

Olzhas Kaiyrakhmet

Software Engineer

olzhabay.i@gmail.com

<https://www.linkedin.com/in/olzhas-kaiyrakhmet-a8a93170/>

Work Experience

- Motional**
Senior Software Engineer

Singapore
July 2023 - Present

 - **Mission Manager.** Took over the ownership of a critical computing module within autonomous vehicles, focused on navigation and mission execution.
 - * Directed the Mission Manager module, enhancing navigation and mission execution for Level-2 and Level-3 autonomous vehicles.
 - * Led cross-functional teams, designing a state machine for seamless and consistent vehicle state transitions, remote assistance control, and emergency handling.
 - * Conducted an in-depth analysis and identified critical performance bottlenecks, implementing optimizations that enhanced execution speed by 570%. Furthermore, developed a comprehensive visual analytics dashboard to track the module's latency across autonomous vehicles, ensuring prompt detection and alerting of any performance deviations.
 - **Vehicle to cloud communication.** Spearheaded the shift of API to use Google Protobuf schema for vehicle-to-cloud service communication to improve efficiency to introduce new API, API schema correctness, and increase reliability without compromising backward compatibility.
 - **Stack:** C/C++, Python, Go, Google Test, Google Benchmark, Google Protobuf, bazel, gdb, Redash
- ByteDance - TikTok**
Software Engineer

Singapore
October 2021 - July 2023

 - **Storage data migration.** Managed and enhanced an internal service designed for the migration and synchronization of data across various distributed storage systems with high consistency, which is designed to move products to a cloud-native environment.
 - * Developed three new migration channels, Redis, MongoDB, and ByteGraph, significantly broadening the service's capabilities.
 - * Led the architectural revamp of the service's control plane, incorporating an advanced API server and task scheduler.
 - * Achieved a groundbreaking 900x throughput increase for a specific migration channel through strategic refactoring.
 - **NoSQL table storage.** Contributed to the development of a high-traffic distributed table storage system, focusing on cloud-native support and efficiency.
 - * Delivered a pioneering RPC proxy server, enabling seamless cloud integration.
 - * Implemented advanced filtering features for table scans, cutting traffic by up to 50%.
 - **Stack:** C/C++, Java, Python, Go, Google Test, Google Benchmark, gdb, Apache Kafka, Apache BRPC, gRPC, Redis, Apache Thrift, C++ Boost, Google Protobuf, NoSQL
- Start-up**
Entrepreneur - Engineer

Remote
Sep 2020 - Aug 2021

 - Founded a start-up to develop an innovative smart-lock system, managing both the technical and operational aspects. Led a team of engineers in building a proof-of-concept that enables door access via smartphones, combining software and hardware components for a seamless user experience.
 - **Stack:** Python, Django, C/C++, Arduino, Raspberry Pi, Android, AWS

- 4PSA** **Remote**
Part-time contributor *March 2021 - July 2021*
 - Developed a lock-free library for a highly multi-threaded environment based on a novel memory reclamation scheme.
 - Stack:** C/C++, RapidCheck, Google Benchmark, Google Test
- Arista Networks, Inc** **Dublin, Ireland**
Software Engineer *Apr 2019 - Aug 2020*
 - Refactored BGP "route-map" builder algorithm for improved traffic service consistency post-graceful restart and delivered various IETF RFC features.
 - Stack:** C/C++, Python, gdb, perforce
- System Software Lab (UNIST)** **Ulsan, Korea**
Research Assistant *Feb 2017 - Feb 2019*
 - Designed a novel key-value database architecture called SLM-DB for non-volatile memory systems with an average of 2x improvement compared to traditional key-value stores.
 - Stack:** C/C++, PMDK, Quartz, Gnuplot, Python, gRPC

Education

- Ulsan National Institute of Science and Technology (UNIST)** **Ulsan, Korea**
M.S. Computer Science *Feb 2017 - Feb 2019*
- Ulsan National Institute of Science and Technology (UNIST)** **Ulsan, Korea**
B.S. Computer Science and Management *Sep 2012 - Feb 2017*

Publications

- SLM-DB: Single-Level Key-Value Store with Persistent Memory
Olzhas Kaiyrakhmet, Songyi Lee, Beomseok Nam, Sam H. Noh and Young-ri Choi, 17th USENIX Conference on File and Storage Technologies, 191(2019)
- Wireless power and data transfer system for the Internet of Things over metal walls and metal shielded environments
S. K. Oruganti, **O. Kaiyrakhmet** and F. Bien, URSI Asia-Pacific Radio Science Conference, 318(2016)

Skills

- Programming Languages:** C++11/14/17, C, Python, Java, Go, JavaScript, \LaTeX
- Technologies:** LevelDB, NoSQL, SQL, PMDK, Google Test, Google Benchmark, C++ Boost, gRPC, Apache Kafka, Apache HBase, Redis, Apache BRPC, Apache Cassandra, Apache Hadoop, Docker, Kubernetes, Django, GNU Flex, GNU Bison, TCP/IP, git, perforce, RapidCheck, vim, cmake, maven
- Skills:** Teamwork, communication, skill sharing, presentation, project ownership, architecture design, critical thinking, mentorship
- Languages:** English, Russian, Kazakh, Turkish