MUSTAFA KEMAL GILOR

Senior C++ Systems Programming Engineer | OSS Contributor, Maintainer

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Architect of Türkiye's first telco-grade DPI engine, processing traffic for millions daily with sub-1μs latency. Expert in high-performance systems programming, resilient architecture, and quality-driven development.

EXPERIENCE

Canonical Ubuntu   Urla, Izmir (Remote/WFH)

Software Engineer II | Desktop Engineering, Multipass   *Dec 2024 - present*

Tech stack: C++17, Python, Flutter, CMake, gRPC, QT, vcpkg, Hyper-V, QEMU, LXD, libvirt, snap, Protobuf, GTest, pytest
● Authored the Multipass Windows virtualization backend based on Hyper-V Host Compute System and Host Compute Networking
● Built the foundation for CLI end-to-end tests, dramatically improving confidence and reducing regressions across releases
● Improved CI stability by proactively debugging and fixing flaky tests across multiple OS targets, reducing test failures by 25%
● Delivered features and bug fixes for Windows, Linux, and macOS for virtualization solutions, such as QEMU, Hyper-V, and LXD
● Increased developer productivity by progressively eliminating long-standing technical debt and removing critical roadblocks
● Provided mentoring to junior teammates, performed code and specification reviews. Performed bi-monthly community support duties
● Involved in the decision-making of Multipass's roadmap discussions, providing guidance, direction, and estimation
● Been a key member in team hiring activities, assessing candidates through grading assignments, and performing face-to-face interviews

Software Engineer II | Sustaining Engineering   *Jun 2022 - Dec 2024*

Tech stack: Python, tox, pytest, kdump, gdb, valgrind, strace, bpf, klogg, Wireshark, dpkg, quilt
● L3 escalation engineering for complex customer cases from both Canonical products (Juju, Snap, MAAS, Canonical OpenStack) and software in Ubuntu (Kernel, Foundations, Server), fixing issues upstream, landing fixes through Stable Release Updates & backporting
● Provided deep troubleshooting, debugging, and root-cause analysis in high-profile, region-affecting customer cases
● Provided monthly weekend on-call escalation engineering work, being the sole engineer on call for all kinds of different issues
● Contributed SEG's log analysis tool, "hotsos" & co-authored a kernel crash analysis tool "hotkdump", improving response time by 15%

Nettsi Bilişim Teknoloji A.Ş.   Istanbul, Turkiye (hybrid)

Principal Software Architect, Head of Development | Software R&D   *Jan 2020 - Jun 2022*

Tech stack: C++20, Python, CMake, Conan, DPDK, Docker, GitLab CI, Hyperscan, Wireshark
● Technical founder of the company, built everything from scratch – led a 30-person cross-functional team of software engineers and QA specialists; directed all architectural, development, and test efforts across multiple concurrent projects with a 20 million USD budget
● Managed the entire SDLC company-wide, set engineering standards, enforced code quality, and performed regular technical and performance evaluations. Engaged regularly with internal and external stakeholders; steered the technical direction
● Established and administered the company's DevOps and IT infrastructure from the ground up, including CI/CD pipelines, secure development environments, and artifact management – enabling uninterrupted remote-first transition during the COVID pandemic
● Designed and implemented a fully L2-transparent, fully-portable, real-time DPI engine stack with sub-1μs per-packet latency, no packet sampling, no runtime allocation, and full protocol stack support (L2–L7), processing traffic generated by millions of people per day
● Developed lightweight, RFC-compliant, DPI-suitable DNS, TLS, STUN, and QUIC parsers from scratch, and a Python API
● Designed and implemented a packet preprocessor supporting 45 L2-L4 protocols with nested tunnel decapsulation capabilities, IP defragmentation & blazing fast performance, 20ns avg. packet processing time (10x better than the competition), tiny memory footprint
● Designed a CMake module that streamlines developer workflow, cutting onboarding time by 3 weeks
● Delivered classification support for 6000+ applications and protocols (e.g., WhatsApp, BitTorrent, TLS) and over 10000+ metadata
● Achieved 96% true positive rate, <0.3% false positive rate, 20ns preprocessing time, 30ns avg classification time
● Enabled deployment on lower-cost, smaller-scale hardware with better performance than the competitors, bringing a competitive edge
● Spearheaded technical interviews, coding exams, and contributed to hiring strategy for high-caliber talent.

