

Aleksei Anisimov

HPC, RUST, SOFTWARE ENGINEER

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Skills

Programming Languages

Rust, Scala, Python, SQL

Databases, storage formats and a like.

PostgreSQL, Redis, Apache Kafka, Apache Arrow

Others:

Apache Spark, Slurm, MPI

ABOUT ME

I am a seasoned professional programmer with more than 20 years of experience in various fields and domains.

In recent years, I have worked as a Rust HPC programmer in the biotech field, specializing in optimizing the performance and resource usage of biostatistical pipelines. My extensive experience as a Scala developer has given me a solid understanding of functional and type-level programming, which enables me to deliver robust, high-quality software, that builds on the strengths Rust already offers.

Additionally, I have completed graduate-level courses in Bioinformatics, Whole Genome (WGS) and Single-Cell Sequencing, and Genomic Networks. This formal training demonstrates my passion and dedication to delivering top-quality software, as truly effective solutions require a deep understanding of the field.

My efforts, to a sensible extent, helped biologists to develop at least two molecules for treating orphan diseases, and one of them is out of clinical trials.

Besides that I have contributed to the back-end development of a well-known MMO game, an IoT framework, a London minicab automation system, and a bus station automation project.

SUMMARY

- 20+ years of professional experience in the Information Technology industry;
- Rich experience in Rust, Scala, Python programming;
- Experience in team leadership;
- Experience in software design, development, and deployment;
- Solid background in functional and type-level programming paradigm;
- Development and expertise highlights:
 - HPC application development;
 - Client-server applications development;
 - Continuous Integration management;
 - Advanced technical troubleshooting, application profiling and performance tuning.

EXPERIENCE

2019 - Present HPC, Rust programmer

BPGBio

The project aim was to learn the structure of biological networks from omics data assessed with patient data using a combined constraint-based approach and Bayesian score-based method (a framework based on S. Boettcher deal package) in a distributed environment.

My responsibilities were:

- Performance optimization and tuning using vtune, mpip, heaptrack, dhat, llvm sanitizers, criterion and iai (cachegrind);
- Algorithms optimization;
- Porting of R, Python and Wolfram Mathematica scripts, produced by mathematicians to Rust;
- Contributed missing functionality to `special` crate (tri-gamma function), `rsmpi` (group splitting by colors and tags, User Level Failure Mitigation);
- Design and implementation of auxiliary programs requested by the analytics department;
- Writing user and programmer guides, software design documents (tectonic, latex, confluence), SOWs;
- Automation of development and deployment processes (gitlab-ci, docker);
- HTTP API development using axum, utoipa and http4s for Scala-based services;

Languages

English B2+

Serbian B1

Russian C2

- Implementing automated tests (property, unit, mutation, integration and e2e) and benchmarks (criterion, iai);
- Onboarding and technical-leading, helping team members to develop professional development plans, conducting technical interviews, mentoring and conducting summer schools for rust programmers;
- Bug fixing in HPC cluster environment (pmpl, vtune);
- Developing and maintaining open source components required by our software: **kendalls** crate for Kendall's tau-b rank correlation, **hoconLight** crate - a peg parser and deserializer of Akka hocon configuration files.

Stack: Rust, Apache Arrow, BLAS/LAPACK (ndarray-linalg), MPI, Slurm, Apache Kafka

2016 - 2019 **Scala programmer**

BERG BIOSYSTEMS

Design and Developed Mesos Framework to schedule and execute bioinformatics pipelines. The framework mostly based on Lightbend stack with addition of TypeLevel stack (circe, cats-effect, fs2) for more lightweight utilities and more granular control of task termination.

My responsibilities were:

- Developing utilities used in biostatistical pipelines;
- Writing user guides, SOWs, RFCs;
- Reviewing DOI:10.1089/cmb.2019.0210, DOI:10.3390/app11062466;
- Coordinating two teams of developers, resolving conflict situations;

Stack: Apache Mesos, Scala 2, Lightbend stack, TypeLevel stack, Apache Kafka

2016-2016 **Senior Software Developer**

DATAART

US-based healthcare network and healthcare provider. I was working on a pluggable module, that acted as a mediator between Medicaid Analytics Performance Portal (MAPP) HHTS and the internal Health Home system of the client. The module I developed aggregated data and events in the form of Web API call and CSV files from both systems and provided instruments to synchronize internal state of these systems databases.

