

Project Title

NPLC Website

Year Accomplished

2024

Role/Position

UI/UX Designer

Database Designer

Back-end Developer

Publication Link

<https://github.com/chaidenfoanto/Group-3---Project-NPLC>

Project Description

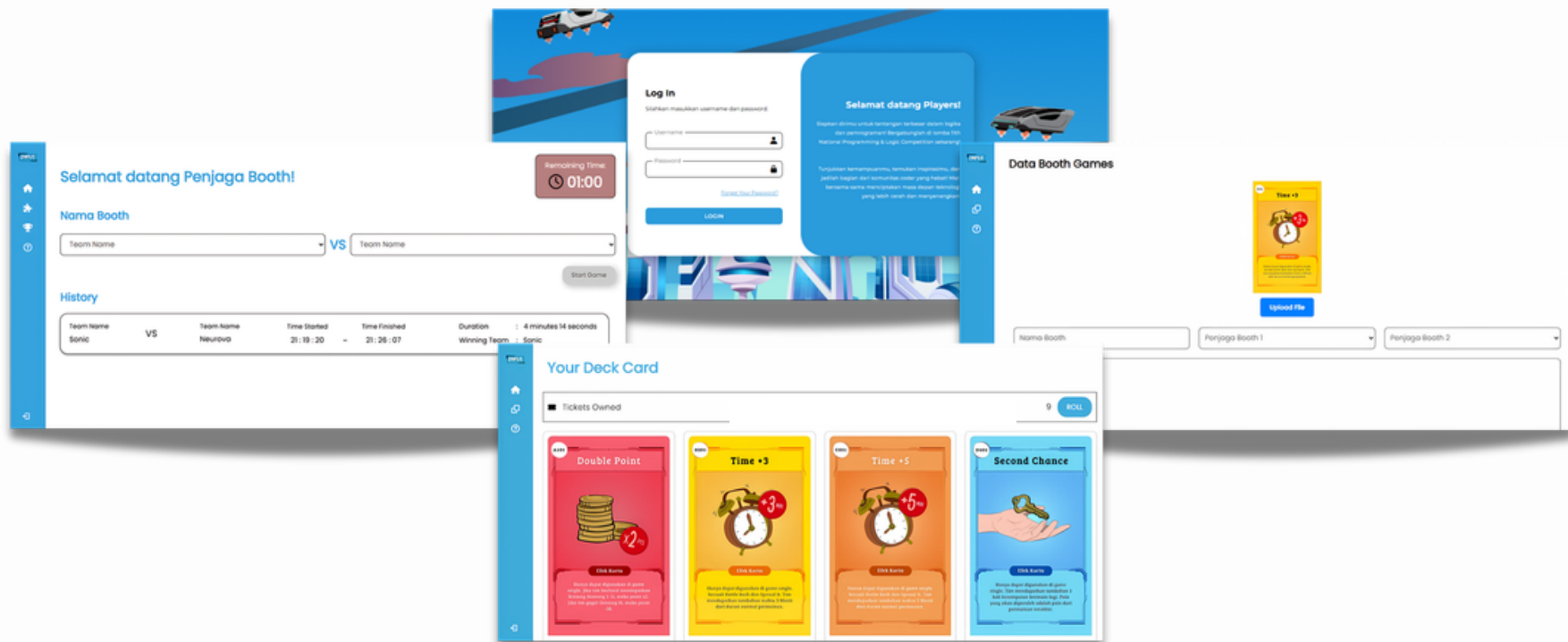
A competition management website that replaced a manual spreadsheet system with a digital solution built by the same team that ran the event.

The idea came from two things happening at the same time. We were wrapping up our second semester and needed to build a project for our Web Programming and OOP coursework, and right around that time we had just finished organizing NPLC, a national programming and logic competition held by Universitas Ciputra across two campuses in Surabaya and Makassar. During the event, one of our committee members made a human error recording participant points because everything was still being tracked on a spreadsheet. It felt like the right moment to solve something real rather than build something just for the sake of submitting an assignment.

We used Challenge-Based Learning as our framework, which kept us focused on the actual problem rather than just building features. The part I found most interesting was working on the backend with Java SpringBoot, because OOP and MVC architecture were completely new to me at the time. Learning those concepts while actively building with them was tough, but seeing how everything connected, models, controllers, and APIs talking to the frontend, made it click in a way that sitting in a lecture never would have.

