Morteza Zakeri-Nasrabadi

Curriculum Vitae

Computer Engineering Ph.D. Candidate,
Iran University of Science and Technology,
Narmak, Tehran, Iran.
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"Towards better software systems by automating laborious software engineering activities with software II and compiler II."

Educations

2018—Now **Ph.D. Candidate in Computer Engineering (Software)**, *Iran University of Science and Technology (IUST)*, Tehran, Iran.
- Dissertation: *"Measuring and improving testability of software systems artifacts"*
- Advisor: Dr. Saeed Parsa
- Co-Advisor: Dr. Mehrdad Ashtiani
- GPA (five semesters): *19.11 out of 20* (Ranked 1^{st}).

2016—2018 **M.Sc. in Computer Engineering (Software)**, *Iran University of Science and Technology (IUST)*, Tehran, Iran.
- Thesis: *"Automatic test data generation in file format fuzzers"*
- Advisor: Dr. Saeed Parsa
- GPA: *18.54 out of 20* (Ranked 1^{st})

2011—2015 **B.Sc. in Computer Engineering (Software)**, *Arak University*, Markazi, Iran.
- Project: *"Design and implement a multi-agent system to participate in the multi-agent programming contest (MAPC'15)"*
- Advisor: Dr. Vahid Rafe
- GPA: *18.18 out of 20* (Ranked 2^{nd})

2010—2011 **Pre-college in Mathematics Science**, *Shahid Beheshti Pre-college*, Isfahan, Iran.
- GPA: *19.35 out of 20*

2008—2010 **Diploma in Mathematics and Physics**, *Shahid Beheshti High School (2^{nd} and 3^{rd} years) and Ibn-e-Sina High School (1^{st} year)*, Isfahan, Iran.
- GPA: *19.77 out of 20*

Research Interests

Software Engineering & *Machine Intelligence*

Automated and empirical software engineering, requirement engineering, and software quality assurance.
Compilers, program analysis, transformation (refactoring), testing, debugging, and repair.
Machine learning, deep learning, and natural language processing for software engineering (AI4SE).
Machine learning applications in biomedical engineering.

Honors and Awards

Graduate study
- Awarded as an outstanding Ph.D. researcher, Iran University of Science and Technology, winter 2022.
- Ranked 1st among 60 students during my M.Sc. program at Iran University of Science and Technology, fall 2018
- Ph.D. admission without entrance exam, fall 2018.
- Awarded as an outstanding M.Sc. graduate by the Iran University of Science and Technology talent office, winter 2018.
- Awarded as an outstanding student by the Iran University of Science and Technology talent office, winter 2017.

Undergraduate study
- Ranked 2nd among 31 students during my B.Sc. program at Arak University.
- Awarded as an outstanding student by the Arak University talent office, fall 2014.
- Ranked 1st in Arak University futsal tournaments, winter 2014.
- Awarded as *ethics* team in Arak University pantomime competitions, winter 2014.

High school
- Ranked 3rd in Isfahan physics laboratory contests, spring 2010.
- Ranked 2nd and 3rd in Isfahan regional students' chess tournaments, fall 2008 and fall 2010.

Skills

Theoretical computer science background

Selected university courses with grades
- Software engineering (19.5/20), software architectures (18.80/20), and object-oriented design (19.25/20)
- Compiler design (20/20), advanced compilers (18/20), dependable software systems (18.80/20)
- Formal languages and automata (19.25/20), algorithms design (18.50/20), and game theory (18/20)
- Operating systems (20/20), distributed systems (19/20), internet of things (20/20)
- Database systems (20/20/), data mining (19/20), graph/ network mining—complex dynamic networks (19.75/20), and text mining—natural language processing (20/20).

