ALEKSANDR FEDCHIN

GitHub: Dargones ◇ LinkedIn: aleksandr-fedchin ◇ Website: sasha-fedchin.github.io ◇ Email: sasha.fedchin@gmail.com

PROFILE

Berlin-based computer scientist with a PhD in CS from Tufts University specializing in program verification, most recently of concurrent MPI software. Industry experience includes multiple internships at AWS (CI/CD, programming language design) and JetBrains (machine learning, classification).

EDUCATION

Tufts University **PhD** (defended Oct 2025, to be conferred Feb 2026), M.S. 2022

Advisor: Jeffrey Foster
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

PROFESSIONAL EXPERIENCE

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

Extended the Dafny programming language (Amazon strategic open-source project) with features that include:
- Automated test generation and dead code detection
- Proof failure explanation and counterexample generation
- Test coverage reporting

Results have been published in NFM 2023 and TACAS 2022, presented at POPL 2024, and described on the official Dafny blog. Dafny has subsequently been used to verify parts of AWS Cloud-Scale Authorization Engine.

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

PUBLICATIONS

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)