Ivan Grigorik

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Research Interests

Software Testing and Verification, GPU-oriented HPC, Compilers, and AI for Software Engineering

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Education

2024–present	**Ph.D.**, *The University of Texas at Austin*, Austin, United States, *GPA: 3.9* Major in Software Engineering and Systems, advised by Milos Gligoric.
2020–2024	**B.S.**, *Belarusian State University of Informatics*, Minsk, Belarus, *GPA: 3.7* Major in Computer Science and Network Engineering

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Skills

Languages	C, C++, Python, Rust, ASM, Java, Bash, SQL;
Tools	GCC, LLVM, Make & CMake, CUDA, GDB, Valgrind, Docker, STL,
Domains	Compilers, HPC, Static and Dynamic Analysis, Verification of Software;
Concepts	System and Software Engineering, Program Testing, Sanitizing and Profiling, Design Patterns, Distributed Computing, Parallel Algorithms, Multithreading, Computer Architecture, Networking.

Experience

Summer 2024 - present	**Research Assistant**, *University of Texas at Austin*, Austin Working on Software Testing and Validation and Compilers tools

- Researching compiler optimization techniques, source code processing, and code testing tools;
- Developing static and dynamic analyzer tools for the existing programming language on top of its infrastructure;
- Researching the source-to-source code conversions in HPC languages;
- Experimenting with prompt engineering and LLM-based tooling for research;
- Working with HPC code conversions and optimization techniques (PyKokkos, Kokkos);
- Making my own ray tracing engine for fun.

Spring - Summer 2024	**Research Assistant**, *BSUIR*, Minsk, Belarus Led the research on wireless communication technology

- Conducted in-depth research on the topic of harmonic oscillations and total harmonic distortion between signals in wireless networks;
- Designed and developed the PCB for jamming Bluetooth and WiFi devices;
- Contributed to 3 different research projects over 5 months.

Summer 2023	**Software Developer Intern**, *AGAT - Control Systems*, Minsk, Belarus Contributed to multiple network tools for the company network.

- Developed network controlling and monitoring software for CISCO and DELL equipment.
- Implemented and designed network analysis tools for the company's local network.
- Collaborated with the team to deploy an improved network management system.

Projects

xbash	A fork of bash with static and dynamic analysis tools and extended builtins.
cuRTX	Open-source ray tracing tool written in CUDA and CPP, inspired by RTX-in-one-weekend book
GameOfLife	Pet-project, Conway's Game of Life written in C++ + SFML
HvC	Fork of HIPIFY that compares heterogeneous computing platforms (CUDA, HIP, etc.)

Courseworks

- Programming languages and computer design
- Computer Architecture
- Software Networks
- Compilers
- System software
- HPC architecture
- Hardware Systems
- Programming Paradigms

Honors and awards

2024 Graduate School Fellowship, University of Texas at Austin

2024 Outstanding paper of BSUIR 60th SE
Paper: Active jammer stations based on direct influence noises

Services and event participation

Sub-reviewer CGO (2025), OOPSLA (2026)

Symposium AMD iMAGiNE consortium poster session

Seminars Co-organized of Joint UT-Cornell Software Engineering Seminar Series ('24 -'25)