Applied computer science background

Programming and markup languages
- Python and Java [expert]
- C, C++, and C# [proficient]
- Assembly (x86), shell scripting, and Scratch [familiar]
- XML, (X)HTML, CSS, YAML, JSON, DOM, and AJAX [familiar]

Tools, frameworks, libraries, and IDEs
- Program analysis: ANTLR, Understand, PMD, Doxygen, Roslyn, SonarQube, EvoSuite, and AFL
- Data science: Scikit-learn, Tensorflow2 (Keras), NetworkX, SciPy, and Weka
- Visualization: Seaborn, Graphviz, and Matplotlib
- Application software development: PyQt, JavaFX, Django, and Jason (multi-agent programming)
- Website building: Wordpress, Joomla, Moodle, and Pelican
- Databases: MySQL, Microsoft SQL-Server, and OrientDB
- Dependency and code management tools: Pip, Maven, and Git
- IDEs: PyCharm, IntelliJ IDEA, Eclipse, Netbeans, and Visual Studio.

Software development methodologies and modeling
- Methodologies: Agile (BDD and TDD), rational unified process (RUP), and Oracle custom development method (CDM)
- Modeling languages: UML, BPMN, and Petri net
- Project management: Scrum.

Operating systems, virtualization, and office
- OSs: Microsoft Windows and Linux (Ubuntu desktop/server, and Kali)
- Virtualization: VMware Workstation and ESXi
- Presentation software: Microsoft Office and LaTeX
- Multi-media: Camtasia.

Other

Languages
Persian: Native
English: Good (English degree: MSRT with score of *74*/100)
Arabic: Basic.

Publications

Journal papers

Journal 1
Morteza Zakeri-Nasrabadi and Saeed Parsa. **An ensemble meta-estimator to predict source code testability**. *Applied Soft Computing*, 129:109562, 2022.

Journal 2
Mahnoosh Shahidi, Mehrdad Ashtiani, and Morteza Zakeri-Nasrabadi. **An automated extract method refactoring approach to correct the long method code smell**. *Journal of Systems and Software*, 187:111221, 5 2022.

Journal 3
Morteza Zakeri-Nasrabadi and Saeed Parsa. **Learning to predict test effectiveness**. *International Journal of Intelligent Systems*, 37(8):4363–4392, 2022.

Journal 4
Morteza Zakeri-Nasrabadi, Hamideh Tabibi, Mahsa Salmani, Mahdieh Torkashvand, and Eisa Zarepour. **A comprehensive survey on non-invasive wearable bladder volume monitoring systems**. *Medical & Biological Engineering & Computing*, 59(7-8):1373–1402, aug 2021.

Journal 5

Morteza Zakeri-Nasrabadi, Saeed Parsa, and Akram Kalaee. **Format-aware learn&fuzz: deep test data generation for efficient fuzzing**. *Neural Computing and Applications*, jun 2020.

Journal 6

Morteza Zakeri-Nasrabadi and Saeed Parsa. **Automatic test data generation in file format fuzzers**. *Electronic and Cyber Defense*, 8(1):1–16, 2020.

Conference papers

Conference 1

Morteza Zakeri-Nasrabadi and Saeed Parsa. **learning to predict software testability**. In *2021 26th International Computer Conference, Computer Society of Iran (CSICC)*, pages 1–5, Tehran, mar 2021. IEEE.

Conference 2

Zahra Zakeri-Nasrabadi and Morteza Zakeri-Nasrabadi. **Analysis social phenomena using machine learning techniques: a mixed research framework**. In *Proceedings of the first conference on artificial intelligence and soft computing in humanities (AISCH-2019)*, pages 120–127, Tehran, Iran, 2019. Allameh Tabataba'i University.

Under review papers

Under review 1

Morteza Zakeri-Nasrabadi and Saeed Parsa. **Natural language requirements testability measurement based on requirement smells**. *Manuscript is under review in Neural Computing and Applications*, 2022.

Under review 2

Saeed Parsa, Morteza Zakeri-Nasrabadi, Ekhtiarzadehand, and Mohammad Ramezani. **Method Name Recommendation Based on Source Code Metrics**. *Manuscript is under review in Journal of Computer Languages*, 2022.

