1. PERSONAL DATA

Name	Nikolay N. Igotti
Date of Birth	17 Dec 1976
Location	St. Petersburg, Russia
Citizen of	Russia
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E-mail address	igotti@gmail.com
Family status	*Married*
Keywords	**System programming, architecture, binary translation, virtualization, x86 architecture, Java Virtual Machine, storage, Java, C, C++, LLVM, compiler, assembler, team lead**
Languages	• Russian (native) • English (fluent)

2. SUMMARY

Skilled software engineer and technical leader with interests in virtualization, advanced storage technologies, dynamic code generation, OS internals, CPU internals, virtual machine technologies, compiler development and embedded programming. Experienced team builder and leader.

Enthusiastic about new technologies and new ideas, able to create and sustain successful teams, motivate others and achieve highly non-trivial technical and organizational goals.

PROFESSIONAL EXPERIENCE

Sep 2016 - now	*Company:* **JetBrains** *Position:* technical lead and architect *Responsibilities: designer,* leading compiler and runtime development team *Results*: created team that delivered production quality native compilation support for Kotlin programming language (Kotlin/Native), designed runtime and compiler architecture
Jun 2011 — Aug 2016	*Company:* ***Google*** *Position:* software developer *Responsibilities:* design and architecture of system software *Results*: contributed to Dart programming language, Native Client runtime, ARM binary translator and other software
Aug 2008 –May 2011	*Company:* **Sun Microsystems Inc. then Oracle Inc.** *Position:* technical lead of VirtualBox virtualization platform *Responsibilities:* design, development, bug fixes, tracking and technical management of other team members *Results:* successful release of Virtual Box 2.0, 2.1, 2.1.2, 2.2, 2.2.2, 3.1, 3.2, 4.0. During those releases VirtualBox has grown into the fully functional virtualization suite, one of the market and technology leaders.
Sep 2007 –Jul 2008	*Company:* **EMC corporation** *Position:* technical lead of Viper data deduplication platform team at EMC's St. Petersburg Center of Excellence. *Responsibilities:* R&D in storage, software architecture, development, mentorship and technical management of other team members *Results:* performed full development process for general purpose data redundancy elimination stack from R&D phase to deployment in production quality storage solution (EMC Celerra), team created continues to work on maintenance and development of the product's code base

Mar 2005 - Sep 2007	*Company:* **Sun Microsystems Inc** *Position:* technical lead of Hotspot JVM development team (runtime) at St. Petersburg office of Sun Microsystems. *Responsibilities:* hiring, software design and development, bug fixes, mentorship and technical management of other team members *Results:* successful release of JVM for JDK 6.0, serious performance improvements, team created continues to work on maintenance and development of the product's codebase
Jul 2001 - Mar 2005	*Company:* **Sun Microsystems Inc** *Position:* engineer and then technical lead of embedded JVM development (project Monty, also known as CLDC Hotspot Implementation) *Responsibilities:* hiring, software design and development, bug fixes, mentorship and technical management of other team members *Results:* successful release of JVM for CLDC versions 1.0.0, 1.0.1, 1.1, serious performance improvements, team created continued to work on maintenance and development of the product's codebase until product's end of life
Jun 2001 - Jul 2001	*Company:* **Sun Microsystems Inc** *Position:* software developer *Responsibilities:* design, development, support low level JVM integration API
Jul 1998 - May 2001	*Company:* **Elbrus MCST** (contract work for Sun Microsystems Inc) *Position:* software developer, bug fixing and development of HotJava Views office suite and HotJava browser

Total professional experience: 21 years

3. ACHIEVEMENTS

1) Design and implementation of compiler architecture in Kotlin/Native compiler from tree-like IR to the LLVM bitcode

2) Complete design and implementation of automatic memory management system in Kotlin/Native programming language

3) Design and implementation of the concurrent garbage collector in Kotlin/Native runtime

4) Design and implementation of library-level high performance ARM binary translation engine for ARC project

5) Implemented backend for JIT for x86-32, x86-64, ARM (instruction encodings, NaCl-friendly code emission) for ARC

6) Dispatcher and code cache of binary translation engine for ARC

7) Coauthored 64-bit guest on 32-bit OS host support in VirtualBox (dynamic translator work, part of mode switcher)

8) Implemented physical PCI devices passthrough to the guest in VirtualBox

9) Implemented support for running unmodified macOS guests in VirtualBox

10) Clean room PCI bus emulation in VirtualBox

11) Coauthored guest SMP support in VirtualBox (design, APIC, ACPI, BIOS)

12) Complete redesign of notification mechanisms (events) in VirtualBox API

13) EFI support in VirtualBox

14) Virtual hardware devices implementation and maintenance for VirtualBox (x2APIC, HPET, others)

15) Implementation of Python and Java language bindings in VirtualBox

16) Design and implementation of generic storage deduplication platform to be used across EMC storage products (including deduplication index)

17) Building and ramp up of deduplication technology development team at EMC's SPB Center of Excellence

