



Martin Farkas

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ABOUT MYSELF

Skilled and dedicated Computer Science student specializing in System Engineering and development of fault-tolerant software utilising Modern Service Platforms, bringing forth expertise in design, integration, deployment, testing, and maintenance of systems and applications.

Proficient in technologies and methods for creating, testing, deploying, and maintaining privacy-preserving, fault-tolerant, decentralised, and blockchain-based systems. Deep understanding of computer science from logic gates up to high-level languages. Accustomed to working well with others and committed to meeting deadlines and adhering to project guidelines. Can tackle critical problems with a clear mind. Able to effectively self-manage during independent projects, as well as collaborate in a team setting. Skilled in public speaking and presentation.

WORK EXPERIENCE

 **BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS** – BUDAPEST, HUNGARY

Department Critical Systems Research Group | Department of Artificial Intelligence and Systems Engineering |

Website <https://ftsrg.mit.bme.hu/hu/>

RESEARCH ASSISTANT – 2023 – CURRENT

Research into privacy-preserving technologies in blockchain contexts.

Development of groundbreaking Zero-Knowledge Proof systems.

Education and demonstration in the topic of Self-Sovereign Identities, Distributed Systems, and Blockchain technologies.

Mentoring of and consulting with BSc and MSc students.

 **QUANOPT KFT.** – BUDAPEST, HUNGARY

SYSTEMS ENGINEER – 2023

Developed, tested, and deployed a Hyperledger Fabric-based consortial blockchain chaincode for managing usage data of public service infrastructure utilising fablo, java, and docker.

Developed, tested, and deployed a swagger-based RESTful API for the previous service using nodejs, express, mocha, chai, and typescript.

Carried out a performance measurement campaign for the forementioned system.

 **NAS KFT.** – BUDAPEST, HUNGARY

CRYPTOCURRENCY MINING PLATFORM DEVELOPER – 2022

Prototyped a GPU-based cryptocurrency mining platform utilising Go Ethereum

Researched and reviewed candidate cryptocurrency mining software

Did market analysis and demonstrated the relevant design choices regarding a would-be cryptocurrency mining platform

EDUCATION AND TRAINING

2025 – CURRENT Budapest, Hungary

COMPUTER ENGINEERING, PH.D. Budapest University of Technology and Economics

Website <https://www.bme.hu/> | **Field of study** Model driven design of decentralized trust solutions

2023 – 2025 Budapest, Hungary

COMPUTER ENGINEERING, M.SC. Budapest University of Technology and Economics

Website <https://www.bme.hu/> | **Field of study** IT Security, Critical Systems | **Final grade** Summa Cum Laude |

Thesis Self-Sovereign Identity based Self-Evaluated Policies

2019 – 2023 Budapest, Hungary

COMPUTER ENGINEERING, B.SC. Budapest University of Technology and Economics

In my thesis work, I proposed two payment schemes over the openCBDC transaction platform, utilising the Hyperledger Aries SSI framework

Developed Solidity based Smart-Contracts within an educational project focused on designing, deploying, and load testing an application that manages NFTs on the Ethereum Blockchain and Hyperledger Fabric

Created a load-testing framework for MIT MediaLab's openCBDC (Project Hamilton) in JMeter, in connection with in-house research on a domestic Central Bank Digital Currency

Developed multiple server-side applications, both with REST API-s and HTML, using frameworks from Express.js with NodeJS to Java Spring

Developed single and multi-agent artificial intelligence systems in Python and Jason/AgentSpeak

Developed games and client applications in C, C++, C#, Java, Android, and Flutter

Gained experience with DevOps tools like Git, Docker, Kubernetes, GitHub workflows, Jenkins, SonarQube, Gradle, Maven

Website <https://www.bme.hu/> | **Field of study** System Engineering |

Thesis Self-Sovereign Identity supported payment on the openCBDC platform

2013 – 2019 Győr

HIGH SCHOOL DIPLOMA Révai Miklós Secondary Grammar School

Website <http://www.revai.hu/hun/>

● PROJECTS

2024 – CURRENT

Development of CBDC systems in the Cooperation of the Hungarian National Bank (MNB) and the Budapest University of Technology (BME)

Integrating a novel Self-Sovereign Identity (SSI) based Zero-Knowledge Proof (ZKP) protocol into a Central Bank Digital Currency (CBDC) prototype within the Cooperation of the Hungarian National Bank and the Budapest University of Technology based on my own research with the Critical Systems Research group at the Department of Artificial Intelligence and Systems Engineering of the Budapest University of Technology.

