Dániel Molnár

Nationality: Hungarian

Gender: Male

CONTACT

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Dániel Molnár

europass

EDUCATION AND TRAINING

2023 – CURRENT Budapest, Hungary

Bachelor of Science in Electrical Engineering Budapest University of Technology and Economics

Website www.bme.hu

2015 – 2023 Budapest, Hungary

Graduat Újpesti Babits Mihály Gimnázium

Website babits.hu

LANGUAGE SKILLS

MOTHER TONGUE(S): Hungarian

Other language(s):

English

Listening B2
Spoken production B2
Reading B2
Spoken interaction B2
Writing B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

SKILLS

Embedded Systems

PROGRAMMING LANGUAGES

Assembly (computer programming) | C | C++ | Python | HTML | CSS | JavaScript | PHP | MySQL

TOOLS, PLATFORMS

Git | GitHub | Simplicity Studio | Linux | JIRA | Microsoft Office | Docker | MATLAB

HARDWARES

Raspberry Pi | ESP8266 | EFM32GG | ESP-01 | Home Server

PROJECTS

2025 – CURRENT

BME SharkTeam | Autonomous Driving Engineer

- Contributing to the University's racing team in preparation for the **Shell Eco-marathon** at Silesia Ring, Poland.
- Developing **Autonomous Driving** capabilities using a **stereo camera setup** for object detection and lane identification.
- Implementing image processing algorithms in **Python and OpenCV** on **Nvidia GPU** hardware.
- Architecting system communication using **ROS2** , with hardware-level integration via **Ethernet and CAN** protocols.
- Utilizing **BeamNG** for high-fidelity vehicle simulation and algorithm testing prior to physical deployment.

Link https://sharkteam.hu/

2023 – CURRENT

Systems Administration & Home Labbing

- Architected and maintaining a **self-hosted infrastructure** transitioned from Raspberry Pi to a dedicated PC server running **Ubuntu Server**.
- Orchestrating containerized services (Plex, NextCloud, Home Assistant) using **Docker-compose** for high availability and easy management.
- Configured advanced **networking and security** solutions, including Cloudflare domain integration, firewall management, and port-forwarding optimization.
- Managed hybrid cloud environments utilizing **Google Cloud** and **Oracle Cloud Infrastructure** for off-site workloads.

Link https://danielserver.uk

2022 – 2025

IoT & Home Automation Solutions

- **Precision Stepper Clock:** Engineered a 3D-printed mechanical clock using MicroPython and **MQTT** to ensure time synchronization with my central server.
- **Advanced LED Controller:** Developed a multi-functional controller featuring IR-remote support, thermistors for heat monitoring, and photoresistors (SPI ADC). Migrated the logic from custom Sockets to the **ESPHome framework**.
- Developed a **dual-MCU system (RPi & ESP8266)** designed to manage high-current peripherals, specifically a Hi-Fi audio setup and a workstation PC. The project features a custom **autonomous cooling loop** to maintain the hub's thermal health and a dedicated TFT interface for system diagnostics.

2024 – CURRENT

Embedded Software Development

- Developed a bare-metal Snake game on an **EFM32 Giant Gecko**, featuring a **custom hardware mapping** that visualized the snake's position directly on **7-segment display segments**. Used **UART interrupts** for responsive control and dedicated separate display units for real-time score tracking.
- **Linux Integration Tool:** Authored a C-based Linux utility to interface with the microcontroller, providing a user-friendly menu system and automated score logging.
- **RISC-V Optimization:** Implemented a high-performance **RISC-V assembly routine** to perform substring pattern matching within memory-resident data.
- **Movie Analytics Tool:** Developed a search engine in C with custom filtering, later **refactored into C++** to leverage **Object-Oriented Programming (OOP)** for better scalability.
- **Full-Stack Web App:** Architected a web application using a **PHP/MySQL backend** and a responsive HTML/CSS frontend.

HOBBIES AND INTERESTS

Sports & Discipline

Competitive swimming was a huge part of my life for 8 years. It taught me the discipline and stamina I now bring to my engineering projects. These days, I hit the gym to stay sharp and keep a healthy balance between screen time and physical activity.

The Joy of "Tinkering"

I've always been driven by the "how does it work?" mindset. Whether it's soldering a tiny LED segment or welding a workbench for the garden, I find immense satisfaction in creating something tangible.

Custom PC & Linux Enthusiast

I built my own workstation from scratch—not just for the performance, but for the challenge of picking the perfect components. Running Linux is more than a choice; it's a hobby that requires constant learning and a bit of a "detective" mindset for troubleshooting.