18) Coauthored design and implementation of Java DTrace support in JDK 7

19) Successfully built and led two highly skilled software engineers teams of Sun Center for High Technologies at St. Petersburg:

    a. CLDC HI JVM development

    b. Hotspot JVM development

20) Hotspot JVM bug fixing and development during release of JDK 1.6/1.7 at Sun

    a. implemented compressed object pointers on 64-bit platforms (implementation of compressed object pointers allowed Sun JVM to achieve world performance records in SpecJBB benchmark)

    b. VM and JDK porting to Linux/Sparc

21) Implemented several key features for Sun's CLDC HI JVM

    a. ARM software floating point support

b. C interpreter loop for the VM

c. optimized assembly routines

d. build system

e. Java bytecode profiler support in the VM

22) Driven several successful ports of Sun's embedded JVM onto customers devices (cellular phones)

23) Designed and implemented generic low level JVM integration API ("Project Waterfall") successfully used in Mozilla web browser

24) Fixed several show-stopper bugs in Gecko engine for Netscape 6 FCS release on Solaris

25) Coauthored following mathematical papers:

a. *"Existence of complex homoclinic points"*, N. N. Igotti, V. F. Lazutkin, *Regular & Chaotic Dynamics, Volume 5(2000), Number 4, Pages 383-400. (http://ics.org.ru/doc?pdf=251&dir=e*)

b. *"Asymptotic of discrete spectrum generated by confluent Hoin equation with nearby singularities"*, S. Yu. Slavyanov, N.N. Igotti, *Modern mathematics and applications, Volume 38(2006)* (see http://rd.springer.com/article/10.1007%2Fs10958-007-0487-5)

4. EMPLOYMENT HISTORY

Sep 2016 — now	JetBrains, Technical Lead
Jun 2015 — Sep 2016	Google, Switzerland, Senior Software Engineer
May 2011 — Jun 2015	Google, Russia, Senior Software Engineer
Aug 2010 - May 2011	Oracle, Russia, Principal Member of Technical Staff
Aug 2008 - Aug 2010	*Sun Microsystems*, Russia, Staff Engineer
Sep 2007 - Jul 2008	EMC Corporation, Russia, Principal Engineer
Jun 2004 - Sep 2007	Sun Microsystems Inc., Russia, Staff Engineer
Jan 2004 - Jun 2004	St. Petersburg branch of Elbrus MCST, Software Developer
Jun 2001 - Nov 2003	Sunnyvale, CA, Sun Microsystems Inc., Software Developer
Jul 1998- Jun 2001	Individual contract with Elbrus Inc, contract work for Sun Microsystems Inc, St. Petersburg, Russia

5. PROGRAMMING LANGUAGES

- C (expert)
- C++ (expert)
- assemblers (ARM: including v7, Neon, VFP, ARM64, x86, AMD64 – expert; Sparc: advanced)
- Java (expert, JIT compiler and runtime core developer)
- Kotlin (expert, compiler and runtime core developer)
- JavaScript (advanced)
- Bourne shell (advanced)
- Python (advanced)

6. VERSION CONTROL SYSTEMS

- git
- CVS
- SCCS
- Subversion
- Perforce

7. OPERATING SYSTEMS

- CP/M, MS-DOS (5.x – 7.0), DR-DOS
- MS Windows (3.xx, NT, 95, 98, 2000, XP, Vista, Windows 7)
- OS/2 (1.x to 4.x)
- UNIX (FreeBSD, other BSDs, HP/UX, Solaris/OpenSolaris)

- Linux (Redhat/Fedora, Suse, Debian, Ubuntu)
- Embedded OSes (RexOS, Nucleus, embedded Linux, WinCE)
- Android
- Apple macOS, iOS

8. EDUCATION

1991 - 1993	School #239, St. Petersburg, Russia	*n/a*
1994 - 1998	St.Petersburg State University	BS in theoretical physics. Diploma with honor.
2003 - 2004	Stanford University, CA	*Courses*: • CS107 - Programming Paradigms, grade B • CS140 - Operating Systems and System Programming, grade B+ • CS143 - Compilers, grade A-
2005	St.Petersburg State University, Department of Physics	MS in computational physics

9. PATENTS

- Binary translation on shared object level, 2016 https://www.google.com/patents/WO2016162721A1
- Binary translation into Native Client, 2016, https://www.google.com/patents/WO2016162720A1
- Virtual machine integration application program interface, 2003, https://www.google.com/patents/US20030033443
- Method and system for optimizing software program start-up time, 2005 https://www.google.com/patents/US20050003810

10. TRAININGS

- 2006 - AMD Processors Software (www.mindshare.com)
- 2007 - Solaris Kernel Internals (Max Bruning)
- 2007 - EMC storage trainings
- 2009 – Fundamentals of team leadership (Rachel Shackleton)

11. SPECIAL SKILLS

- technical leadership skills in advanced technology areas, ability to bootstrap the new team
- proven ability to work remotely and deliver consistent and high quality results
- deep understanding of virtualization and virtual machines
- in-depth understanding of modern storage technologies
- self-motivated and goal-oriented
- experience in design and development of enterprise grade system software
- strong interest for code optimizations and assembler programming
- deep VM technologies understanding (including JIT and GC)
- deep OS internals and hardware architecture knowledge (especially x86/PC)
- ability and taste for debugging of complex problems and working on long term tasks
- deep mathematical and theoretical physics education
- cross platform C/C++ development experience
- free software development experience
- excellent self-learning skills, willing and able to help others
- deep understanding of system programming (synchronization, interrupts, scheduling, kernel/userland interface, memory management etc.)
- compiler infrastructure understanding and experience, both proprietary and LLVM-based