David **Mödinger**, PhD

SOFTWARE ENGINEER · COMPUTER SCIENTIST

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Work Experience

Autovia GmbH
Fully Remote

PLATFORM ENGINEER - PYTHON, RUST — *Jan. 2025 - Today*

- Designed and developed key components of a secure data-analysis platform for a highly regulated defense-sector client, delivering production-ready software under strict operational and security constraints.
- Modernized and refactored a Flask-based portal application, replacing ad-hoc prototype code with maintainable, well-structured components and introducing proper engineering practices, testing, and architecture.
- Implemented a Git-backed workflow interface for Argo Workflows, enabling users to manage executions using a .workflows/ directory pattern similar to GitHub Actions; built the control logic and namespace wiring in the platform's management layer.
- Delivered multiple platform features, significantly improving developer and data-scientist experience.
- Contributed to internal prototypes for a Kubernetes data-analysis product using Rust, exploring architectural options and producing proof-of-concept implementations.

Everest Systems
Heidelberg, Germany

SOFTWARE ENGINEER - TYPESCRIPT, RUST — *Feb. 2023 - Dec. 2024*

- Led the technical design and development of key features, working closely with management and stakeholders to ensure alignment with business goals and efficient execution.
- Key achievements: Spearheaded the optimization of the installation process, reducing installation time by 60% (from 80min to 30min), significantly improving deployment efficiency and reducing support overhead.
- Key achievements: Developed and deployed a streamlined data transport solution, enhancing internal workflows and accelerating application deployment cycles, enabling faster and more reliable updates for customers.
- Collaborated with internal teams to support developers in writing migrations for structural changes, ensuring smooth transitions during updates and reducing development time.
- Organized team and discussion meetings during lead absence, providing guidance and support to junior developers, fostering a collaborative and productive working environment.

TeSolva GbR
Fully Remote

SOFTWARE ENGINEER - JAVA, TYPESCRIPT, PHP — *Mar. 2022 - Jan. 2023*

- Led the end-to-end development of green-field features, delivering innovative solutions tailored to client needs.
- Enhanced and secured an in-house system by redesigning critical components, improving security and deployment capabilities.
- Collaborated closely with stakeholders to gather, define, and refine technical requirements, ensuring alignment with business goals.
- Mentored and guided junior developers, fostering their technical growth and enhancing overall team productivity.

Ulm University
Ulm, Germany

RESEARCH SCIENTIST - PYTHON, C++, TYPESCRIPT, JAVA — *Aug. 2015 - Jul. 2021*

- Developed multiple research prototypes both independently and in collaboration: Sorrir, netsim2, coinview, btcmon and pricloud.
- Conducted in-depth data analysis of real-world observations and simulation-based results such as eta-adaption, providing key insights into real-world systems for research and optimization.
- Authored and presented 15 peer-reviewed journal, conference, and workshop papers, showcasing innovative research. Full publications available at ketzu.net/science.
- Supervised and mentored 5 students in thesis projects, while hiring and managing over 20 research and teaching assistants annually, enhancing the department's research capabilities and improving academic outcomes.

Sole Proprietor
Ulm, Germany

FREELANCE CONSULTING AND DEVELOPMENT - C#, JAVASCRIPT, PHP, PYTHON, RUST — *2016-2022*

- Collaborated closely with clients to gather and define project requirements, provide cost and time estimates, and deliver timely feedback, ensuring alignment with goals and expectations.
- Managed and maintained client web presences, providing regular updates, performance optimizations, and implementing scalable solutions to improve user engagement and site functionality.
- Designed, developed, and published multiple video games on platforms such as Steam, showcasing creativity and building technical expertise in game design and development.

Ulm University
Ulm, Germany

RESEARCH ASSISTANT - PYTHON, C++ — *Apr. 2014 - Oct. 2014*

- Contributed weak-Popov form matrix operations to the open-source python math system Sage.

Education

PhD in Computer Science *Ulm, Germany*
Institute for Distributed Systems *2021*

Specialization in cryptography and data analysis for privacy protocols in peer-to-peer networks. Authored 15 peer-reviewed publications in journals and conferences, contributing to advancements in privacy-preserving technologies and distributed systems.

You can find a list of and preprints of all my publications online on my website ketzu.net/science.

Key Thesis Publications

2021	Statistical privacy-preserving message broadcast for peer-to-peer networks,	*PLOS One*
2020	3P3: Strong Flexible Privacy for Broadcasts,	*IWCSS 2020*
2020	Unobtrusive monitoring: Statistical dissemination latency estimation in Bitcoin's P2P network,	*PLOS One*
2018	A flexible network approach to privacy of blockchain transactions,	*ICDCS 2018*

M.S. in Computer Science *Ulm, Germany*
Ulm University *2015*

Focus on computer security with a minor in psychology. Developed a thesis on coding theory, which resulted in a published academic paper.

B.S. in Computer Science *Ulm, Germany*
Ulm University *2012*

Minor in mathematics, with a strong foundation in computational theory and algorithms.

Skills

Languages

Communication

German: Native. English: Fluent. Korean & French: Basic.

Programming Languages

Proficient

Python, TypeScript, C++, JavaScript, Rust, Java, SQL.

Software & Tools

In daily use

Git. Docker, Kubernetes. Bash, Powershell. SQLite, Postgres. GitHub, GitLab, Traefik. LaTeX.