

# Nikolay Kurtov

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## Summary

Seasoned C++/Rust engineer with deep expertise in high-performance computing, large-scale distributed systems and FPGA acceleration.

## Experience

### System SW / Cryptography Engineer - Irreducible.com 2024 - Present

- Achieved x12 speed up of Binus Sumchecks and Zerochecks using FPGA: (<https://gitlab.com/IrreducibleOSS/binus>)
- Directed a junior team member to exploit parallelism in Evalcheck, boosting performance of Evalcheck x15.
- Designed and deployed the software stack bridging Binus and FPGA drivers in production.

### Tech Lead - Node Team - NEAR Protocol 2021 - 2023

- Re-architected State Sync, increasing reliability and performance: <https://gov.near.org/t/protocol-reinventing-state-sync/34567>
- Reduced release incidents and improved community validator experience
- Enhanced node monitoring with advanced metrics, logs, and tracing (Grafana Tempo)
- Code contributions: <https://github.com/nikurt>

### Senior Software Engineer at Google 2011 - 2021

- Tech Lead, YouTube Core SRE (2.5 years)
  - Drove end-to-end reliability initiatives for YouTube, boosting success metrics.
  - Led a C++ microservice dependency management framework and production readiness process.
- Knowledge Graph Infrastructure (3 years)
  - Built and optimized critical backend components, improving throughput and reliability.
  - Designed APIs to help internal teams leverage Knowledge Graph data.
- Knowledge Graph Quality (1 year)
  - Improved ML models for music entity reconciliation, impacting 0.3% of Google search traffic.
- Geo Logs and Data Quality (1 year)
  - Designed an ML system to eliminate duplicate business listings in Russia and Vietnam.

- - Extracted new usage metrics for product teams, improving feature development.
- Google Offers (2 years)
- - Developed a personalized offers system (email + online distribution).

**Software Engineer at Intel** 2010 - 2011 Optimized Intel C++ Compiler for CPU2000 and EEMBC1.1 on Atom

**Intern Software Engineer at Intel** 2008 - 2010 Developed a distributed memory runtime for Intel Concurrent Collections for C++.

**Intel Student Laboratory** 2008 Added edge profiling support to the Apache Harmony Jitrino.JET compiler.

**xored software** 2007 QA, CI, and administered Debian servers

**SWSoft Student Laboratory** 2006 Created a 3D physics engine and handled level generation/sound for a game

## Skills

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- Languages: Rust (4 yrs), C++ (14 yrs), Python (3 yrs)
- Expertise: High-performance computing (FPGA), SRE, blockchain protocols, distributed systems
- Core Competencies: Data structures & algorithms, parallel/distributed programming, large-scale systems design

## Education

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**MS in Computer Science**, 2009 - 2011 [Novosibirsk State University](#). GPA 5.00 (100%)

**BS in Computer Science**, 2005 - 2009 [Novosibirsk State University](#). GPA 5.00 (100%)

## Hobbies

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- Swordfighting (HEMA). Assistant Coach. <https://hemaratings.com/fighters/details/12545/>
- Running, Marathon personal best time - 3h25m
- Astronomy. [Built a solar projection telescope](#)

## Programming Competitions

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1. 14th place at the ACM ICPC World Finals 2010 in Harbin
2. 27th place at the ACM ICPC World Finals 2011 in Orlando
3. 11th place at the Yandex Open 2010 onsite round