=en&user=j6gUwMkAAAAJ&view_op=list_works&sortby=pubdate)’s supervision on applied machine learning for software testing

**Tutor, Faradars** [[link]](https://faradars.org/courses/fvcs9907-web-services-using-c-sharp) **(Jan 2021 - Mar 2021)**

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

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

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

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

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

**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]](https://github.com/SaraRostami/DeepRL_EmotionRecognition_UsingEEGsignals) **2021**

* EEG-based emotion recognition using deep reinforcement learning

**Harif -** **B.Sc Final Project** [[link]](https://github.com/TahaRostami/Harif) **2018**

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

**Tati Studio 2017**

* A compiler + IDE for [TSLANG](http://nit.rudi.ir/962/).

**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 almost the whole CLRS)
* **Introduction to Programming Contests:** 19.3/20 (used available materials from Stanford’s [CS 97SI](http://web.stanford.edu/class/cs97si/) )
* **Fundamentals of Compiler Design:** 19.3/20 (read the whole Compiler Design by F. Shapouri)
* **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, 2023 [[link]](https://www.sciencedirect.com/science/article/abs/pii/S0950584923001623)
2. **T. Rostami**, "Simpler machine learning models for predicting non-trivial equivalent mutants," en, The Journal of Systems & Software, *Under Review*, 2023 [[link]](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4358867)
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, 2022 [[link]](https://civilica.com/doc/1436432/)
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, 2021 [[link]](https://github.com/TahaRostami/TahaRostami.github.io/raw/main/files/paper_ikt1.pdf)

**References**

**References Available Upon Request**