David Imolai

Software engineer, Researcher · Cybersecurity, DevOps, and AI

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work experience

Research Fellow @ Eötvös Loránd University · Budapest, Hungary 2024-04 – present

Building LLM-based agents for autonomous penetration testing at ELTE's AI Research Group, with a focus on Python agent infrastructure, CTF benchmarks and containerised tool execution.

- Implemented substantial parts of HackSynth in Python, connecting command planning, tool execution and observation summarisation into an autonomous penetration-testing loop.
- Designed and optimised the Docker attackbox setup, including tool installation, container lifecycle management and connectivity to challenge environments.

publications

HackSynth: LLM Agent and Evaluation Framework for Autonomous Penetration Testing

arXiv · 2024-12-02 · Lajos Muzsai, David Imolai, András Lukács

projects

Cooking Assistant Apr–Jul 2026

A cooking assistant with a Kotlin/Spring backend, Python AI services, and a deployment and observability stack built for a TUM DevOps course.

- Built container and CI/CD workflows and declarative Kubernetes deployment manifests.
- Added Prometheus metrics, Grafana dashboards, Alloy/Loki logs and Tempo tracing across services.

EdenMod and its infrastructure Jun 2026 – now

A Fabric mod connecting our Wynncraft guild to Discord, with account verification, guild-management tools, verified updates and a NixOS-hosted backend.

- Implemented JAR attestation verification and maintained automated GitHub/Modrinth releases and JUnit tests.
- Maintained a NixOS deployment with Podman services, PostgreSQL, reverse proxying, encrypted secrets and scheduled database backups.

education

BSc in Computer Science 2023-09 – present

Eötvös Loránd University, Faculty of Informatics · Budapest, Hungary

- Member of the John von Neumann Honors Program, a selective program for high-achieving students in computer science and mathematics.
- Erasmus+ exchange at the Technical University of Munich, April–September 2026, studying in an international environment and using German in everyday university life.

leadership

Captain of the Hungarian CyberSecurity Team Since Aug 2024

Hungarian CyberSecurity Team (HCST)

Captain of the Hungarian CyberSecurity Team, coordinating communication and cooperation among players, coordinating with coaches and watchdogs, while continuing to solve challenges, manage infrastructure, etc. Representing Hungary at ECSC every year since 2022, and captaining the team since 2024.