

Vlad Merticariu

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Experience

Independent Contractor

True Distributed (Berlin, Germany / Iasi, Romania)

Mar 2023 - Present (11 months)

Providing software development services with focus on:

- distributed data intensive applications
- high availability setups on bare metal and in cloud
- high performance custom storage solutions
- high performance event processing pipelines
- complex front-end applications
- inter-organization, multi-tenant authentication and authorization solutions

Senior Software Engineer

Swaarm Tech GmbH (Berlin, Germany)

Nov 2020 - Feb 2023 (2 years 4 months)

At Swaarm, I worked as a distributed systems developer focused on high availability. My role involved developing services that processed massive amounts of streaming data, shaping and storing it efficiently for business decisions and analytics. I also managed clusters of hundreds of bare metal servers running various applications, such as database clusters, and wrote software to manage, monitor, and mitigate failures. Tech stack included Java, Kafka, Druid, ClickHouse, Scylla, Python, Salt, Docker, Spring Boot etc.

Representative projects:

Developed a write-heavy time-series key-value store able to consume millions of events per second per server and store them on cost-efficient commodity spinning disks, while ensuring hundred millisecond reads without saturating I/O. The system has built-in replication, migration, rolling clean-up and is eventually consistent between replicas.

Developed a distributed in-memory deduplication store which supports millions of inserts per second per server and millisecond reads, leveraging scylla and kafka for achieving durability and strong consistency while offering high availability.

Developed an ORM for ClickHouse able to transparently derive database schema, flatten, generate DDL and queries from any semi-structured data structure, as well as spread and manage data in clusters to achieve high-availability, read performance from parallelization, and uniform storage usage. Used it support pipelines which transform in real-time row oriented, write-heavy streaming events into column-major analysis ready data.

Implemented business services using Java and graphql APIs to enable customers to interact with the platform meaningfully. I used technologies such as JSON Web Tokens (JWT) and AWS Cognito to build secure and scalable authentication services. Additionally, I designed and implemented rate-limiting proxy services to ensure reliability and availability.

Built a highly efficient distributed recommendation service.

Senior Software Engineer

rasdaman GmbH (Bremen / Berlin, Germany)

Jul 2013 - Feb 2023 (9 years 8 months)

Developed enterprise features for the rasdaman database engine, focused on improving scalability by exploiting parallelism in cloud architectures, designing, implementing and optimizing query processing modules, federated multi-tenant security systems, as well as developing and supervising development of standard-compliant interfaces. Tech stack included: C++, Java, python, TypeScript, Spring boot, Angular etc.

Representative projects:

Earthserver project: lead developer for data partitioning, replication and synchronization, and federated authentication and authorization in distributed environments. An inter-continental federation of institutions that publish geo-spatial data (European Center for Medium Weather Forecast, European Space Agency, National Computational Infrastructure etc) was built on top of rasdaman.

Co-managed the Publicamundi European project on rasdaman's side, ensuring the integration of the rasdaman engine in the Publicamundi suite. In the context of the project a open-data, open-source platform for distributing georeferenced data through OGC Services was built. The platform is now actively used by the Greek Government to publish their data to public and private partners and explored as a possible platform for the European Union geodata portal.

Managed BigPicture: Big Data in Agriculture on rasdaman's side. This project has addressed diagnosis in the farm field through Big-Data-based determination of causes for satellite image derived and site-specific variations.

Managed LANDSUPPORT on rasdaman's side. The project provided a powerful set of tools devoted to support sustainable agriculture/forestry, evaluate trade-off between land uses (including spatial planning) and contribute to implementation, impact and delivery of about 20 European land policies and also selected 2030 UN Sustainable Development Goals including climate change resilience goals and the key SDG 15.3 "achieving a land degradation-neutral world".

Education



Jacobs University Bremen

PhD Studies, Computer Science (Distributed Database Systems)

2012 - 2015



Jacobs University Bremen

Bachelor of Science (B.Sc.), Computer Science

2009 - 2012

Skills

Java • C++ • Distributed Systems • Databases • Python (Programming Language) • TypeScript • Optimization • High Availability (HA) • JavaScript • Apache Kafka