

Teoman Köylüoğlu | Curriculum Vitae

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Education

- **KTH Royal Institute of Technology** **Stockholm**
Degree Programme in Information and Communication Technology 2022–2027
BSc ICT, MSc Computer Science
- **KTH Royal Institute of Technology** **Flemingsberg**
Technical Preparatory Year (Foundation Year) 2020–2021
- **NTI Gymnasiet Stockholm** **Stockholm**
Upper Secondary School Programme in Electrical Engineering 2015–2018
Specialisation in Computer and Communication Technology

Bachelor's Thesis

- **KTH Royal Institute of Technology & RISE Research Institutes of Sweden** **Stockholm**
Zero Self-View Latency: An Implementation of Conflict-Free Replicated Data Types 2025
Bachelor's thesis (15 ECTS) in distributed systems and state synchronization, investigating operation-based Conflict-Free Replicated Data Types (CRDTs) for local-first updates and eventual consistency. Designed and implemented a benchmarking environment comparing client-server and distributed architectures, demonstrating reduced client-perceived latency with consistent system state.

Work Experience

- **KTH Royal Institute of Technology** **Stockholm**
Teaching Assistant (Amanuensis) 2024–
I work as a teaching assistant in several courses—covering discrete mathematics, formal logic, relational databases, object-oriented design, and interaction programming—and serve as the lead TA in one of them. I contribute to course development, maintain and improve testing and programming environments, lead exercises and seminars, and supervise and grade laboratories and projects.
- **Parkskolan** **Municipality of Solna**
Leisure-Time Teacher / Childcare Assistant 2019–2022
During my time at Parkskolan, my responsibilities included conflict management, communication, and pedagogy. As both an educator and leisure-time teacher, I actively contributed to children's development. In my work with students with disabilities, I focused on promoting structure, clarity, and safety in environments that might otherwise be challenging or unstable.
- **IT Gymnasiet** **Flemingsberg**
Network Technician – IT Department (Internship) 2017–2018
As a network technician within the IT department, I was responsible for maintaining a well-functioning network infrastructure for the school's operations. Tasks included installing server racks, configuring switches, structured cabling, and general network setup. We developed and maintained a robust network environment for the school's primary networking lab used in instruction.
- **Arenabolaget Friends Arena** **Municipality of Solna**
Facility Technician – Maintenance Work June 2017
Assisted with troubleshooting, installation, cabling, and general technical maintenance at Friends Arena.

Technical and Personal Skills

- **Programming Languages:** Java, C, C#, C++, JavaScript, TypeScript, Assembly, Prolog, Python
- **Backend & Distributed Systems:** Spring Boot, RESTful APIs, client-server architectures, distributed systems fundamentals
- **Databases & Data Systems:** PostgreSQL, relational database design, JDBC, Spark, Kafka
- **Computer Science Foundations:** algorithm design, data structures, complexity analysis, object-oriented design
- **Web & Application Development:** React, Redux, Node.js, Express.js, MobX, React Native
- **Systems & Tools:** Linux/WSL, Git, Docker, Maven, Bash, PowerShell, networking fundamentals, JUnit, JIRA, Agile/Scrum workflows, CI/CD (GitHub Actions)
- **Modeling & Formal Methods:** UML, Astah, formal logic, model checking
- **Languages:** Swedish (native), English (fluent), Turkish (mother tongue).

Projects and Activities (Details available on GitHub)

- **MenuMatic Backend**
 - A backend system for managing digital menus and related domain entities, implemented in Java using Spring Boot. The project includes RESTful APIs, layered application architecture following MVC, and persistence using relational databases. Focus areas include backend system design, data modeling, and maintainable service-oriented development.
- **SoundGood Music School**
 - A project focused on efficient database management for students, teachers, and instruments at a music school. Implemented using relational database design, normalization, and development of both OLTP and OLAP queries with JDBC for practical data access.
- **Model Checking for CTL**
 - An advanced model checker developed using temporal logic and Prolog to evaluate the correctness of complex systems and prove logical properties, such as ensuring that invalid system calls are always identified as faulty.
- **Proof Checking in Natural Deduction**
 - An automated proof checker in propositional logic for natural deduction, allowing users to verify logical sequents without manual proof construction.
- **Pong**
 - A recreation of the classic *Pong* game combining low-level programming in C and MIPS Assembly with hardware integration via an I/O shield. The game was visualized and played interactively by two players on a chipKIT Uno32 Arduino platform.

References Available Upon Request
