Evgeny Seliverstov

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Senior Software Engineer

Senior software engineer and CTO with over 15 years of experience building data-intensive backend systems with high throughput and low latency, handling terabytes of data and network traffic of tens of gigabits per second, and network protocol analysis. Proficient in designing and optimising advanced data structures and algorithms, multi-threaded and concurrent techniques, and GPU/SIMD. Led and mentored teams of professionals in both startup and well-established companies. Conducted research in computational mathematics in parallel systems during the work on the PhD in Computer Science, participated in conferences and open-source communities.

Skills

- Programming languages: Rust, C++, Python, Erlang, Ruby, Java, Haskell
- Cloud-native solutions: AWS, Azure, Vault, Hydra, Envoy, ECS, RDS, Docker, Kubernetes
- Distributed systems: REST, gRPC, microservices, event-based, asynchronous and parallel processing, Paxos- and raft-based consensus and coordination systems (Etcd, Consul, ZooKeeper)
- Technology stack: Asyncio, Flask, Fastapi, Tokio, Actix, Boost, ASIO, WebAssembly
- Data systems: Kafka, Hadoop, Avro, Protobuf, Thrift, ASN.1, RabbitMQ, AMQP, Airflow
- Databases platforms and engines: PostgreSQL, Riak, MongoDB, Clickhouse, HBase, InfluxDB
- Scientific computing: CUDA, image processing, language models, Tensorflow, PyTorch, OpenCL
- System programming: compiler design, LLVM/clang, GPU, SIMD, DPDK, pf-ring, cryptography, high-performance network drivers, hardware security tokens
- Observability and monitoring: Elastic, Prometheus, Jaeger, OpenTelemetry, BPF, Fluentd
- Infrastructure and CI/CD: Terraform, Ansible, CloudFormation, Jenkins, GitHub Actions

Education

- Bauman Moscow State Technical University: PhD in Computer Engineering (waiting for defence).
- Bauman Moscow State Technical University: M.S. in Computer Engineering (Computer-Aided Design Systems, Faculty of Robotics).

Academical and open-source experience

- Conducted research on parallel and distributed computing, graphical processors, meta-heuristic algorithms, and parametric optimisation, resulting in more than 15 papers and conference talks.
- Designed an auto-tuning parametric optimisation platform for the optimal structural mapping of algorithms to the GPU. Developed custom LLVM-based compiler for transforming source code to GPU assembly, algorithms for adaptive control and transforming task interaction graphs.
- Authored and taught five courses on CUDA programming, machine learning (PyTorch, DNN, CNN), LaTeX and workshops for graduate and postgraduate students. Pioneered the GPGPU research at the department, where 5 scientists currently work in this field.
- Authored open-source projects: PostgreSQL extensions (foreign-data wrappers, indexing, serialisation formats); cloud-native infrastructure tools (observability for AWS Fargate, Consul agents); video-processing systems and cartography services for non-profit ecological organisations (Greenpeace, human rights); services for peer-to-peer networks and file storage systems.
- Collaborated on open-source projects, including JFrog Conan package manager, infrastructure and library recipes; Debian and Homebrew packages; NEON serverless database; extensions for Redmine and Jenkins.
- Attended dozens of C++, Rust, Python and HPC conferences and meetups.
- Established more than 50 book club sessions on distributed systems and database engines.

CTO, Senior Software Engineer: Agro Software. May 2017 – Present (6 years)

- Established an agricultural technology SaaS startup AgroMon with a co-founder, ensuring the company's technological growth to a sustainable company in 6 years. The system handles about 10% of crop fields in Russia and serves more than 1000 customers.
- Led and mentored a team of 10 engineers on development processes and best practices.
- Designed a scalable system architecture for clouds and on-premise, based on micro-service architectures with REST (Python, Flask, FastAPI), gRPC, event-based communications and relational and NoSQL databases, optimised native libraries (C++, Rust).
- Architected batch- and stream-processing systems for sensor data from GPS trackers, mobile devices, weather sensors, satellite imagery and radar data. Accomplished processing sensor data in real-time and handling many terabytes of data.
- Developed a cloud-native SaaS for providing field boundaries; pipeline for ML inference based on Airflow, Tensorflow, ECS, RDS. Ensured fast serving and processing of millions of crop fields.
- Collaborated with the ML research team to deliver and optimise models to production, achieving significant cost improvements and reaching up to 80% utilisation of cloud computing resources.
- Revamped the distributed system architecture to increase data-processing performance up to 100%, which helped secure the customer base's growth.
- Launched an autonomous system for provisioning, automatic updating, and monitoring Android devices, providing the foundations for a self-managed IoT fleet of thousands of devices.
- Delivered the entire CI/CD infrastructure, observability, monitoring, and infrastructure tools in Rust, reducing feature delivery time to 30 minutes, and improving the system's stability.

Senior Software Engineer: Moscow State University. Dec 2009 – Mar 2023 (13 years)

- Designed cross-platform libraries for servo-drive engines, domain-specific languages and interpreters for generating code which increased development from weekly to daily releases.
- Pushed CI practices for multi-platform to ensure code quality and deployment speed.

Senior Software Engineer: NLP Group. Dec 2010 – Apr 2017 (6 years)

- Implemented and scaled out a high-throughput, resilient network processing and analytics system in C++ to handle many petabytes of storage and about 500 gigabits of bandwidth.
- Applied modern profiling, fuzzing and debugging techniques, achieving significant memory and stability improvements (failures rate reduced up to 10 times on production systems).
- Incorporated low-latency processing with lock-free and ring-buffer techniques, low-level optimization for cache locality, custom InfiniBand networking stack, and kernel bypass, achieving total speedups up to 10 times.
- Developed the indexing system and query engine for the NoSQL database system, modernising for SQL standard conformance and reducing memory consumption up to 3 times.
- Introduced continuous integration, automated testing, and static analysis practices for the team, catching up to 90% of problems reaching production.
- Created and maintained open-source PostgreSQL extensions for connecting with external systems, database firewalls, and cryptography tools.

Software Engineer: Mettem. Dec 2005 – Oct 2010 (5 years)

- Created a corporate messenger and document management system in Erlang/OTP.
- Developed a natural language processing and information retrieval system, a Prolog-like language and large-scale graph processing algorithms.
- Improved the single-host performance of the system about 10 times while keeping the model growing large, scaled out to the distributed system with tailored application-level load balancing.
- Introduced CI/CD infrastructure and testing tools with TeamCity and Jenkins.