

Peter Asanov

SENIOR SOFTWARE ENGINEER

Amsterdam, Netherlands

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About

High-impact professional with 20 years' experience, spent over a decade building enterprise-grade distributed systems for real-time interactive and mission-critical applications, navigating complex problems and delivering elegant solutions.

Education

B.Sc. in Computer Science and Engineering

Novosibirsk, Russia

NOVOSIBIRSK STATE TECHNICAL UNIVERSITY (NSTU)

2002 - 2007

Skills

Systems architecture computer and modern OS architecture, memory model and concurrency, networking, scalability, HA, fault tolerance, distributed consensus, CAP trade-offs, event driven architectures, caching, sharding, load balancing, state management and storage, microservices

Dev stacks

Go gin, fiber, echo, zap/slog, gomock

JS/TypeScript React, Auth.js, tRPC, Prisma, Vite, Tailwind CSS, Axios

Python FastAPI, FastUI, Flask, uvicorn, TortoiseORM, SQLAlchemy, celery, paho, pytest/pytest-mock, numpy, scikit-learn, seaborn, pyo3/maturin

C++23 boost, flatbuffers, cap'n'proto, seastar(scylladb)

Rust Hyper, Reqwest, Diesel, Ring, Dalek (ECC)

JVM Java, Kotlin, Groovy, Spring / Boot, Hibernate, NIO

Build Systems Nix, CMake, ninja, Maven, Meson, Bazel

Cloud Native

IAM/IdPs AAD(enterprise), RBAC (Azure), IAM, KMS (AWS & GCP), Amazon Cognito, Auth0

Orchestration Kubernetes, Azure VM, AKS, EKS, ECS, EC2, GCE, GKE

Serverless Azure Functions, AWS Lambda, GCF, CloudFlare workers

IaC Terraform, Azure Templates, Cloud Formation

CI/CD & GitOps JenkinsX, GitHub Actions, GitLab CI/CD, ArgoCD, Flux, Azure DevOps, AWS CodeBuild & CodePipeline

Observability Azure Monitor / App Insights, AWS CloudWatch, Prometheus, Grafana LGTM, OTLP, Elasticsearch, Jaeger, Zipkin

Data Systems

DBMS PostgreSQL, MySQL, Cassandra, MongoDB, QuestDB, ASD, CosmosDB, RDS, DynamoDB, GCS, CloudSQL

KV-store etcd, Redis, RocksDB, Valkey, Memcached

Block storage S3 / Minio, ABS

Queueing RabbitMQ, ActiveMQ, Kafka

DevSecOps

Continuous Security, OWASP Top-10, Secure-by-Design, Zero Trust, PoLP, RBAC, Tenant Isolation, Intrusion Detection

Cryptography

Basics PKI, Crypto hashes, Symmetric (block) ciphers, KDFs

ECC ECC / Curve25519, ECDH, EdDSA, Ristretto, Bulletproofs, Pedersen Commitments, Ring Signatures, ZK-SNARKS / STARKS

Data processing

FLiP (Flink + NiFi + Pulsar), Kafka (Streaming), Airflow, DuckDB

Project Highlights

Low-Latency Matching Engine Prototype

HOBBY PROJECT (PARTIALLY SPONSORED)

Aug 2023 – Dec 2023

Designed and build PoC of HFT matching engine using C++23, SIMD intrinsics, and Go for management APIs with strong focus on ultra-low latency and customization

Tools: C++23, Go, Cap'n Proto, SIMD intrinsics

Feature flags transpiler

Amsterdam, The Netherlands

HVR SOFTWARE

2018 - 2019

- Scratch-rewrote advanced feature flags transpiler for DSL with pattern matching and multiple inheritance of entities, reducing its runtime for an order of magnitude (5 sec vs 60-70 sec) which resulted in measurable gains for R&D team and saving of build infra costs, as the tool was at the hot path of tens of CI/CD pipelines running 24x7
- Extended the functionality, making it possible to use the mentioned DSL as a single source of truth for documentation generation purposes.

Tools: Python

Zero-to-one generator of CRUD apps

Haarlem, Netherlands

AIMMS B.V.

