Jonathan Tybirk

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Profile

I'm a BSc Artificial Intelligence and Data student at DTU with a focus on applied AI and software engineering. I have built AI systems, enterprise applications, and embedded software, spanning academic, industry, and student rocketry contexts.
I enjoy teaching, and I've worked as a Teaching Assistant in multiple courses.
At DanSTAR, I contribute to technical rocket development as a software team member and organizational leadership as Treasurer and Board Member.
I'm motivated by ambitious projects that demand both technical depth and teamwork.

Education

BSc Artificial Intelligence and Data, Technical University of Denmark
September 2023 – present

- **GPA: 10.8**
- 1st place finisher in the 2025 Danish National Student Championship in AI
- 2025 Summer exchange at Nanyang Technological University, Singapore

Experience

Software Developer (Analyst), Netcompany
May 2025 – present

- Developing the new NemKonto for Digitaliseringsstyrelsen
- Work has included **React** frontend pages and **Java Spring Boot** backend services, **SQL** database integrations, and **XSD/XML** interfaces with external companies
- Designing, implementing, testing, and reviewing features across the stack

Mission Control Developer, Danish Student Association for Rocketry
September 2024 – present

- Contributed to the Mission Control System in **C#**, implementing a **TCP** protocol for real-time communication with the flight computer and redesigning the logging system
- Currently working on embedded software for the rocket Flight Computer in **C++**

Teaching Assistant, Technical University of Denmark
January 2024 – May 2025

- Taught 120 students *Computer Programming* as Assistant Lecturer
- Supervised students on deep reinforcement learning, convolutional neural networks, and latent text embeddings
- Taught practical data science programming with **pandas**, **SciPy**, and **scikit-learn**

Projects

Emergency Healthcare RAG system (~ 40 hours)
August 2025

- Retrieval-augmented system to classify medical statements under strict runtime and memory constraints as one of 3 tasks for DM in AI 2025
- The solution scored the top result in the competition, and my team *Powered by SmartFridge* went on to become national champions
- Use of **local LLMs**, **Okapi BM25**, and **Bayesian hyperparameter optimization**

Graph Neural Networks for Center-of-Mass Estimation (~ 250 hours)
February – June 2025

- Academic project on the strengths of learned vs. enforced equivariance in GNNs for predicting physical object properties from **LiDAR** point clouds
- Training and benchmarking of an **SE(3)-Equivariant** GNN vs. **data-augmented** GNN and geometric baselines
- Result: comparable accuracy for data-augmented GNN and SE(3)-EGNN

Technical skills
Python / PyTorch / LangChain
TypeScript, React, Node.js
Java / Spring Boot
C# / .NET
C++ / STM32
SQL / PostgreSQL
Git, Docker, GitHub Actions
Azure, Google Cloud

Languages
Danish, native
English, fluent
Spanish, basic

Additional qualifications

- Chairman of the student council for 250 students at *Gymnastikhøjskolen i Ollerup*. I improved efficiency by delegating responsibilities to small task groups.
- Certified personal trainer, having worked with regular people to promote health and an optimistic outlook through exercise and nutrition.
- Cultural insight from solo-backpacking many times across Europe. I like working with international and diverse groups of people.
- 4-month army enlistment on Bornholm. This taught me to teamwork effectively even under stressful conditions.
- Experience performing music as guitarist and front singer - this has helped me get over a fear of public speaking.
- Great joke-teller according to my programming students!