ALEKSANDR FEDCHIN

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EDUCATION

Tufts University **M.S. 2022**, Ph.D. Candidate in Computer Science, 2020 - Present

Advisor: Jeffrey Foster
Research Area: Programming Languages, Formal Verification, Automated Test Generation
Current Work: Verification of scientific software that uses Message Passing Interfaces for concurrent computation
Awards: Amazon Post-Internship Graduate Research Fellowship (2022)

Bard College B.A. in Computer Science, B.A. in Classical Philology, 2016 - 2020

LANGUAGES

Programming Languages	C#, Java, Python, Dafny > Coq, C, ML, Kotlin > Boogie, Prolog, Ruby etc.
Natural Languages	English (fluent), Russian (fluent), German (C1), Latin & Ancient Greek

INDUSTRY EXPERIENCE

Amazon Web Services – Applied Scientist Intern Summers of 2021, 2022, 2023; Sep 2023 - Apr 2024
Mentors: Lucas Wagner and Zvonimir Rakamarić

Worked on and maintained several features of the Dafny and Boogie programming languages, including counterexample generation, automated testing, and coverage reporting (all open-source), as well as on several related closed-source projects. Some of the results have been published in NFM 2023 and TACAS 2022, presented at POPL 2024, and described on the official Dafny blog.

JetBrains – YouTrack ML Intern Summer 2019
Mentors: Vitaly Khudobakhshov and Denis Litvinov

Developed a machine-learning pipeline for automatic categorization of issue tracker tickets. Compared several neural network architectures, approaches to multi-task learning, meta-learning, etc.

PUBLICATIONS IN COMPUTER SCIENCE

Fedchin, Bai, Foster: *Metamorph: Synthesizing Large Objects from Dafny Specifications*. Object-Oriented Programming, Systems, Languages & Applications (OOPSLA), 2025

Fedchin, Dean, Foster, Mercer, Rakamarić, Reger, Rungta, Salkeld, Wagner, Waldrip: *A Toolkit for Automated Testing of Dafny*. NASA Formal Methods (NFM), 2023

Chakarov, Fedchin, Rakamarić, Rungta: *Better Counterexamples for Dafny*. Tools and Algorithms for the Construction and Analysis of Systems (TACAS), 2022

TEACHING EXPERIENCE

Discrete Mathematics (Tufts, 2024), Introduction to Automated Deduction (American University of Central Asia, 2024), Programming Languages (AUCA, 2025), Introduction to Artificial Intelligence (AUCA, 2025)

SKILLS

Verification Tools	Coq, Dafny, Boogie, Weakest Precondition Calculus, etc.
Developer Tools	Git, CI (GitHub Actions), Code review, VS Code, JetBrains IDEs, etc.
Machine Learning	PyTorch, Scikit-learn, etc. Participated in the Vesuvius Challenge Kaggle Competition.
Comp. Linguistics	Published in AJP 2022 and NAACL 2025.