

Kuntay Yilmaz

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EDUCATION

Hacettepe University

Bachelor of Science in Artificial Intelligence Engineering

Turkey

Expected Graduation: June 2027

- **GPA:** 3.51
- **Relevant Coursework:** Deep Learning, Machine Learning, Data Science, Differential Equations

EXPERIENCE

Research Intern

METU NLP Research Group

July 2025 – August 2025

- Researched state-of-the-art **polygon-based building-extraction models** (HiSup, SamPolyBuild, P2PFormer) for **aerial/satellite imagery** under the supervision of Asst. Prof. Dr. Cagri Toraman.
- Conducted a **small-scale evaluation** on aerial images to inform **model selection**.
- Integrated the top-performing model into a **Django-based data-annotation platform**, enabling **model predicted building polygons** that reduced manual polygon labeling time.

PROJECTS

Neural Physics Engine (NPE) [GitHub]

November 2025

Technologies: PyTorch, Python, Pymunk

- Re-implemented the ICLR 2017 paper *"A Compositional Object-Based Approach to Learning Physical Dynamics"* to predict object interactions and trajectories.
- Developed both the **classic NPE** architecture and a **modern variant** with residual connections and layer normalization, training on 200M+ samples generated via **Pymunk**.
- Implemented an **autoregressive rollout evaluation** pipeline, visualizing ground truth vs. predicted physics simulations side-by-side.

ResNet-50 Implementation for CIFAR-10 [GitHub]

September 2025

Technologies: PyTorch, Python

- Implemented a **ResNet-50** from scratch (bottleneck blocks, BatchNorm, residual connections).
- Built a reproducible training/evaluation pipeline with **augmentations**, **mixed-precision**, and **learning-rate scheduling**. Achieved **94.8%** test accuracy on **CIFAR-10**.

Fine-Tuned GPT-2 (124M) for Shakespearean Text [GitHub]

November 2024

Technologies: PyTorch, Python, Hugging Face

- Fine-tuned a pretrained GPT-2 124M model using **PyTorch** and the **Hugging Face** Transformers library on the **Tiny Shakespeare** dataset to generate stylistically accurate Shakespearean text.
- Optimized training performance by techniques such as **gradient accumulation**, **learning-rate scheduling**, and mixed-precision training (**BF16**) to enhance computational efficiency.

2D Game Engine with a Space Shooter Prototype [GitHub]

June 2024

Technologies: C++, SFML, Box2D, CMake

- Developed a custom 2D Game Engine using **C++** and **SFML** for rendering and integrated an open-source physics library to handle collisions.
- Demonstrated engine capabilities through a space shooter prototype, implementing core gameplay elements such as player controls and enemy spaceships.

ACHIEVEMENTS & ACTIVITIES

Algorithm Competition Winter & Summer Camp 2025

2025

- Ranked **1st** in a team contest among **23** students at a one-week-long algorithm camp organized by **Inzva** in 2025.
- [Contest Link](#)

TECHNICAL SKILLS

Languages & Tools: Python, C, C++, OpenGL, Git

Frameworks & Libraries: PyTorch, OpenCV, NumPy, pandas, Matplotlib

Topics of Interest: Real-Time Graphics, 3D Vision, Deep Learning