

Negar Fathi

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[Webpage](#) | [LinkedIn](#) | [GitHub](#) | [Google Scholar](#)

PROFILE

Ph.D. student in Computer Science at the University of Nebraska-Lincoln specializing in program analysis, formal verification, and automated reasoning. Interested in static and dynamic program analysis, SAT/SMT-based reasoning, compiler-driven techniques, and software testing to improve software reliability and verification.

EDUCATION

Ph.D. in Computer Science 2023–Present

University of Nebraska-Lincoln (UNL), Lincoln, NE, USA

GPA: 3.85/4.00 (current)

Research Focus: Formal verification and program analysis methods for verifying safety and liveness properties, with an emphasis on termination and non-termination reasoning.

Advisor: [Dr. Rahul Purandare](#)

M.Sc. in Computer Engineering (Software) 2018–2021

Iran University of Science and Technology (IUST), Tehran, Iran

GPA: 18.69/20.00 (Ranked 1st)

Thesis: Development of a Constraint Solver to Determine the Domain for Complex Data Types

Supervisor: [Dr. Saeed Parsa](#)

B.Sc. in Computer Engineering (Software) 2013–2017

Babol Noshirvani University of Technology (NIT), Babol, Mazandaran, Iran

GPA: 17.29/20.00 (Ranked 1st)

Final Project: Study and Investigation of Routing Protocols in Wireless Sensor Networks

Supervisor: [Dr. Mojtaba Mansouri](#)

SKILLS

Program Analysis & Verification: LLVM/Clang, Roslyn, DG & Frama-C (static slicers), KLEE, Z3

Testing & Fuzzing: AFL (coverage-guided fuzzing), NUnit, IntelliTest

Programming Languages: C, C++, C#, Python

Frontend Development: HTML, CSS, JavaScript

Backend Development: Entity Framework Core, ASP.NET Core (Web API, MVC)

Databases: Microsoft SQL Server, PostgreSQL

DevOps & Tools: Docker, Git

PUBLICATIONS

- Manuscript on automated reasoning about program termination and non-termination, *under peer review*, 2025.
- A. Kalaei, S. Parsa, and N. Fathi, “COSMOS: A Comprehensive Framework for Automatically Generating Domain-Oriented Test Suite,” *Information and Software Technology*, vol. 154, p. 107091, Feb. 2023, doi: [10.1016/j.infsof.2022.107091](https://doi.org/10.1016/j.infsof.2022.107091).

EXPERIENCE

Graduate Research Assistant Fall 2023–Summer 2025

University of Nebraska-Lincoln, Advisor: Dr. Rahul Purandare

SELECTED PROJECTS

- **Hospital Admission System** models and optimizes hospital workflows using BPMN, UML, DFD, and dashboard analysis to enhance efficiency and performance evaluation.
- **Software Modularization** analyzes and visualizes software structure using class dependency extraction, clustering with Bunch, and automated package diagram generation in C#, Graphviz, and Rational Rose.
- **UML-Based Code Generation and Unit Testing** implements class diagrams, automated C# code generation, and verification through unit tests using Visual Paradigm, Visual Studio, and NUnit.
- **Clean Code Analyzer** analyzes C# source code using Roslyn to detect violations of clean code principles, including naming, structure, and complexity metrics, with detailed visualization in a Windows Forms interface.
- **COSMOS** implements a comprehensive framework for automatically generating domain-oriented test suites.
- **Client-Server Communication** implements synchronous and asynchronous client interaction with a C# web service to demonstrate performance and concurrency differences.
- **Warehouse Management System** implements a PostgreSQL-based backend with table inheritance, data queries, stored procedures, and C# integration through Npgsql in Visual Studio.
- **Taxi Density Clustering** performs spatial clustering of taxi trajectory data using DBSCAN in ELKI after randomized data sampling with C#, identifying regions of high taxi density based on geographic coordinates.
- **EDFNet** implements an early-fusion framework of RGB, edge, and depth modalities for thin-obstacle segmentation in UAV navigation.

CERTIFICATIONS

- **C# Programming – Beginner Certification**, Information Technology Learning Lab (LAITEC), Sharif University of Technology, *Jan. 2019*
- **ASP.NET**, Information Technology Learning Lab (LAITEC), Sharif University of Technology, *Oct. 2019*
- **ASP.NET MVC – .NET Framework**, Information Technology Learning Lab (LAITEC), Sharif University of Technology, *Nov. 2020*
- **Oregon Programming Languages Summer School (OPLSS): Types, Semantics, and Applications**, Boston University, *Jun. 2024*
- **Oregon Programming Languages Summer School (OPLSS): Types, Logic, and Formal Methods**, University of Oregon, *Jun. 2025*

HONORS & AWARDS

- Ranked 1st among B.Sc. students in Computer Engineering, Babol Noshirvani University of Technology, 2017
- Ranked 1st among M.Sc. students in Computer Engineering, Iran University of Science and Technology, 2021
- Othmer Fellowship, University of Nebraska-Lincoln, 2023–2025

LANGUAGES

English (Fluent), Persian (Native)