

Vasili Korol

Senior Software Developer

Odense, Denmark

Age: 35

Married, have son (born 2010)

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Personal Statement

- Strong IT skills (16+ years of versatile experience)
- Background in physics research
- Work effectively both as team member and leader
- Enthusiastic and committed
- Spoken languages: Russian (native), **English** (fluent), **Danish** (Prøve i Dansk 3 / level B2)

Education

2006–2008: **Master's degree** (with distinction) in applied physics.

2002–2006: Bachelor's degree (with distinction) in applied physics.

Under- to postgraduate student at St. Petersburg State Polytechnical University, Faculty of Physics and Technology, Dept. of Cosmic Physics. The thesis "Search for possible space-time variations of the fine-structure constant and isotopic shifts" (a supervisor [Prof. M.G. Kozlov](#)).

1992-2002: School education in St. Petersburg, Russia and Belfast, UK (in 1993).

Professional Career

2015 – **Feb 2021**: **Software developer** in the [QuantBio research group](#) at the University of Southern Denmark (SDU), Institute of Physics, Chemistry and Pharmacy (HPC section).

I am the **principal developer** of [VIKING](#), a service providing a web interface for configuring and running scientific computational tasks on supercomputers. I designed the software architecture, developed the system core and coordinated the work of several developers.

2014 – 2015: **Lead programmer** (Perl) at Internet Projects LLC, russian informational portals [subscribe.ru](#) and [sendsay.ru](#) (St. Petersburg, Russia).

Worked with a team of developers on projects targeted at developing an API for news aggregation and content processing services. This involved integration with various online platforms (Facebook, Twitter, Vkontakte, LiveJournal, Google Analytics), web scraping and designing instruments for user publications at the portals and beyond.

2010 – 2014: **Head of the IT department** at [Computerprof LLC](#) (St. Petersburg, Russia).

Arranged the work of ca 10 engineers to support the client computer and network infrastructure. Personally handled «tough» tasks where others failed. Established the assembly and sales of the company's desktop PC and server model range.

2007 – 2010: **System integration engineer**, «[Ascod NT](#)» LLC (St. Petersburg, Russia).

My duties included solving a wide spectre of IT tasks, from assembling computer hardware (desktop and servers) to medical software integration (including teaching users to operate with the specialized software).

2004 – 2008: **Research Assistant** at St. Petersburg Institute of Nuclear Physics.

I worked with Professor M.G. Kozlov's research group, developing a method for a search of possible space-time variations of the fine-structure constant α . My work included calculation of isotope shifts for different chemical elements. I maintained the Fortran software packages and used Perl for automating the computations.

2003 – 2014: **System administrator** at the St. Petersburg [Institute of Experimental Medicine](#).

I maintained the scientific library network (Linux and Windows workstations), the Institute's server (Linux, Apache, Squid) and a file storage system (Synology DS).

Publications

- V. Korol, P. Husen *et al*, "[Introducing VIKING: A Novel Online Platform for Multiscale Modeling](#)", ACS Omega **5**, 1254-1260 (2020)
- V. Korol and M. Kozlov, "[Relativistic corrections to the isotope shift in light ions](#)", Phys.Rev.A **76**, 022103 (2007)
- M. Kozlov, V. Korol *et al*, "[Space-time variation of the fine-structure constant and evolution of isotope abundances](#)", Phys.Rev.A **70**, 062108 (2004)

Professional Experience and Skills

Python

I have used Python3 (and previously Python2) in a wide range of appliances, including scientific programming, web development and system administration. I use the Django framework for backend development of web applications. Experienced with writing and debugging asynchronous code (threads, Celery). Familiar with Numpy.

Javascript

Several years of experience with modern JS (ECMA6+, NPM / Webpack / Babel / UglifyJS), including developing 3D applications for visualizing molecular systems, using WebGL (THREE.js) and virtual reality (WebVR / WebXR). I am skilled in optimizing JS code for performance. Have some experience with TypeScript, ASM.js, WebAssembly (Emscripten).

Perl

Perl5 user since early 2000s. Experienced in high-load web projects (<http://subscribe.ru>, <http://sendsay.ru>); use Perl in daily tasks — task automation, log analysis, command line, etc.

C/C++

Familiar with most of C++11/14 features. I participated in the development of the [MBN Explorer](#) multiscale simulations software, written in C++. VIKING, my main project at SDU, relies on a number of modules written in C/C++.

Other programming languages

I have been writing GLSL shaders for WebGL applications, used PHP for programming complex features for internet shops. I use bash for routine console scripting. Employed Fortran during my scientific career and studied Pascal in the late 1990s. Have limited experience with Ruby, Lua and TCL.

Web development

I have versatile experience in web development, including both the backend and the frontend. Have strong skills in HTML5 and CSS3, cross-browser solutions, REST interfaces, MVC, WebSockets. I am experienced in developing web services, 3D web applications (WebGL) and VR applications (WebVR / WebXR). Use various CMS / frameworks, for both managing the content and programming applications: Django, Drupal, Joomla!, Wordpress.

Supercomputers

I have worked with different supercomputer clusters, including Stampede (Austin, TX, US), Marconi (Bologna, Italy), Archer (Edinburgh, UK) and Abacus 2.0 (Odense, Denmark). Familiar with the SLURM and PBS queue managing systems. Have experience with installing software on a Slurm-based cluster (easybuild & modules). Have successfully integrated supercomputer systems with external web services (VIKING).

Used tools / software / OS

- Linux is my primary desktop and server OS, but I am also an advanced Windows user.
- Active user of Git and Subversion.
- Use Redmine for project managing. Active [GitHub user](#), previously used BitBucket.
- Linux containers for sandbox-based development (LXC, LXD) and for managing infrastructure-as-code (Docker).
- Different documentation systems for my code: Sphinx/reStructuredText, jsDoc, DOxygen.
- Used LaTeX for my publications.

Databases

I am experienced in high-load SQL database designing and optimizing, familiar with transactional query mechanisms and replication techniques. I have maintained MySQL, PostgreSQL and IBM Informix systems of different scales – from small DBs to Internet portals. As an example of a «challenge task», I have successfully converted a 80+ GB Transbase DB with tables having up to 100 million rows of mixed data to MySQL. I am also an active user of noSQL DBs including Redis and Memcached.

System and Network Administration

- Experienced Linux administrator (16+ years of practice). Have worked with various desktop/server Linux distributions (Debian, Ubuntu, CentOS, RedHat, SuSE). Encountered and solved a large number of multiscale problems related to web / mail / storage / cache servers, general networking, security, backups, monitoring, reporting, file systems, authentication, virtualization etc. Managed FreeIPA domains and implemented Linux-based storage solutions.

- Skilled in Web server administration: Nginx, uWSGI, FastCGI, Phusion Passenger; Apache with mod_perl, mod_php.
- Long-time experience in administering the Windows OS family. Good knowledge of Active Directory (successfully created and maintained dozens of AD domains; built systems with multiple DCs; solved global AD-related problems).
- Have practical experience in configuring Cisco network devices (site-to-site VPN, traffic shaping, load balancing). CCNA certificate expired in 2014.
- Great experience in overall networking: designed, installed and configured networks of various complexity (ad-hoc, distributed and enterprise). Very good knowledge of network protocols and technologies (switching, routing, VLAN etc). I have designed several custom network protocols for different binary data exchange during my work on the VIKING project.