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Alexander Samoilov

Areas of Strength Summary

20+ years of software development under Linux	Arch Linux at home; Ubuntu at work
15+ years of software development using C++	using last C++17 standard at work, **my C++ samples of code**
CPU and GPU Architecture	deep knowledge of modern CPU architecture, caches, principles of memory organization acquired at the position of performance architect at NVidia while conducting performance analysis of High Performance Computing applications for various scientific areas such as Computational Fluid Dynamics, Quantum Chemistry, Molecular Dynamics.
Solid mathematical background	experience in prototyping complex physical design concepts in particular for Electronic Design Automation thus connecting theoretical mathematical physics concepts with practical physical problems.

Education

'1982 – '1987 **Moscow State University**, *Department of Mathematics and Mechanics*, Moscow.
Chair specialization: Gas and Wave Dynamics.
Grades *95%* Overall

Experience

May '18 – Present
Senior Software Engineer, ***NAUTO*** *http://www.nauto.com*, Krakow – Palo-Alto, Nauto is building a data platform for autonomous mobility that makes driving safer and fleets smarter.
Programming OpenCL kernels in Android Studio NDK for Qualcomm Snapdragon 845 and Adreno 630 GPU Haar Cascade algorithm from OpenCV for moving cars recognition

August '17 – April '18
Lead Software Developer, ***Abagy Robotic Systems*** *http://www.abagy.com*, Moscow.
Software development under Linux using Docker technologies, some of the solved tasks: weld detection using computational geometry algorithms from **CGAL**; design and implementation of the robot transport protocol, the simulator for the protocol has been written using **ROS-Industrial core** and **Boost.Asio**

September '16 – August '17
Software Engineer for Embedded Linux Solutions on NVIDIA Jetson TX1 for Ultra-Precise 3D Scanners, ***Artec 3D*** *https://www.artec3d.com*, Moscow, handheld 3D scanners.
state of the art programming for embedded Linux on ARM/GPU supercomputer NVIDIA Jetson TX1 for Ultra-Precise 3D scanners produced by Artec 3D. Programming languages for development: C++14, Python and **Rust**. for more details see the blog *NVIDIA Jetson Enables Artec 3D, Live Planet to Create VR Content in Real Time* **the development was conducted under Arch Linux using modern C++-14.**

June '15 – August '16
Software Development Engineer; Sr.Software Development Engineer from September '15, ***Mentor Graphics*** *www.mentor.com*, Moscow.
Sr.Software Development Engineer for **Calibre Computational Lithography the development was conducted under RedHat Linux.**

December '14 – June '15
Principal Engineer for Advanced Projects, ***Huawei Corp*** *http://www.huawei.com*, Moscow.
projects for Domain-Specific Languages for GPU programming based on:
Delite - stanford-ppl.github.io/Delite
Scalan - https://github.com/scalan
the development was conducted under Gentoo Linux.

July 2010 – December '14
4.5 years
Performance Architect, ***NVidia*** *www.nvidia.com*, Moscow.
Worked on performance simulators for future GPU architectures.
GPU architectures study and writing codes for simulating virtual memory – TLB cache study.
Performance study of High-Performance Computing applications for Computational Fluid Dynamics, Quantum Physics, Molecular Dynamics.
the development was conducted under Ubuntu Linux.

April 2007 – June 2010
3 years, 3 months

Sr.Software Engineer, ***Cadence Design Systems*** *www.cadence.com*, Moscow.

Support and development for Cadence products for Electronic Design Automation of VLSI.
Some projects:
QCAP support - Cadence product tool for RC parasitic extraction. Bug fixing and further development to support *FINFET* technology process.
SNASND acceleration - a tool for substrate noise analysis was accelerated in more than 50 times by improving algorithm for solving large sparse matrices. The result was reported on TECCI 2009 conference.
Electrostatic BEM/FEM field solvers - tuned SVD low-rank matrices approximation approach for achieving acceleration without loss of precision.

August 2003 – March 2007
3.5 years

Sr.CAD Engineer, ***Intel Corp.*** *http://www.intel.com*, Moscow.

Research worker for Strategic CAD Labs.
Experimental flow for future processor design technologies.
Some of the projects:
Timing-Driven Routing - participated in the project led by Dr. Priyadarsan Patra.
Honored for the project.
Dynamic power estimation - proposed original approach using Bayesian Nets for estimating switching activity.

Skills

CPU and GPU Architecture deep knowledge of modern CPU architecture, especially NVidia GPUs, modern pipeline architectures, caches, TLBs

Algorithms: numeric and for discrete optimization mastered in modern algorithms including NP-hard, graduated from Coursera course for discrete optimization, have experience in implementing numerical algorithms for Computational Fluid Dynamics including porting to parallel architectures.

Programming Preferred: C, C++, Scala, Fortran, Bash, Python, Perl, **CUDA**, MPI

Exposure: Haskell, Rust

Tools Linux, Emacs, Eclipse, IntelliJ, Ant, Ivy, Maven, Autotools, CMake, Make, Git, Subversion, Perforce

Languages Russian (Native), English (fluent)

Interests

Books

Traveling