Alibay Osmanli

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About Me

I am a recent graduate from Koç University, where I earned a Bachelor's Degree in Computer Engineering with a 50% scholarship. Originally from Azerbaijan, I completed my high school education at Diyanet High School, one of the top-performing schools in the country. My passion for technology and innovation led me to pursue higher education in Turkey, where I started my academic journey in September 2020 and graduated in June 2024. In the fall of 2024, I began my Master's in Artificial Intelligence at Queen Mary University of London, furthering my expertise and commitment to the field of AI.

Education

- **Queen Mary University of London** MSc Artificial Intelligence (Stream: Computer Vision and Robotics) (2024 – Present)

- **Koç University** BSc Computer Engineering (2020 – 2024) GPA: 2.89

Experience

- **Azersun Holding** Software Development Intern (July 2022 – August 2022) Contributed to internal tools development by implementing new features and optimizing existing systems.

- **Uniser Group PLC** Angular Frontend Intern (July 2023 and September 2023) Developed responsive and dynamic web applications using Angular framework.

- **Payriff CJSC** React Frontend Intern (August 2023) Built user-friendly interfaces and implemented API integrations for payment systems.

Projects

- **Augmented Reality Indoor Navigation**
  Designed and developed an AR-based navigation application for campus buildings, leveraging feature extraction and real-time spatial data processing to improve user experience.

- **COVID-19 Detection from CT Scans**
  Built a machine learning pipeline to classify COVID-19 from CT scans, addressing challenges such as data imbalance and feature generalization. This project enhanced my skills in medical imaging and robust ML model development.

- **Object Detection in Dynamic Environments**
  Developed algorithms for object detection in road environments, focusing on accurate recognition of small and distant objects to ensure precise car counting.

- **Uncertainty-Guided Learning in Medical Image Segmentation (MSc Thesis)**
  Exploring methods to improve segmentation models by incorporating uncertainty estimation, enhancing reliability and interpretability in medical applications.

- **Colon Tissue Image Classification**
  Developed a deep neural network classifier using transfer learning to classify colon tissue images. Fine-tuned a pretrained CNN to achieve high accuracy on the dataset, demonstrating expertise in leveraging computational resources for effective model training.

- **Heart Segmentation Using UNet**
  Constructed and trained a UNet model from scratch for heart segmentation using the Heart dataset. Optimized the network to achieve precise differentiation between heart and background pixels, showcasing proficiency in semantic segmentation tasks.

- **Cell Detection and Segmentation**
  Designed an algorithm to detect and segment cells in live-cell images of the CAMA-1 cell line. Processed multi-file image data to accurately identify and segment cellular structures, highlighting advanced image processing skills.

- **Image Transformations for Data Augmentation**
  Implemented functions to apply geometric transformations, including rotation and skewing, for data augmentation. Analyzed the effect of operation order on image quality and completeness. This project enhanced my understanding of transformations in computer vision.

- **Kernel-Based Convolution for Image Filtering**
  Developed a convolutional filter function for image processing using custom kernels. Designed and applied smoothing, edge-detection, and sharpening filters to enhance image features, evaluating sequential filtering operations for effectiveness.

- **Histogram-Based Video Segmentation**
  Created a color histogram-based approach to analyze video frames. Computed and normalized histogram intersections to detect scene changes, evaluating robustness and limitations for dynamic scene analysis.

- **Texture Classification with Local Binary Patterns (LBP)**
  Extracted LBP-based feature descriptors for texture classification by dividing images into windows and computing histograms. Applied these descriptors to classify datasets into categories such as faces and non-faces, exploring window size impacts on accuracy.

- **Object Detection and Counting in Video Sequences**
  Designed a frame differencing-based algorithm to detect moving objects in video sequences. Developed a background subtraction method and visualized object counts over time, evaluating advantages and limitations of the approach.

Skills

- **Programming Languages:** Proficient in Python, JavaScript, and their frameworks (Angular, React). Experienced in implementing AI algorithms using PyTorch and TensorFlow.

- **Machine Learning and AI:** Expertise in Deep Learning, Computer Vision, Multimodal Learning, and Semantic Segmentation. Skilled in developing custom models and integrating uncertainty estimation for interpretability.

- **Data Engineering:** Advanced knowledge of data preprocessing, augmentation, and analysis using libraries like NumPy, Pandas, and OpenCV. Competent in handling large-scale datasets for training and evaluation.

- **DevOps and Tools:** Proficient in version control systems (Git), containerization (Docker), and cloud platforms (AWS, Google Cloud). Experienced with Jupyter Notebooks for research and development.

- **Soft Skills:** Effective communicator with strong collaboration and problem-solving skills. Adept at bridging the gap between technical requirements and end-user applications.

- **Languages:** Fluent in English, Russian, Azerbaijani, and Turkish.

Certifications

- **CompTIA Security+ Course**

- **Introduction to Artificial Intelligence by IBM**

- **Introduction to Generative AI by Google Cloud**

Relevant Coursework

- **COMP 106 Discrete Math for Computer Science:** B
- **COMP 302 Software Engineering:** B
- **COMP 306 Database Management Systems:** B
- **COMP 341 Introduction to Artificial Intelligence:** A-
- **COMP 410 Computer Graphics:** A
- **COMP 448 Medical Image Processing:** A-
- **COMP 491 Computer Engineering Design:** A
- **ECS708P Machine Learning:** 80
- **ECS709P Introduction to Computer Vision:** 80.5
- **ECS759P Artificial Intelligence:** 82.3
- **ECS764P Applied Statistics:** 67.5
- **ECS728P Advanced Robotics**
- **ECS729P Cognitive Robotics**
- **ECS795P Deep Learning and Computer Vision**
- **ECS7025P Ethics, Regulation and Law in Advanced Digital Information Processing**