2023 – CURRENT

Blockchain task of DigitalTech EDIH at the Budapest University of Technology

Helped the development of coursework for the Blockchain task of DigitalTech EDIH, which is part of European Digital Innovation Hubs initiative of the European Commission. The topics I contributed to included permissioned blockchains and the groundbreaking developments in digital identity management, such as SSI.

2023 – CURRENT

Training SMEs for the Digital Decade (SME4DD)

Helped the development of coursework for the "Training SMEs for the Digital Decade" (SME4DD) EU project. The projects aim was to introduce SMEs to blockchain technology, with all the related fields, such as digital identity management, which was the topic I contributed to.

2023

Blockchain based data storage for smart gas-meters

Lead developer in a DLT-based meter data storage project for a Hungarian gas provider at QUANOPT Kft.

● **CONFERENCES & SEMINARS**

2025/04/23 – 2025/04/25 Budapest, BME VIK
37th National Student Research Conference | Information and Communication Technology Section | Cybersecurity category

Title: Self-evaluated policies using Zero-Knowledge Proofs
Award: 3rd place

Link <https://otdk25.vik.bme.hu/tagozatok/12-kiberbiztonsag>

2024/08/21 – 2024/08/23 Krakow, Poland
MASCOTS 2024 | EuroCyberSec Workshop

Title: A Prolog-based Approach to Self-Evaluated, Declarative and Zero-Knowledge Verifiable Policies
Link <https://mascots24.iitis.pl/>

2024/07/03 – 2024/07/05 Szeged, Hungary
CS² - The 14th Conference of PhD Students in Computer Science

Title: Design Space Exploration of Verifiable Credential Schemas using Partial Graph Modeling
Link <https://www.inf.u-szeged.hu/~cscs/program.php>

2023/11 Budapest
Budapest University of Technology Faculty of Electrical Engineering and Informatics Students' Scientific Conference

Title: Self-evaluated policies using Zero-Knowledge proofs
Placement: First place
Link <https://tdk.bme.hu/conference/VIK/2023/sessions/inform2/paper/Onkiertekelo-eljarasrendek-tamogatasa>

2022/11 Budapest
Budapest University of Technology Faculty of Electrical Engineering and Informatics Students' Scientific Conference

Title: Payments in openCBDC with Self-Sovereign Identities – from the verifiable to the private
Placement: Reward
Link <https://tdk.bme.hu/conference/VIK/2022/sessions/inform1/paper/Fizetesek-az-openCBDCben-onszuveren>

● **LANGUAGE SKILLS**

Mother tongue(s): **HUNGARIAN**
Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C1	C1	C1

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

● **SKILLS**

Languages

Rust | Solidity | Prolog | Circom | Elixir | C | C++ | JavaScript | Java | Kotlin | C# | Shell Script (Bash) | Python

Web Technologies

node.js | web3.js | next.js | nest.js | tailwindCSS | express.js | HTML

DevOps tools

Docker | Kubernetes | Git | Jenkins | Maven | GitHub Workflows | Gradle | SonarQube | Snyk | CI / CD pipeline design | Continuous Integration and Continuous Delivery

DLT (Blockchain) development

Geth | Truffle | Ganache | Hyperledger Indy | Hyperledger Fabric | Hyperledger Aries

Agent Programming

BDI architecture | AgentSpeak(L)

Database Management

SQL | MongoDB | Relational databases

Development Frameworks, Tools, Skills

Flutter | Design Patterns | Spring

API design and development

Swagger | REST | DIDComm

System Engineering

SysML | PlantUML | Latex | UML