- Assignment and billing workflows implementation;
- Participating in tracking workflow implementation;
- Initial data importers;
- Health Home tracking system integration layer.

Stack: Scala, Play Framework, PostgreSQL, Slick, TeamCity

2016-2016 **Senior Developer**

DATAART

The goal of the project was to develop the sales system to be used by call center agents to book hotels for the clients.

Based on different criteria, the system searched hotels in multiple sources providing an agent with all relevant information about a client. The system utilized microservice architecture, which allowed decoupling all logical subsystem, managing and developing them independently of each other.

Responsibilities:

- Call dispatching service development that notifies agents about incoming phone calls;
- Integration with internal CRM system;
- Next Caller and Piwik integration;
- Payment gateway integration;
- Back-end RESTful API development.

Stack: Python, PostgreSQL, Tornado, Redis, Django Rest framework, Ansible

2014-2016 **Senior Software Developer**

WARGAMING, GLOBAL MAP

The application allowed clan leaders to plan their strategy on capturing and controlling areas on the global world map, managing clan resources, participating in tournaments and landing battles. The development was focused on back-end optimization.

- Preparation of new game events;
- Fixing bugs;
- Implemented “mini-quests” and corresponding reward, medal system.

Stack: Python, Django, PostgreSQL, Celery, RabbitMQ

2012-2014 **Senior Software Developer**

DATAART

I worked on a web-based dashboard and computational engine that used statistical methods to predict prospective markets for Drug sales.

Stack: ASP.NET, C#, VBA, MS Server

2010-2011 **Software Developer**

DATAART

The application allowed clan leaders to plan their strategy on capturing and controlling areas on the global world map, managing clan resources, participating in tournaments and landing battles. The development was focused on back-end optimization.

- Release management;
- CI/CD pipelines;
- Design and Develop software that integrates ophthalmologic perimeters with EMR system.

Stack: C#, WPF, Silverlight

2007 - 2010 **Software Developer**

KANAR SOFTWARE

I designed and developed the first version of eSigTek - a web-based software to sign documents electronically. One of the features that stood out in the software was the online PDF forms editor. I was responsible for features planning and leading a team of two programmers and a QA.

New feature development and bug fixing for Medical Staff Management and Recruitment System for the USA market. I modernized the front-end part of the system such that it works not only on IE6 and introduced PrototypeJS.

Stack: C#, MS Server, jQuery

2005 - 2006 **Software Developer**

OLVEN-AUTO

I participated in the development of the Bus Station Control System. The developed solution consists of a back-end subsystem that manages bus routes, creates schedules, and exchanges tickets between different bus stations; a front-end that provides GUI to bus station's staff; and a website that customers can use to buy ticks online.

- I worked on the tickets exchange back-end service;
- porting Delphi GUI application to gtkmm;
- integration with a cash register machine, and custom PAM development.

Stack: Firebird, PHP, C++ (gtkmm)




2003 - 2006 **Web Developer**

ZEBRA-GROUP

- Development of modules for the company's internal CMS.

Stack: Python, PHP

EDUCATION

- 2025 **Genomic networks**
NOVOSIBIRSK STATE UNIVERSITY (NSU)
- 2022 **From science to drug development**
BLASTIM
- 2022 **NGS data analysis**
BLASTIM
- 2010 **Master of Science in Software Engineering**
VORONEZH STATE TECHNICAL UNIVERSITY
•  VORONEZH, RUSSIA
- 2007 **Bachelor's Degree in Electrical Engineering**
ULYANOVSK STATE TECHNICAL UNIVERSITY
•  ULYANOVSK, RUSSIA
- 2004 **College Degree in Software Engineering**
ULJANOVSKIJ AVIACIONIJ KOLEDZH
 ULYANOVSK, RUSSIA

CERTIFICATES, AWARDS, SIGNIFICANT SIDE ACTIVITIES

- Bioinformatics Contest (2021);
- Molecular biology (2019);
- Third Generation Sequencing using Oxford Nanopore (2019);
- Bug fixes in Arm Mbed OS USB (CDC) for STM32;
- Co-organizer of Voronezh's radio hobbyist club.