ÖMER TUĞRUL

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EDUCATION

Bachelor of Science - Electrical and Electronics Engineering Expected 2025
Bilkent University **GPA: 3.69/4.00**
Honors and Awards: Merit Scholarship, High Honor Roll
Relevant Coursework: Programming with Python, Database Systems Management, Linear Algebra, Probability and Statistics, Statistical Methodology, Statistical Learning and Data Analytics, Machine Learning. Data Science, Deep Generative Networks

High School 2015-2020
Kabataş Erkek Lisesi **Grade: 91.96/100**

EXPERIENCE

Undergraduate Researcher March 2024 - Present
Bilkent University *Ankara, Turkey*

- Working on enhancing the reasoning capabilities of large language models under the supervision of Prof. Dr. Süleyman Serdar Kozat.
- Research papers were implemented using Ollama, LangGraph, and Huggingface.

Research and Development Intern Jul 2023 - Aug 2023
ARÇELIK A.S. *Tekirdağ, Turkey*

- Contributed to the development of large-scale LED displays and designed a controller for operating these displays using an FPGA board.

Embedded Software Engineer Intern Aug 2022 - Sept 2022
ALPPLAS A.S. *Istanbul, Turkey*

- Lead trainee engineer responsible from Raspberry Pi Pico series microcontroller boards; Developed embedded system applications for the Raspberry Pi Pico series

FPGA Intern Jun 2022 - Aug 2022
Istanbul Technical University Embedded System Design Laboratory *Istanbul, Turkey*

- Designed multiple FPGA applications in VHDL, including the implementation of communication protocols.

PROJECTS

SWaTGAN: Sliding Window Attention for Efficient Image Generation:

- A novel architecture SWaTGAN employs sliding window attention (SWA) to efficiently capture local and long-range dependencies, enhancing image generation.
- Evaluated against TransGAN and DCGAN on the CelebA dataset, demonstrating superior efficiency and balanced performance. (Paper Available here)

CycleGAN Paper Implementation:

- Unofficial Pytorch implementation of "Unpaired Image-to-Image Translation using Cycle-Consistent Adversarial Networks" paper. (Available here)

Breast Cancer Classification:

- Project focuses on classifying breast cancer into benign or malignant categories.
- Implements all machine learning algorithms from scratch, without relying on ML libraries. (Available here)

Bird Species Classification:

- This project employs a range of algorithms including Multinomial Logistic Regression, Random Forest, Convolutional Neural Networks (CNN), and Transfer Learning with models such as EfficientNet-B0 and ResNet-50.
- Incorporates extensive data preprocessing and augmentation techniques to improve the models performance. (Available here)

Image Encryption Processor:

- The project focuses on designing a 32-bit VHDL-coded processor for image encryption, displaying encrypted images on a monitor via VGA. (Video Link)

Smart Double Door System:

- I developed a smart double door system using the KL25z Freedom Board, featuring motion detection, Bluetooth connectivity, manual joystick operation, and alarms, all coded in C. (Video Link) (Available here)

Online Funding System:

- Developed a Kickstarter-like desktop app with PySimpleGUI and SQLite. (Available here)

SKILLS

Programming Languages:	Python, C, SQL, VHDL, MATLAB, LaTeX
Technical Skills:	PyTorch, HuggingFace, LangChain/LangGraph, NumPy, Pandas, Scikit-learn, SQLite
Language Skills:	English: Advanced, German: Intermediate, Turkish: Mother-Tongue

VOLUNTEER WORK

Best Buddies Buddy Pair: Sep 2017 - Jun 2018

As a volunteer in the Best Buddies program, I was part of a Buddy Pair, actively supporting people with disabilities. My role included organizing weekly meetings and participating in various events organized by the program.

TOFD: Oct 2018 - Jan 2019

Volunteering at the Spinal Cord Paralytics Association of Turkey involved tasks like collecting plastic bottle caps to aid in providing wheelchairs and engaging in social activities with association members.

LICENSES AND CERTIFICATIONS

Licensed Basketball Player Turkish Basketball Federation

DSD-1 (Verein Deutsche Sprache e. V.)

Neural Networks and Deep Learning DeepLearning.AI (See here)

Python for Machine Learning & Data Science Masterclass Udemy (See here)

LangChain with Python Bootcamp Udemy (See here)