Role in the team

I was part of the UI/UX and machine vision teams. Since I’m on the game development track, I was responsible for designing and programming the user interface for our application. Later, I also became the main person working on dataset creation and AI integration using YOLO and SAM 2.

Technical contributions

UI/UX

I created the base layout for our app using Python and TkInter, including functionality to support multi-screen displays. I implemented fallback behavior so the app would still run properly on single-screen setups. I also combined the other parts of our system (camera feed, color vision, AI detection, simulated view, coordinate testing) into the main app. I also integrated the YOLO model into our app, partially directly from Alex’s code and partially through a subprocess for Leevi’s YOLO + UI thingy.

Color vision system

I programmed a simple hue-based color detection system that could guess the doneness of burger patties. It wasn’t particularly accurate, and I raised concerns about its effectiveness, but we decided to include it after our coach insisted.

YOLO and dataset creation

When we decided to use YOLO for burger detection, I took the task of researching how it works and what kind of data it needs. I did some early tests, worked with OpenCV for image handling, and researched dataset tools. I labelled images using LabelImg and learned how to convert them into the YOLO format.

SAM 2 integration

I set up Meta’s SAM 2 to generate segmentations from videos. This required using WSL or Linux, which I had never used before. The tool was buggy and slow, so I had to debug the setup, manually run scripts, and even write custom scripts to clean up file names and labels. In total, I created 16 separate datasets for training.

Debugging YOLO model

I tested a pre-trained YOLO model, which worked better than our initial attempts. When our custom-trained model failed to detect anything, I found alternative datasets online and shared them with our AI training lead, hoping they would perform better.

Collaboration & Problem solving

I worked closely with the UI/UX team (Eetu & Alex) and the AI team (Alex), sharing tools and scripts, and helping troubleshoot issues. Throughout the project, I attended some of the meetings with the PO. I also helped to keep our progress moving forward, despite technical issues and tool limitations.

Learning & Adaptation

Before this project, I had never worked with machine vision, AI, or dataset creation. I also had only worked once with Linux on another course in this school. I had to learn everything from scratch: setting up Linux tools, labeling images, integrating models, and debugging unusual issues (like why a camera took 45 seconds to initialize or why SAM 2 never moved forward after a specific step (because, it was going to take 5 hours on that step)). I learned a lot about persistence, and how important it is to choose the right tools and data early on (and not after wasting a month on something literally useless.