

ALEKSANDR FEDCHIN

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PROFILE

Berlin-based computer scientist with a PhD in CS from Tufts University (defended October 2025) specializing in programming languages and verification, most recently of concurrent MPI software. Industry experience through multiple internships at AWS and JetBrains. Authorized to work in Germany via Chancenkarte.

EDUCATION

Tufts University (advisor: Jeffrey Foster)

PhD 2025, M.S. 2022

Thesis: Expanding the Capabilities of Automated Program Verifiers for Testing, Synthesis, and Concurrency

Awards: Amazon Post-Internship Graduate Research Fellowship (2022)

Bard College

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

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 the Dafny programming language in close collaboration with the team that used Dafny to help **rewrite and optimize the Java backend of the AWS Cloud-Scale Authorization Engine**. Specifically, I designed and maintained the counterexample generation, automated test generation, and coverage reporting features of Dafny. 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.

SKILLS

Languages	C#, Java, Python, Dafny > C, C++, ML, Kotlin > Prolog, Ruby etc. English (native), Russian (native), German (intermediate reading), Latin, Ancient Greek
Parallel Computing	Experience in formally verifying correctness of MPI-based scientific software.
Verification Tools	Rocq/Coq, Dafny, Boogie, Weakest Precondition Calculus, etc.
Machine Learning	PyTorch, NumPy; practical experience training and deploying models (JetBrains).
Developer Tools	Linux, Git, CI (GitHub Actions), Code review, VS Code, JetBrains IDEs, etc.
Language Design	Reflection (Java, C#), compilers, type systems, functional programming, concurrency

PUBLICATIONS

[Conditionally Accepted] Fedchin, Mejr, Sundar, Foster:

DafnyMPI: A Dafny Library for Verifying Message-Passing Concurrent Programs. POPL, 2026

Fedchin, Bai, Foster:

Metamorph: Synthesizing Large Objects from Dafny Specifications. OOPSLA, 2025

Fedchin, Dean, Foster, Mercer, Rakamarić, Reger, Rungta, Salkeld, Wagner, Waldrip:

A Toolkit for Automated Testing of Dafny. NFM, 2023

Chakarov, Fedchin, Rakamarić, Rungta: *Better Counterexamples for Dafny. TACAS, 2022*

Fedchin, Cooperman, Chaudhuri, Dexter:

Probabilistic Identification and Ranking of Acrostics in Multilingual Corpora. NAACL, 2025

TEACHING EXPERIENCE

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