Richard Cooper, 24, Belgrade

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Tech Lead, Senior Golang Engineer

Career objective: Find new challenges to complete, grow expertise management as a tech leader

Ready to relocate to any city.

Education

- **September 2023 — 2026** Data Science Engineering at **International University of Applied Sciences**
  - Improving my qualifications in the area of analyzing big data and AI
  - Hybrid tuition at Dresden, Germany
- **September 2019 — July 2021** Automation and Remote Control of Railway Transport at **University of Transport Engineering**
  - Bachelor degree in Automation and Communication systems speciality

Work experience

> More info about each project in my work experience listed below

- **February 2022 — December 2023** Lead Software Architect at **DataDirect Networks**, Chatsworth, LA (Hybrid)
  - Improved cluster database for extra high-load tasks (supercomputing, weather forecasting, AI). Supervised the team that developed the toolset for the new framework.
  - Developed our own protocol from scratch on CoAP + Flatbuffers, achieved 1.4x speedup of communication between clients compared to gRPC, as well as 3x reduction of generated code
  - Implemented Integration and e2e tests for whole project by using Python
- **October 2021 — February 2022** Product Lead at **MadDevs LLC**, London, UK (Hybrid)
  - Led a team developing a service for ordering and checking tickets by conductors for intercity and commuter trains.
  - Managed team of bile-bile.kz, which we made from scratch in 3 months and within the next 4 months gained 37% of the rail transportation market in the western part of Kazakhstan
- **March 2021 — August 2021** Senior Golang Developer at **RedTrack**, Vilnius, Lithuania
  - made certificate management subsystem, had a lot of experience with legacy code
  - This system reduced the company's monthly costs from $2600 to $130 by eliminating a third-party provider in favor of our development (Let's Encrypt + Lego).
- **June 2020 — March 2021** Senior Golang Developer at **KHS Films**, Moscow (On-Site)
  - We created from scratch and launched an IAM service for our customers to access message channels in Telegram and Discord
  - The best service indicator: 19,000 simultaneously interacting users with 5 services.
  - As part of the project, I created one of the most popular protocol clients, MTProto, which now has 1100+ stars on GitHub and weekly library usage is from 360 unique users
- **October 2018 — February 2020** Co-Founder, Middle Developer at **Xelaj Software**, Moscow (On-Site)
  - Made a full-featured ERP system for the pub, that saved $200/mo in 2 facilities for 4 years
  - Led 5 key open-source projects, elevating stargazers from 300 to 1-2k/project. Improved community involvement generated 20-30 weekly pull requests for the top 2 projects, relieving in-house developers and allowing focused work on high-demand features.
- **April 2018 — October 2018** Junior python/golang developer at **Datamap**, Moscow (On-Site)
  - Created geo application which allowed to search best apartments per price, based on information about near social infrastructure and transport availability
  - Won 2 hackathons and awarded in 3 more: our team ranked in the top 15% of participants in Moscow's local hackathon tier list, based on annual average stats.

Key skills

- **Languages and Frameworks:**
  - **Golang:** Over 7 years of commercial development experience. Actively participating in the open source community and maintaining multiple projects.
  - **Python:** 4 years of experience. Utilized mainly for scripting, test writing, and conducting programming classes using Jupyter Notebook. Have experience with Mojo lang.
  - **C/C++:** Experience in supporting C/C++ code, Linux kernel modules programming in particular
  - **Lua/Teal:** Experience in scripting for Kong/Nginx. Actively using the Teal toolset for strict typing and linting.
- **API and Specifications**
  - **Swagger/OpenAPI:** Routinely used for generating client/server modules. Design-first approach where services are first defined using Swagger