Under review 3

Morteza Zakeri-Nasrabadi, Saeed Parsa, Ehsan Esmaili, and Fabio Palomba. **A systematic literature review on the code smells datasets and validation mechanisms**. *Manuscript is under review in ACM Computing Surveys*, 2022.

Under review 4

Morteza Zakeri-Nasrabadi, Saeed Parsa, and Mohamed Wiem Mkaouer. **Flipped boosting of automatic test data generation frameworks through a many-objective program transformation approach**. *Manuscript is under review*, 2022.

Under review 5

Alireza Ardalania, Saeed Parsa, Morteza Zakeri-Nasrabadi, and Alexander Chatzigeorgiou. **Supporting single responsibility through automated extract method refactoring**. *Manuscript is under review*, 2022.

Under review 6

Morteza Zakeri-Nasrabadi, Saeed Parsa, Masoud Ekhtiarzadehand, Chanchal Roy, and Mohammad Ramezani. **A systematic literature review on source code similarity measurement: techniques, applications, and challenges**. *Manuscript is under review in Journal of Systems and Software*, 2022.

Under review 7

Saeed Parsa and Morteza Zakeri-Nasrabadi. **Testability-driven development: an improvement to the TDD efficiency**. *Manuscript is under review*, 2022.

Under review 8

Roshan Golmohammadi, Saeed Parsa, and Morteza Zakeri-Nasrabadi. **Dynamic domain testing with multi-agent Markov chain Monte Carlo method**. *Manuscript is under review*, 2022.

Under review 9

Morteza Zakeri-Nasrabadi, Saeed Parsa, and Zahra Hayati. **Automatic test data generation to improve fault-localization based on causal-statistical analysis**. *Manuscript is under review*, 2022.

Theses

Thesis 3

Morteza Zakeri-Nasrabadi. ***Measuring and improving testability of software systems artifacts***. Ph.D. dissertation, Iran University of Science and Technology (IUST), School of Computer Engineering, September 2022, (In Persian).

Thesis 2

Morteza Zakeri-Nasrabadi. ***Automatic test data generation in file format fuzzers***. M.Sc. thesis, Iran University of Science and Technology (IUST), School of Computer Engineering, September 2018, (In Persian).

Thesis 1

Morteza Zakeri-Nasrabadi. ***Design and implement a multi-agent system to participate in the multi-agent programming contest (MAPC'15)***. B.Sc. project, Arak University, Faculty of Engineering, September 2015, (In Persian).

Complete list of publications

Research accounts

The up-to-date list of publications are available in my research profiles:

- Publons: *https://publons.com/researcher/1809049/morteza-zakeri-nasrabadi/*
- ORCID: *https://orcid.org/0000-0003-4289-0606*
- Google scholar: *https://scholar.google.com/citations?user=km5DzwwAAAAJ&hl=en*
- ResearchGate: *https://www.researchgate.net/profile/Morteza-Zakeri-Nasrabadi*
- DBLP: *https://dblp.org/pid/232/3298.html*

Professional Activities

Academic and industry experiences

2018—Now **Ph.D. student**, *Reverse Engineering Research Laboratory (http://reverse.iust.ac.ir), Iran University of Science and Technology*, Tehran, Iran.

- Developing an automated refactoring engine, CodART (*https://m-zakeri.github.io/CodART*)
- Developing software requirements quality measurement tool, ARTA (*https://m-zakeri.github.io/ARTA*)
- Developing ource code testability measurement tool, ADAFEST (*https://m-zakeri.github.io/ADAFEST*)
- Developing a file format fuzzer, DeepFuzz (*https://m-zakeri.github.io/iust_deep_fuzz*).
- Supervisor: Dr. Saeed Parsa (*http://parsa.iust.ac.ir*)

2021—2022 **Software engineer, project manager**, *Fanavaran Denshgar Co. (https://www.dantech.ir)*, Tehran, Iran.

