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Name: Aleksei Markov **Email:** laladrik at pm.me

Senior Software Engineer with 15+ years of experience. Core competencies: Rust, Go, GNU/Linux, high-load web systems, and desktop applications. Additional skills: Python, C++. I strive to understand systems and keep them simple. This allows my software to keep users happy and AWS bills lower.

Professional experience

Independent study & research

From Dec 2024 to present	Graphics programming & compiler engineering
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Goal: learn the techniques required to create graphics software and compilers. Method: create two applications: a clone of an old game Space Invaders and a compiler for Tiger programming language.

Results of compiler study. I created from scratch the compiler frontend in Rust. I advanced my skills using GDB, learning how to automate debugging and implement tools with the GDB Python API..

Results of graphics software study: I created the game using the library SDL3 and its extensions for media in Zig. I learned Data-oriented design. I enhanced my skill of desktop application development for GNU/Linux. I improved my skill of creating cross-platform software for the following platforms: GNU/Linux, MS Windows, WebAssembly.

AWS Cloudfront

From Nov 2022 to Dec 2024	Monitoring system of the low-latency video streaming protocol
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I was a member of the team which worked on the content delivery sub-system in Rust. In the constantly changing system, I designed and implemented backward compatible data pipelines using Linux API to make efficient I/O operations. This allowed the software to be deployed to the world-wide fleet with environments being updated asynchronously. I improved the precision of the calculation of the load of the streaming service nodes. The change was in a high-load Go service designed for routing decisions. Besides the technical side, I coordinated the work across multiple teams. I implemented hot-reload of the configuration in a multi-threaded high-loaded system written in C++ which processed the data from all of the server clusters across the globe. I improved the project's tech stack and its automated testing. Besides, I taught Rust to my colleagues with various backgrounds.

Blackmoon

From Aug 2018 to Nov 2022	Cryptocurrency Trading Platform
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Being part of Blackmoon, I worked on multiple projects. I built a decentralized application server for the TON blockchain; my primary focus was on the system exporting the data in Rust and C++. I created a system of concurrent high-load network services that shaped the data pipelines to connect systems that spoke gRPC, HTTP, and FIX. I created the system from scratch in Go & Python, communicating across multiple teams, internal and external. Besides developing, I partially fulfilled a DevOps role, maintaining the infrastructure network, CI/CD, security. That enabled me to apply my knowledge of the Linux API.

Floship

From May 2018 to Aug 2018

Delivery service

As a self-contractor Python backend developer I worked on the integration of the core project and third-party applications and developed new ones. In particular, I implemented an integration with Amazon MWS. As Amazon MWS had some limitations in the sandbox, it was possible to test some parts of the integration only in production. Therefore, I did my best to create a bullet-proof test suite before testing in production. The integration worked right away.

Ringmaster Technologies, Inc

From Aug 2017 to Mar 2018

An insurance management project

Ringmaster Technologies was a B2B startup designed to connect insurance and reinsurance companies. I was on the backend team from the start of the project, I designed and implemented the core of the platform from scratch in Python with PostgreSQL, Redis, and RabbitMQ. Among other things, I implemented chat communication and calls. Besides developing the backend, I worked on some parts of the infrastructure, creating CI/CD based on Docker, Team-City and GitLab.

4XXI

From Aug 2014 to May 2017

Financial services, Research project

At 4XXI, I worked on an astronomy research project and two financial platforms. The astronomy research project was an application written in Python with Scikit-Learn and Go. It performed calculations using AI had big data on input. I led the development which required a lot of experiments with various machine learning libraries. The scientific paper is Evgeny A. Smirnov, Alexey B. Markov "Identification of asteroids trapped inside three-body mean motion resonances: a machine-learning approach" DOI: 10.1093/mnras/stx999. The financial platforms shared a similar purpose - to serve as a wealth management platform. The platforms were HTTP services written in Python and PHP. They allowed users to understand what their financial portfolio should consist of based on the users' goals. Among other things, I encrypted the user data in the PostgreSQL database, and optimized SQL queries throughout the stack, which allowed the users to load some of the pages 20 times faster.

Clever promo

From Jun 2012 to Nov 2013

Web-studio

As part of the web-studio's development team, I worked on customers' websites. Fulfilling the role of generalist programmer, I ran projects through full product lifecycle, from design and task estimation through development, testing, release and live operations.