

# Alexander Fokin

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## CONTACT INFORMATION

Current Location: Moscow, Russian Federation  
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## PROFESSIONAL EXPERIENCE

### ISO C++ Standards Committee

*C++ Expert*

**May 2016 - present**

Currently serving as a chairman of the C++ standards working group of the Russian National Body.

**Yandex**, Moscow, Russian Federation

*Head of Search Components*

**October 2015 - present**

*Senior Search Engineer*

**October 2014 - October 2015**

Currently responsible for most of Yandex search runtime, from L7 load balancer all the way down to the services running on top of search database shards, managing a team of some 80 engineers.

Here is a list of some of the most important projects that I have worked on:

- Increasing search performance and number of searchable documents. This is the project that I was hired into as an engineer, and it started as a rewrite of one of the search stages. I wrote most of the foundational code myself, and shipped the first version bringing significant performance gains. Throughout the next several years we continued to ship incremental improvements, considerably increasing the number of document in our search database while simultaneously bringing substantial performance gains.
- Improving technical interviews in the company, making them standardized and consistent. This is a company-wide project that has included everything from researching how it's done in other companies, to doing lectures on best interviewing practices, preparing 100s of interviewers, doing 100s of interviews myself, running a Q&A channel, creating an online seminar, incrementally improving our rules, and scaling it all up when I was no longer able to do everything by myself.
- Revitalizing our codebase and creating a system that would motivate developers to pay off technical debt in common code. This is also a company-wide project that started with me porting clang's libcxx to MSVC so that we could switch to C++11 STL, and realizing that this effort could be crowdsourced. This then paved way to some important repository-wide refactorings that could not have been possible otherwise.
- Refactoring our search stack and replacing all the different ways services were communicating with each other with a single unified graph-based approach.
- Switching from an old system with separate admins & developers into a more efficient one where developers are the ones maintaining their services.
- Improving our infrastructure to make it possible to considerably increase the release frequency of key search components, and provide SLAs for the time it takes for a commit to get into production.

**Network Optix**, Moscow, Russian Federation, then Los Angeles, USA

*Senior Software Engineer*

**October 2011 - July 2014**

Designed and implemented initial version of the HD Witness client application, making sure that its high-level architecture is sound and extensible. As of 2016, five years down the road, most of the foundational code is still unchanged, with a bunch of features added on top.

As the person solely responsible for the client-facing part of the system, I made no compromises when it came to delivering the best experience for our users. After 1.0 release various sources have described HD Witness as the most user-friendly and aesthetically pleasing video management system on the market, which has helped the company to gain a competitive edge.

Was subsequently charged with management of the front-end development team. Other responsibilities included design of public APIs and development of generic C++ libraries that were used internally.

**SmartDec**, Moscow, Russian Federation

*Software Engineer*

**July 2009 - September 2011**

Was mainly working on SmartDec, a native code decompiler. Laid out the architecture of the decompiler and implemented several frontend and backend plugins, including support for different x86 and PIC assembly input formats. Was responsible for devising novel algorithms that would improve the quality of the decompiled code and would allow for reconstruction of C++-specific constructs. This effort has led to several publications on international conferences on reverse engineering.

Have also implemented a form recognition toolkit that was subsequently used in some of the Moscow schools for test checking.

Was additionally working on <http://mathege.ru>, a national mathematics exam portal. Did both frontend and backend development and have implemented a  $\text{\LaTeX}$  to html converter that was used for importing problems into the system.

**Institute for System Programming of the Russian Academy of Sciences**, Moscow, Russian Federation

*Software Engineer*

**September 2007 - September 2008**

Was working in a team developing a framework for dynamic analysis of binary code. Using C++ metaprogramming techniques implemented a disassembler for MIPS64 architecture that significantly outperformed all other disassemblers for this architecture.

**Intel**, Moscow, Russian Federation

*Software Engineering Intern*

**February 2007 - April 2008**

Was researching computer vision algorithms and have implemented a panorama stitching application. Description is available at <https://github.com/retgone/prec>.

Was also charged with the development of Ruby bindings for Intel's Integrated Performance Primitives library. Description is available at <https://github.com/retgone/ipp4r>.

## EDUCATION

**Department of Computational Mathematics and Cybernetics, Moscow State University,**  
Moscow, Russian Federation

*Specialist degree in Applied Mathematics and Computer Science*     **September 2004 - July 2009**

Advisor: Professor Alexander Chernov

Thesis: Reconstruction of Class Hierarchies for Decompilation of C++ Programs

Graduated with high honors. Diploma GPA is 5.0 out of 5.0.

**Graduate School of Science and Engineering, Chuo University, Tokyo, Japan**

*Full-time non-degree student*

**September 2008 - March 2009**

Advisor: Professor Mitsunori Makino

Was studying Japanese, working on algorithms for real-time ray tracing and implemented a real-time ray tracer for use with CAVE automatic virtual environment.

## PUBLICATIONS

A. Fokin, E. Derevenetc, A. Chernov and K. Troshina. “SmartDec: Approaching C++ Decompilation”, in proceedings of the *18th Working Conference on Reverse Engineering*, pp. 347-356, 2011.

A. Fokin, K. Troshina and A. Chernov. “Reconstruction of Class Hierarchies for Decompilation of C++ Programs”, in proceedings of the *14th European Conference on Software Maintenance and Reengineering*, pp. 249-252, 2010.

K. Troshina, A. Chernov and A. Fokin. “Profile-Based Type Reconstruction for Decompilation”, in proceedings of the *17th International Conference on Program Comprehension*, pp. 263-267, 2009.

## HONOURS, AWARDS AND TEST SCORES

TOEFL iBT, 111/120, Moscow, 2010.

M.V. Lomonosov Scholarship for Academic Excellence, Moscow, 2006-2009.

ABBYY Collegiate Mathematics Competition, 1st place, Moscow, 2006.

8th Moscow Collegiate Programming Contest, 9th place, Moscow, 2006.

7th Moscow Collegiate Programming Contest, 11th place, Moscow, 2005.

Unified State Exam in Mathematics, 100/100 (nationwide top), Izhevsk, 2004.

## LANGUAGES

Russian: native.

English: fluent.

Japanese: intermediate.

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