- Intelligent anti-money laundering (AML) system project

2020—2021 **Research assistant**, *Automated Software Engineering Laboratory (http://ase.ce.sharif.ir), Sharif University of Technology*, Tehran, Iran.

- Designing and implementing a software maintainability measurement tool, QualCode (*https://qualcode.ir/*)
- Project supervisor: Dr. Abbas Heydarnoori (*http://sharif.edu/∼heydarnoori*)
- Funded by Iran's National Elites Foundation and MCI R&D Center

2019—2020 **Research assistant**, *Iranian Online Smart Monitoring (Riz-Payesh) Healthcare Company*, Tehran, Iran.

- Designing a wearable bladder monitoring system (WBMS)
- Project supervisor: Dr. Eisa Zarepour (*http://webpages.iust.ac.ir/zarepour*)
- Funded by Iran's National Elites Foundation

2015–2016 **Software engineer**, *Pars Sina Azeen Consulting Engineers Company (Parsina)*, Khorramabad, Lorestan.

- Designing and developing Parsina bridge management system (PBMS)

Mar–Aug, 2015 **Intern**, *Computer Engineering Laboratories, Arak University*, Arak, Markazi.

- Building AVR and ARM micro-controllers educational boards
- Rewriting and revising laboratories pamphlets and handbooks
- Launching the faculty cloud-center based on $2X$ OS

Teaching experiences

2017—Now **Teaching assistant (fundamental of compiler design—undergraduate)**, *Iran University of Science and Technology*, Tehran, Iran.

- Instructor(s): Dr. Saeed Parsa
- Web-page: *http://parsa.iust.ac.ir/courses/compilers*
- Responsibilities: Designing and grading assignments, holding extra office hours, and editing lecture notes.
- Funded by Iran's National Elites Foundation

2018—Now **Teaching assistant (advanced compiler—graduate)**, *Iran University of Science and Technology*, Tehran, Iran.

- Instructor(s): Dr. Saeed Parsa
- Web-page: *parsa.iust.ac.ir/courses/advanced-compilers*
- Responsibilities: Designing and grading assignments and projects, holding extra office hours, and editing lecture notes.

2019—Now **Teaching assistant (advanced software engineering—graduate)**, *Iran University of Science and Technology*, Tehran, Iran.

- Instructor(s): Dr. Saeed Parsa
- Web-page: *parsa.iust.ac.ir/courses/advanced-software-engineering*
- Responsibilities: Designing and grading assignments and projects, holding extra office hours, and editing lecture notes.

2020 **Teaching assistant (game theory—graduate)**, *Iran University of Science and Technology*, Tehran, Iran.

- Instructor(s): Dr. Vesal Hakami
- Web-page: *https://m-zakeri.github.io/game-theory.html#game-theory*
- Responsibilities: Designing and grading assignments and projects, holding TA classes.

2020 **Teaching assistant (complex dynamic networks—graduate)**, *Iran University of Science and Technology*, Tehran, Iran.
- Instructor(s): Dr. Hossein Rahmani
- Web-page: *https://m-zakeri.github.io/dynamic-complex-network.html#dynamic-complex-network*
- Responsibilities: Designing and grading assignments and projects.

Services

2022 **Journal reviewer**, *Artificial Intelligence Review*.

2021 **Journal reviewer**, *Communications in Combinatorics, Cryptography & Computer Science (CCCS)*.

2020 **Reviewer**, *5th International Conference on Combinatorics, Cryptography, Computer Science, and Computing (I4C'20)*, Tehran, Iran.

2019 **Reviewer**, *25th International Computer Conference, Computer Society of Iran (CSICC'20)*, Tehran, Iran.

▷ MORE More information including my presentations, talks, teaching resources, and open-source projects can be found on my website: *http://m-zakeri.ir*

Last update *September 3, 2022*.