



BILKENT UNIVERSITY

CS491/492 - Logbook

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Fall Semester - 2025

August

This month, as a group we talked about the general ideas and key elements of the project structure. According to the project topic, I researched which supervisor fits our project. I attended the initial meeting with Doruk Öner to convince him to be our supervisor. We defined which innovative solutions must be used to meet the needs of the logistics market. He mentioned he could help with the computer vision module.

September

In September, our focus was on finding suitable innovation experts who could provide guidance. Together with my teammates, I listed potential candidates and took responsibility for initiating communication. I reached out to Mustafa Demir via email, introducing our project and requesting their mentorship and feedback.

October

This month, we applied for the AI mentorship program. I conducted preliminary research on the innovation experts who replied to our mail. Then, we decided our innovation expert to be Ali C. Beğen since we were missing a guidance in video streaming.

November

After being selected for the AI Mentorship Program, we held our initial meeting with Onur Bıçakçı. During this meeting, he provided valuable feedback regarding the feasibility of our project and shared important insights from the logistics sector, particularly saying the constraints that require emphasis in real-world deployments. He also informed us about ongoing work in the industry on generating synthetic data for training machine learning models in the logistics domain, noting that one of his friends is actively involved in this area. He gave us his contact, and we scheduled a meeting the following month. Additionally, he recommended that we consult Alper Şen, an experienced industry engineer and academic, to validate our design choices. I attended all of these meetings and as a team we brainstormed for possible ideas. These meetings were crucial for writing our Project Specification Document.

December

This month, we had our first meeting with Ergin Selim Gönen, who has a synthetic data company in Canada. After the meeting, we decided to generate synthetic data for training our models. We also finished writing the Analysis and Requirements Report. I noted some possible scenarios with the constraints and standards part. My friends and I brainstormed ideas about possible use cases and class diagrams to explain the areas where we had not determined yet.

Spring Semester - 2026

February

I focused on making the streaming setup more stable across local and Docker environments. I adjusted deployment settings, updated stream ports, and worked on YOLO stream management. Also I searched for possible real-world datasets to train our models.

March

In March, I continued improving the overlay and simulation flow. I connected the simulation side with the YOLO output stream and helped integrate the simulation service into the frontend. I trained models from different kinds of YOLO models, and created a test environment for evaluating the performance of latency and accuracy of these models.

April

In April, I concentrated on detection quality and anomaly handling. I worked on model configurations, marker detection, event handling, and anomaly management features across the backend, frontend, simulation, and YOLO modules. With the outputs from our trained models, I prepared a frame logic flow that creates anomalies and detects boxes with ArUco barcode. Before delivering the project, we integrated our parts and tested the app under different conditions.

May

In May, I kept refining the dock-splitting and anomaly workflows. I added validation, labels, and deduplication logic, and fixed issues related to anomaly types and stream/event handling.