ÖMER TAHA GÖGEN

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Education

Hacettepe University **Sep 2022 – June 2027**

Bachelor of Science in Computer Science, GPA: 3.53 / 4.00 *Ankara, Türkiye*

- **Relevant Coursework:** Data Structures & Algorithms, Object Oriented Programming, Machine Learning, Database Systems, System Programming, Computer Organization, Formal Languages, Linear Algebra, Probability & Statistics.

Experience

Hacettepe University Data Science Bio Lab **Oct 2025 – Present**

Undergraduate Researcher *Ankara, Türkiye*

- Built end-to-end **machine learning pipelines** involving **NLP** and **large language models (LLMs)**, applying both **supervised and unsupervised** learning techniques.
- Conducted comparative experiments, **hyperparameter optimization**, and systematic performance evaluation across models.
- Analyzed and benchmarked **academic research papers** (NLP, representation learning, embeddings) and translated theoretical methods into practical, reproducible implementations.

Bluesense **Aug 2025 – Sep 2025**

Data Science & AI Engineering Intern *İstanbul, Türkiye*

- Applied **ML/DL techniques** for attribute classification and explored **LLM-based methods** to enhance recommendation performance.
- Built and optimized **Automation pipelines** in **Python** for large-scale data acquisition and cleaning, reducing processing time per record by **66%**.
- Researched **Recommendation Systems** including collaborative, content-based, and hybrid models.

Selvi Technology **July 2025 – Aug 2025**

Software Engineering Intern – *Sensor Fusion & Robotics* *Ankara, Türkiye*

- **Radar Perception Pipeline:** Engineered a data processing pipeline for **3,000+ frames** of raw sensor data using **Pandas** and **scikit-learn**. Implemented **DBSCAN clustering** and signal filtering to minimize noise and track objects with **95% accuracy**.
- **Real-time System Integration:** Designed a multithreaded **Linux-based** architecture using **ROS** to synchronize heterogeneous devices (Jetson, Pixhawk). Resolved critical **serial communication** latencies and validated system performance in **Gazebo** simulations.

Projects

Personal Music Recommendation System | *Hacettepe R&D Team, Python, ML*

∗ Developing a **personalized music recommender** using clustering and content-based filtering on audio features.
∗ Implemented end-to-end pipeline for **feature extraction, similarity computation**, and evaluation.

LLM-powered Automation Pipeline | *Python, LLMs, Regex, Automation*

∗ Designed a **hybrid automation pipeline** combining **template- and regex-based retrieval** with **LLM-based reasoning** for structured information extraction and task automation.
∗ Structured inputs using predefined **data templates** and applied **LLM-driven decision logic** to enable context-aware automated workflows.

Comparative Analysis of CNN Architectures | *CNN, Python, PyTorch*

∗ Designed and implemented an end-to-end **image classification pipeline** in **PyTorch**, including a **custom CNN** architecture and transfer learning with **ResNet** and **MobileNet**.
∗ Performed a systematic **architecture comparison**, achieving **98% accuracy** with the custom CNN and **99%+ accuracy** using pretrained ResNet models, and analyzed **performance–complexity trade-offs**.

Sentiment Analysis with LSTM | *Python, PyTorch, NLP*

∗ Implemented a **sentiment classification model** on the IMDB dataset using a **custom LSTM** architecture developed from scratch in **PyTorch**.
∗ Built the complete **NLP preprocessing pipeline**, including tokenization, vocabulary construction, and sequence padding, achieving **95.7% classification accuracy**.

Technical Skills

Languages: Python, **C++** (STL), SQL, Bash Scripting, Java (OOP)
AI & Data Science: PyTorch, GNNs, OpenCV, Pandas, NumPy, Scikit-learn
Systems & Tools: Linux, Git, Docker, ROS, GCC/GDB, NVIDIA Jetson, Qdrant (Vector DB), RAG
Research Interests: Computer Vision, High Performance Computing, Graph Learning, Sensor Fusion

Extracurricular

Algorithm Competition Summer Camp (C++) **Summer 2025**

*Participant & Intermediate Contest Winner (**1st Place**)* inzva, algoleague

∗ Selected for a **national-level algorithm camp** gathering **top 50 students** from across Turkey.
∗ Attended **daily algorithmic lectures**, **intensive problem-solving sessions**, and **team-based coding challenges**.
∗ Achieved **1st place** in the Intermediate Final Contest, demonstrating strong collaboration and algorithmic thinking.