Curriculum vitae: Mehmet Tosun

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Nationality: Swiss

EDUCATION

ETH Zürich *Zurich, Switzerland*
Bachelor of Science in Computer Science Graduating in 2027

- **Relevant Coursework:** Computer Systems (Operating System + Distributed System), Systems Programming and Computer Architecture, Algorithms and Data Structures

SKILLS

- **Programming Languages:** Java, C, C++, Python, Haskell, OCaml
- **Libraries & Frameworks:** PyTorch, scikit-learn, Pandas, NumPy
- **Systems & Infrastructure:** Linux, Docker, Git
- **Networking:** BGP, OSPF, FRR, DNS
- **Tools:** VSCode, Vim
- **Database:** PostgreSQL

PROJECTS

Dynamic Memory Allocator | C
- Architected a custom heap memory manager, providing the core functionality of malloc, free, and realloc
- Managed memory blocks through efficient tracking and merging strategies to optimize space
- Developed understanding in low-level pointer arithmetic and a rigorous approach to ensuring memory safety and preventing corruption

Compiler Engineering | OCaml
- Developed a compiler for the Oat language in a two-person team, translating high-level source code into executable x86Lite
- Built a multi-stage pipeline using OCaml, including a frontend for LLVM IR generation and a backend for machine-specific resource management
- Gained a deep understanding of how high-level logic is transformed into hardware instructions and the management of complex data structures in functional programming

Network Engineering & Routing | Python, FRR, Kathara
- Simulated a large-scale internet-like network architecture with multiple autonomous systems
- Configured dynamic routing protocols (BGP, OSPF) and implemented traffic policies to manage data flow between providers and customers
- Learned how global internet routing works and how to diagnose complex connectivity issues in distributed environments

Applied Machine Learning | Python, PyTorch, scikit-learn, Pandas, NumPy
- Built and trained various supervised learning models, including linear/logistic regression and neural networks, applying them to tabular and image datasets
- Prepared datasets by handling missing values and encoding categorical features, then performed hyperparameter tuning to optimize model accuracy
- Strengthened understanding of machine learning concepts such as regularization and model selection

ADDITIONAL INFORMATION

- **Interests:** Dancing (salsa / bachata), boxing / sparring