BURAK KUCUKTOPAL

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Professional Summary

Dual Master's student in Computer Science and Applied Mathematics with a strong foundation in Mathematics and Physics. Focused on software engineering and machine learning, building scalable and intelligent systems.

Technical Skills

Programming Languages	Python, C/C++, Rust, Java, TypeScript/JavaScript, C#
Software Engineering	Data Structures & Algorithms, Distributed Systems, Object-Oriented Programming, REST APIs, Docker, Git, Unix/Linux, CI/CD
Frameworks & Tools	Flask, Next.js, React, GCP, Azure, Firebase, Auth0
Machine Learning	PyTorch, NumPy, Neural Networks
Systems & Security	Formal Verification, Cryptographic Protocol Implementation & Benchmarking

Education

Eindhoven University of Technology *Expected Sep 2024 – Nov 2026*
Dual M.Sc. Computer Science & Applied Mathematics ***GPA: 3.5/4.0 (CS), 3.2/4.0 (Math)***

- Relevant Coursework: Deep Learning, Machine Learning, Cryptographic Protocols, Software Security, Big Data Management.

Hasselt University *Sep 2021 – Jul 2024*
Dual B.Sc. Mathematics & Physics ***GPA: 3.7/4.0 (Physics), 3.6/4.0 (Math)***

- Graduated Summa Cum Laude with Felicitations of the Jury (highest distinction). Received the Best Bachelor's Thesis Award.
- Presented a Python simulation and theoretical model of two-state Markov systems to 110+ attendees at the University Conference.
- Relevant Coursework: Computer Networks, Databases, Python Programming, and Algorithmic Thinking.

Experience

NXP Semiconductors *Sep 2025 – Present*
AI/ML Research Intern *Leuven, Belgium*

- Reduced client-side memory consumption by 90% by implementing novel client-optimization techniques for FHE-based neural network inference in a client-server setup.
- Contributed to the open-source cryptographic library OpenFHE, reducing key sizes by 30%.

Punch Powertrain *Jan 2026 – Mar 2026*
AI Engineer Intern *St-Truiden, Belgium*

- Built a multi-agent system to automate unit and regression testing for large-scale automotive control models (200+ subsystems), achieving 95+% structural coverage on target subsystems.

Dillen Technologies *May 2025 – Aug 2025*
Backend Engineer Intern *Hasselt, Belgium*

- Improved platform reliability by implementing 100+ unit tests and 10+ integration tests as part of the CI/CD pipeline.
- Developed 20+ RESTful API endpoints integrated with GCP (Auth0, Gmail API, Pub/Sub), doubling available email providers.

ASML *Nov 2024 – Apr 2025*
Formal Verification Engineer Intern *Veldhoven, Netherlands*

- Designed a standalone proof of concept with a C++ formal verification tool to evaluate integration into a 5M+ LOC codebase, targeting 100% message ordering consistency in multi-threaded controllers.
- Presented formal verification feasibility results to 100+ engineers to support evaluation of larger-scale adoption.

Mobile Vikings *Jul 2024 – Aug 2024*
Frontend Engineer Intern *Hasselt, Belgium*

- Enabled 100+ employees to run autonomous product tests by building a responsive Next.js/React/TypeScript dashboard.
- Designed a graph-based dependency algorithm for efficient toggle enable/disable propagation.

Selected Achievements & Projects

Cryptographic Protocol Benchmarking (Paper In Progress) – [GitHub] *May 2025 – Present*
Research Paper – Eindhoven, Netherlands

- Achieved a 20% performance gain over CPace (co-developed by IBM Research) by benchmarking the Protoss PAKE protocol across Rust, C++, and Python using OpenSSL, Libsodium, and Dalek-Rust.

1st Place, WAIB Summit Hackathon – [GitHub] *Nov 2025*
Web3 & AI Competition – Leuven, Belgium

- Won 1st place among 80+ onsite competitors in a 24-hour challenge by implementing invisible document fingerprinting (PDFs, images, audio) with blockchain-backed authorship verification.