

# Alexander Astapchuk

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## Senior Software Developer

### *Cloud Development ~ Fault tolerant systems ~ Performance analysis*

My code is behind the 3rd largest search engine on this planet.

As a seasoned software developer with a proven track record, I wrote the code for the third largest search engine on the planet. I am now seeking new opportunities to apply my skills and expertise, which include:

- Developing fault-tolerant and massively parallel services capable of handling petabytes of data and serving millions of queries.
- Operating largest clusters at Microsoft, 10,000s of nodes across multiple regions and data centers, with a focus on business continuity and user experience.
- Proficient in C/C++ programming with a strong background in performance analysis and tuning of both managed (Java) and C++ applications.
- Delivering high-quality releases on time and within budget, with a history of successful project completion.
- Possessing excellent communication skills and an independent, innovative mindset.
- Experience with various software development methodologies, from waterfall to Agile, and expertise in all phases of the software development life cycle.
- Comfortable working with projects of any size, from small-scale applications to projects with millions of lines of code.

### Strengths:

Low latency, high availability, distributed systems	Performance analysis and tuning
Virtual machines and managed runtimes	Debugging & testing
High-level, low-level, platform-specific optimizations	Multi-platform / concurrent / parallel programming

**Languages:** C/C++ (including C++11, C++14, C++17), C#, Java, Python

**Platforms:** Windows, Linux, x86, x64, ~~Itanium~~

## Professional Experience

### Freelance Software Developer

Various SaaS applications.

Environment: Docker, Kubernetes, NoSQL, MongoDB, Redis, MySQL

**2021-present**

### MICROSOFT Corporation, Bing

*Senior Software Engineer*, Microsoft Bing - WebSearch

Designed, coded and maintained critical query-serving components for Microsoft Bing with extremely high-availability, reliability and performance requirements.

**2010-2021**

### INTEL

### *Senior Software Engineer*

Recruited from Sun Microsystems to play senior-level role in design and implementation of compilers and compiler toolchain components on diverse products and platforms

**2004-2010**

[Apache Harmony](#) - advance VM and JIT development (open source implementation of J2SE), 2004 – 2007

Environment: C++, Java, assembly, Windows, Linux, x86, x64, Itanium

Achievements:

- Led team of 4 engineers in design, planning and implementation of x64 support in Harmony VM and JITs (honored with project-level award for results and quality)

- Increased applications startup speed 200% by architecting and implementing baseline JIT for Apache Harmony's VM (honored with project-level award for outstanding performance)
- Delivered 10% speedup on SpecJBB2005 benchmark by personally implementing numerous platform-specific optimizations (fast TLS access, fast calling convention, etc).
- Implemented core security classes for java.security and javax.security.auth packages.

#### Sun JDK for Itanium, 2007 – 2009

Environment: C++, Java, assembly for Itanium, Windows, Linux, Itanium

- Java Virtual Machine, JIT development and performance tuning
- Compiler back-end implementation and porting to Itanium platform

Achievements:

- Performance analysis and tuning of applications and JVM
- Ported interpreter and assembly parts of Sun JDK to Itanium
- Achieved 50% speedups on SpecJBB2005 benchmark
- Developed debugging and troubleshooting tools
- Trained support and development teams on effective debugging techniques
- Emerged as last line of defense for most obscure and critical problems for project
- Received division-level award for quality and outstanding results
- Co-authored "Novel use of Itanium features in Managed Runtime Environments"

#### Intel Ct (C for throughput computing), 2009

Environment: C++, Windows, Linux, x86, x86-64, Intel Larrabee

- Back-end development for Ct dynamic compiler for Intel architectures
- Performance analysis and tuning, both for Ct applications and Ct compiler

Achievements:

- Implemented numerous global data flow analyses and optimizations
- Achieved up to 50% speedup on Ct workloads by implementing graph coloring register allocator

#### RTMon –Platform-independent library for collecting hardware-based profiling data, 2007 - 2009

Environment: C++, Windows, x86, x86-64, Itanium, Windows, Linux, WinDDK

Achievements:

- Architected and implemented kernel-mode driver for Windows
- Implemented user-mode API
- Supported diverse architectures: Intel Core2, Nehalem, x86, x86-64, IA-64 (Itanium, Itanium2)
- Implemented hardware-based profile collection for Sun JDK on Itanium
- Co-authored "A Practical Approach to Hardware Performance Monitoring based Dynamic Optimizations in a Production JVM"

#### **SUN MICROSYSTEMS / UNIPRO, Novosibirsk, Russia**

**01/2001 – 08/2004**

##### *Software QA Engineer*

Environment: Solaris (sparc and x86), Linux, Windows, Apache, MySQL, C++, Java

JDK, J2SE conformance and regression testing, writing automation software. Identified several serious flaws in Java Web Start via security analysis

#### **ELDIS-SOFT, Novosibirsk, Russia**

**06/1997 – 01/2001**

##### *Software Engineer*

Environment: C++, MFC, Windows, Pervasive Btrieve, MS SQL

Stocks and securities processing software for Direct Registration System (RDS) and for brokerage firms.

## **Publications & Presentations**

"Novel use of Itanium features in Managed Runtime Environments," 7<sup>th</sup> Workshop on Explicitly Parallel Instruction Computing Architectures and Compiler Technology ([EPIC-7](#)). [Abstract](#). 2008

"A Practical Approach to Hardware Performance Monitoring based Dynamic Optimizations in a Production JVM," International Symposium on Code Generation and Optimization ([CGO'09](#)).

## Selected Accomplishments & Awards

- Selected for numerous high-profile industry-wide projects.
- Played key role in compiler development and software development of Intel Ct, Sun JDK for Itanium, and Apache Harmony.
- Implemented numerous dynamic optimizations in Harmony JVM that increased processing speed by up to 200%
- *Intel Outstanding Results & Quality Award* – Division-level award for outstanding results and quality in enabling Sun Hotspot on Itanium, 2007.
- *Intel Outstanding Results & Quality Award* – Project-level award for achievements in implementation of x86\_64 support in Apache Harmony, 2006.
- *Intel Outstanding Performance Award* – Project-level award for outstanding performance during implementation of ultra-fast JIT for Apache Harmony project, 2005.

## Education

NOVOSIBIRSK TECHNICAL STATE UNIVERSITY      *MS – Electrical & Computer Engineering*

- Implemented and supported inventory management system for a store (FoxPro).
- Municipal program: implemented software system for distributed inventory reporting for pharmacies with automatic database updates (Foxpro, dial up modems).

~ Excellent References Available upon Request ~