Fran Kelava

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Experience

Software Developer, AVL-AST d.o.o, Croatia — Jun 2021 – Jan 2026

- Developed a .NET mobile application which enabled real-time collection of driver observations in autonomous driver assistance system (ADAS) testing. It replaced observation forms filed after runs, reducing delay from hours to seconds.
- Integrated vehicle CAN bus communication into the application, fusing application data with sensor output directly in the vehicle. This bypassed an external post-processing step, reducing result delivery time from 24 hours to 30 minutes and allowing customers to commence immediate remediation of issues.
- Designed a comprehensive over-the-air reconfiguration system for the application, allowing its visual layout, data collection rules and categories to be changed in seconds. This circumvented the need for a full app update, which entailed a lengthy process, reducing the adaptation time for new customer requirements from days to minutes.
- Created a modular, performant C# telemetry system for Formula Student race cars. End-to-end latency was cut threefold, allowing real-time analysis, and the high throughput allowed capture of all CAN data, enabling a complete and perfectly accurate view of the race car's status.

Systems Administrator, FSB Racing Team, University of Zagreb — Nov 2019 – Oct 2023

- Architected a hybrid Active Directory/Azure AD and Microsoft 365 infrastructure from scratch, allowing seamless communication, collaboration and file sharing for over 100 users. Continued knowledge transfer led to the creation of a dedicated IT & Systems division in the team.
- Designed and deployed a complete virtualization, networking, and storage stack using Proxmox, OPNsense, and ZFS, ensuring reliable operation with a budget of under EUR 500 annually.

Education

University of Zagreb, BS in Mechanical Engineering — Sep 2018 – Sep 2024

- Won the Rector's Prize in 2021/22 for work on the FSB-RT06R "VulpesR" Formula Student race car.
- **Orientation:** Autonomous Systems & Computer Intelligence, with a focus on automotive applications.

University of Slavonski Brod, BS in Mechanical Engineering — Graduation: 2027

- **Thesis:** Supporting vehicle testing processes with a mobile application.

Publications, Conferences

Applications of ZFS in small businesses — May 2022

DORS/CLUC 2022 - Video link

Discussing the applications of ZFS to handle the storage requirements of the FSB Racing Team at minimal cost.

Projects

Binary Reverse-Engineering — GitHub

- Led a comprehensive reverse-engineering effort for a video game, devising a simple, but powerful and expressive framework for injecting C# code into native processes, allowing unlimited control over game execution.
- As project lead, collaborated with several contributors and over 1,000 users, issuing tasks, carrying out code review, creating policies, and setting milestones for the team.
- Developed advanced, custom tools such as a mixed-mode Win32 debugger, providing extensive error information. This allows maintainers to perform root-cause analysis of even the most complex problems within minutes.

Skills & Technologies

Programming languages: C#, C++, Python

Applications: Visual Studio, Git (& GitLab/GitHub), Ghidra, MS Office.

Platforms and systems: Android, Docker, Windows Server, Active Directory, Hyper-V, Proxmox, ZFS, MS Azure, AWS, PowerShell, OPNsense, Group Policy, Intune, Yocto Project, Grafana, InfluxDB, MQTT, CANopen.

Languages: Croatian (native), English (C1/C2), German (B1).