Nov 2019 – Sep 2021

Wrote generator of CRUD apps from declarative schema which helped to drastically reduce R&D costs of internal tooling:

- OOB OAuth support
- two generator backends:
 - Python/FastAPI/FastUI (CRUD generator)
 - Typescript/tRPC + Prisma + React

Tools: Python, TortoiseORM, FastAPI, FastAPI Users (OAuth), FastUI, Typescript, React, tRPC, Prisma, Auth.js

Font rendering engine

NEW CLOUD TECHNOLOGIES

2014 - 2017

High performance font rendering engine for scalable document layouts featuring

- subpixel positioning
- multi-level cache
- multi-platform support

The work required deep dive into freetype and Qt internals. It was eventually shipped as part of My Office app suite for Tizen (mobile embedded Linux from Samsung), on millions of Tizen devices in South Asia

Tools: c++14, boost, freetype, Qt, various native rendering backends

Work Experience

Senior Software Engineer

Netherlands

FREELANCE / CONTRACTING

2022 -

Contractor / freelancer working on multiple projects:

- Deliverect, full cycle restaurant business automation PaaS: integrated extra dimensions to Ordering facility
Tools: Python, Eve, celery, Kubernetes (GKE), Typescript, React, Redis, minio (local backend)
- Ahold Delhaize (Albert Hijn): online data ingestion platform for internal compliance project, related to R&D efficiency and performance
Tools: Go, Kubernetes (AKS, Kafka Strimzi operator), GitOps (ArgoCD), Terraform
- Private customer: online data ingestion of Taxi terminals data for compliance project to prevent fraud from a driver side
Tools: Go, Kubernetes (AKS), Kafka, Postgres
- LEGO: building internal IAM / IdP functionality
Tools: Azure Functions, Azure SAML identity provider, Python
- Private customer: cloud based video conversion service
Tools: c++20, cmake, ninja, go, grpc-gateway, ffmpeg, nix, terraform(terrannix), EKS, CloudWatch
- Private customer: custom video calls service
Tools: c++23, cmake, ninja, asio, libdatachannel (WebRTC stack), nix, ansible

Core Software Engineer

Haarlem, Netherlands

AIMMS B.V.

Nov 2019 – Sep 2021

- Centric role in large cloud platform migration project (from AWS to Azure with substantial scratch-rewrite in modern c++, from former Java/Scala)
- Scratch-written Modern c++ framework and related micro-service template featuring protobuf DSL as API first class citizen, popularizing its use also for REST APIs to avoid buggy (back then) OpenAPI generators
- Ensured scalability under variable loads, minimizing downtime via parallel migration.
- Bootstrapped Azure landing zone (custom bootstrap for Terraform state and RBAC)
- Built scalable tooling and participated in sensitive customer data migration
- Wrote low-code generator of CRUD apps from declarative schema, used for administrative and other internal tools; bringing measurable R&D cost reduction

Tools: ECS, EC2, CloudWatch, Go, Python, Java, Scala, c++17, Typescript, React, conan, cmake, ninja, grpc-gateway, go, Kubernetes (AKS), Azure Application Insights, Terraform

Senior Software Engineer

Amsterdam, Netherlands

HVR SOFTWARE (ACQUIRED BY FIVETRAN)

Jan 2018 – Oct 2019

Worked on high performance online data replication system, also called HVR (features and bugfixing)

- Worked on product core (log based replication engine)
- Reversed Oracle histogram data to build custom sharding functionality
- Rewrote a Python transpiler, cutting execution from 65 seconds to 5 seconds, speeding up CI/CD.
- Built a Go REST service for cloud integration.

Tools: C99, Python, Go, multiple RDBMS and Big Data stacks (integration), Oracle (histogram internals), Airflow

Software Engineer

Eindhoven, The Netherlands

MAPSCAPE B.V.

2017

Worked on Mapscape NDS (navigation data standard) compiler:

- implemented parts of NDS compiler backend related to parsing raw map data
- introduced parallelism in parsing raw map data, significantly speeding it up

Tools: c++ 11 / 14 / boost / gtest / sqlite / shell / python / Airflow

Senior Software Engineer

St. Petersburg, Russia

NEW CLOUD TECHNOLOGIES

2014 - 2017

My Office project: on-prem office solution featuring collaboration engine"

- work on core functionality (features and bugfixing)
- scratch-written `freetype` based cross-platform font rendering engine with subpixel positioning and antialiasing support
- Work on spreadsheets for Samsung Tizen (embedded linux)

Tools: c++14, cmake, emscripten, Objective C, Qt, SWIG, Kubernetes

Senior Software Engineer

St. Petersburg, Russia

AIS

2014

Building bank (transaction facility) for crypto mining pool basic exchange functionality:

- scratch-written c++11 / asio framework and a few microservices (and their ownership)
- multi-stage fault tolerant transactions
- operating mission critical distributed system and managing risks of direct loss via using append-only fault-tolerant custom storage, two-factor transactions, impenitent circuit breaking, proper alerting, extensive testing
- zero-to-one release the thing into production as joint effort of 3 engineers exercising high degree of code ownership (on subsystem level)

Tools: c++11, Core Java, Groovy, Ruby(Chef)

Previous work history

AVAILABLE UPON REQUEST

2005 - 2014