Netaş Telekomünikasyon A.Ş.

Istanbul, Turkiye (On-site)

Senior Product Development Engineer | Cyber Security, Product R&D

Mar 2018 - Jan 2020

Tech stack: C++17, nfqueue, iptables, Apache Kafka, Apache Ignite, PostgreSQL, Pacemaker, ZeroMQ
● Developed a fully RFC-compliant (3261, 3265, 3986), zero-copy SIP stack for the VoIP firewall product
● Wrote a stateful Layer 3 proxy from scratch using Boost.ASIO—multi-threaded, cross-platform, and able to handle SIP protocol translation between insecure UDP and secure TLS, plus real-time SIP header editing and load balancing
● Authored a fast, asynchronous, cross-platform pub-sub messaging framework for C++ and Java based on Protobuf
● Improved the VoIP firewall performance 20x by optimizing PostgreSQL tables, queries and, indexing; increasing customer satisfaction
● Replaced a JVM-based Apache Ignite client with a thin client, shaving 3 minutes off system boot time
● Implemented licensing, feature, and capacity controller, analytics/statistics features, co-authored the active-active redundancy system, and did a lot of code cleanup and refactoring. Maintained packaging for Debian and CentOS.

PUBLICATIONS AND OPEN-SOURCE CONTRIBUTIONS

CMake Best Practices, Packt Publishing (2022)	Co-author
Co-authored a book about CMake, which provides a practical guide to writing modern, maintainable, and scalable CMake. https://ieeexplore.ieee.org/document/10163528	
**Multipass	Orchestrates virtual Ubuntu instances**	Contributor
Authored patches for numerous daemon crashes, eliminated technical debt, and maintained CI while shipping a huge feature. https://github.com/canonical/multipass/commits/main/?author=xmkg	
**tdslite	Lightweight, platform-independent, embedded-ready MSSQL Connector**	Author
The **only** MSSQL driver for Arduino, and the most memory-constrained embedded devices. Written in C++11, dependency-free, and it can work with just 2KiB of memory. Based on MS-TDS R33, customizable and extendable. https://github.com/tdslite/tdslite	
**Nexus	QUIC-based game networking sockets**	Author
A C++20 networking library utilizing MSQUIC and Flatbuffers to provide a seamless online gaming experience for MMOs. https://github.com/madturks/nexus	

EDUCATION

Cyprus International University	Cyprus
*Bachelor of Science, Computer Engineering	3.33/4.00 CGPA	Honour Student*	*Sep 2012-Feb 2017*

SKILLS & INTERESTS
● **Languages:** Turkish (native), English (Full professional proficiency/ C2)
● **Skills**: Advanced C++ (17/20/23), Asynchronous network programming, Python, Low-latency networking, Reverse engineering, CI/CD, Test methodologies, Linux & Windows internals, Debugging (gdb, bpf, valgrind,), Build systems (CMake, Meson, Conan, vcpkg), Packaging(dpkg, snap), Messaging (Protobuf, Flatbuffers, Cap'nProto, Apache Kafka, ZeroMQ), Network security systems (DPI, IDS/IPS, DLP), Databases (MSSQL, PostgreSQL, MySQL, Apache Ignite, Redis, MongoDB), Virtualization (Hyper-V, QEMU, LXD)
● **Interests:** Role-playing Games (Divinity OS1+2, BG3), homebrewing, gravel cycling, indie MMORPG design, DIY, sim-driving

FULL LIST OF PROJECTS AND REFERENCES AVAILABLE UPON REQUEST.