specifications before working on the code.
    - **gRPC/Protobuf/Flatbuffers:** Large experience with tooling systems for supporting gRPC APIs.
    - **Protocols design and development:** Wide experience in creating architecture and implementing new protocols for specific tasks, vast skill in integrating developments into current infrastructure
- **Product Management:**
    - **New Product Planning:** Successfully led and managed a team of 7 developers to launch an internal tool for the documentation team, optimizing their workflow within 5 months.
    - **Dev process optimization:** Applied workflow and bug tracking optimizations, reducing team time spent on technical debt support. Achieved a 41% improvement in feature/bug task distribution compared to the core product average.
- **Cloud Providers:** 3+ years of experience with **GCP** (Google Cloud Platform) and **AWS**, lots of work with **Azure** and **Oracle Cloud**
- **Container toolset:** Docker, Swarm, Kubernetes, Nomad, strong familiarity with orchestration automation
- **Raw virtualization:** QEMU, VMware, and Rosetta, have experience in scripting and automating in linux environment
- **Databases:** PostgreSQL, MySQL, Scylla, Mongo, Redis, SQLite, Neo4J, ClickHouse
    - **Integration testing:** Strong practice in SQL testing, in addition to schema and data management, Spearheaded the development of a test framework for the team, resulting in an 85% reduction in new issues related to SQL bugs.
- **CI tools:** Prometheus, RabbitMQ, NSQ, Fluentd, Grafana, GitLab CI
    - **Hashicorp stack:** Have great experience with working on **Terraform** tool for setting cloud infrastructure, in addition working with **Nomad**
    - **Ansible/Puppet:** Experienced in automation daily tasks, such as new node setup, driver/hardware configuration, and other routine problems

Participated projects

Developing of RPC protocol for high-load clusters (at DataDirect Networks)

While contributing to the DDN Infinia cluster storage, I aligned the task of creating an efficient communication protocol for networking across cluster nodes. This protocol was designed to minimize messages overhead and be adaptable for usage in "heavy" machines and in resource-constrained microcontrollers responsible for hardware monitoring.

Our team successfully implemented a protocol from the ground up in 2 months, leveraging CoAP and Flatbuffers. As a result, we achieved nearly 1.5x higher throughput of "useful" payload against the prior solution (JsonRPC + custom additions). Additionally, RAM consumption saw a reduction of 3.7x times. In benchmark tests against gRPC, our protocol demonstrated a 37% increase in throughput of "useful" payload, attributed to switching from HTTP/2 to CoAP and reduction of generated code to nearly 3x times (compared to `protoc`). Furthermore, we introduced enhancements beyond gRPC functionality, such as deferred requests, both-side stream cancellation, and more.

Developing MTProto lib for Telegram API (at KHS Films)

I've made a full-featured library that works with, perhaps, one of the most confusing interfaces among popular web services, the MTProto protocol. Were developed: a basic wrapper over the protocol, an encoder/decoder of binary messages, and a codegen to cover all current methods from the latest API version. The project received wide support from the open-source community, and it scored more than 1100+ stars on GitHub, stats show that this repository is cloned and used by more than 60 unique users daily. Project link

Creating a full-feature IAM system (at KHS Films)

Successfully developed a comprehensive IAM system to facilitate the creation of subscription products. In 6 months, our team developed a complex service based on several payment systems** (CloudPayments and Stripe) that allow flexible configuration of available resources for each member, including different access schemes (ACL, RMAC, ABAC), user configuration scripts, temporary access sharing and much more.

The decision to create our own system instead of using "out-of-box" services allowed us to enrich it with product-specific requirements and reduce usage costs. Based on a metric of 19,000 simultaneously interacting users using 5 third-party services, we have achieved an impressive cost reduction of buying an external service by ≈$6,000/mo (compared to the pricing from JumpCloud), roughly equal to half of the monthly development budget.

ERP system for the pub (at Xelaj Software)

It was necessary to develop an easily portable service for the kitchen and bar that can operate without the internet, with a simple and intuitive interface, and a flexible administration system. As a result, this task was solved, and the project resulted in a simplified analog of Odoo. The service was written in Python, packaged in a Docker container, and works great as intended to this day in a small staff room of the bar running on Raspberry Pi. The database works on SQLite, and the server was written using Flask.

Libraries and wrappers for APIs (at Xelaj Software)

For personal use, I had to make wrappers for different APIs: CloudPayments, Kommo (formerly AmoCRM), vk, TimePad, etc. All results are open-sourced, available on GitHub, and can be used for any purpose. GitHub link. In addition, I participate in the development of the open UI framework BubbleTea, as well as the framework for creating synthesizers and bleep sequencers.