We knew the system was not perfect, but solving a problem we had experienced ourselves made it feel different from a typical class project. Before this project I had no real sense of how to organize a codebase cleanly, and working with OOP and MVC for the first time showed me why structure matters especially when you are building as a team.

Project 1 of 7

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Project Title

Bantu.in

Year Accomplished

2025

Role/Position

Project Manager
UI/UX Designer
Database Designer
Front-end Developer

Publication Link

https://github.com/chaidenfoanto/Group-3_Bantu.In_BACKEND
https://github.com/chaidenfoanto/Group-3_Bantu.In_FRONTEND

Project Description

A mobile marketplace that connects homeowners with trusted, bookable technicians through an experience as smooth as ordering a ride.

The idea came from watching our parents go through the same frustrating cycle every time something at home needed fixing. They would ask around, wait, and never really know if the person showing up was someone they could trust. When we brought this up during user research, we found out a lot of families felt the same way. It was not just about availability. People were genuinely uneasy about letting a stranger into their home with no way to verify anything beforehand. That was the problem we wanted to solve.

As the team leader, I ran the team through a Design Sprint and made sure everyone had a clear lane from the start so we were not stepping on each other. I took on most of the frontend work alongside the database design and the overall user flow. One decision I made early was to integrate OpenStreetMap directly into the booking screen. Most apps just show a list, but I wanted users to actually see where their technician was coming from before confirming anything. It felt like the right answer to the trust problem we kept hearing about.

Connecting Laravel and Flutter was honestly the roughest part since neither of us had done it in a real mobile project before. A lot of the debugging came down to learning how to actually read what the API was telling us instead of just rerunning the same request and hoping for a different result. That experience taught me more about leadership too. I realized pretty quickly that delegating only works if you know the work well enough to step in when someone gets stuck.

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Project Title

Jobaile

Year Accomplished

2025

Role/Position

UI/UX Designer

Database Designer

Front-end Developer

Publication Linkhttps://github.com/chaide_nfoanto/Jobaile_BACKENDhttps://github.com/chaide_nfoanto/Jobaile_FRONTEND[D_Recruiter](#)**Project Description**

A mobile app that lets families book trusted housemaids directly, removing the broker middleman and the fees that come with it.

Before we jumped into designing anything, we put together a UX Research Study Plan first. We ran surveys and did interviews, and honestly the responses were pretty eye-opening. A lot of families had the same frustration, finding a trustworthy housemaid was harder than it should be, and going through a broker middleman just made it more expensive without making it any safer. One thing that kept coming up was that older parents were the ones dealing with the problem, but their kids were usually the ones actually searching for a solution. That meant we had two very different users to design for, and both of them needed to feel like they could trust what they were looking at.

From there we made sure every design decision we made could be traced back to something real that came out of the research. We tested wireframes with older participants early on and some things we assumed were straightforward just were not. We also wrote an Architecture Decision Record before coding anything, and that ended up saving us a lot of back and forth later when technical disagreements came up mid-project.

Seeing older participants use the final app without any help was probably the moment that stuck with us the most. It felt like proof that the research actually mattered and did not just sit in a document nobody opened again. We learned that applying User-Centered Design from the very beginning makes a real difference, because every decision you make has a reason behind it that comes from users, and the product ends up working better for everyone because of that.



Project Title

Tomato Leaf Disease
Detection

Year Accomplished

2025

Role/Position

Lead Researcher
ML Engineer

Publication Link

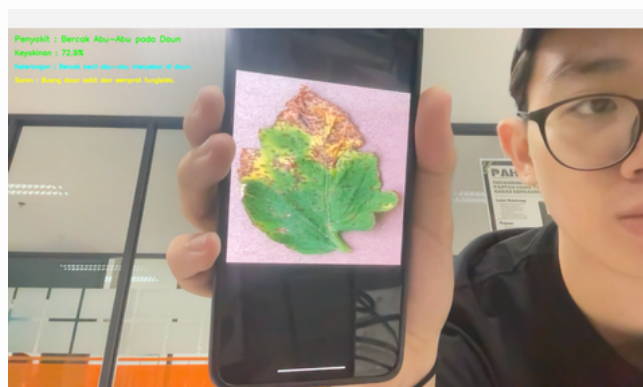
https://github.com/chaidenfoanto/Tomato_Leaf_Detection
<https://doi.org/10.51747/intro.v4i2.425>

Project Description

A real-time computer vision system that helps farmers identify tomato leaf diseases instantly by pointing a camera at a leaf.

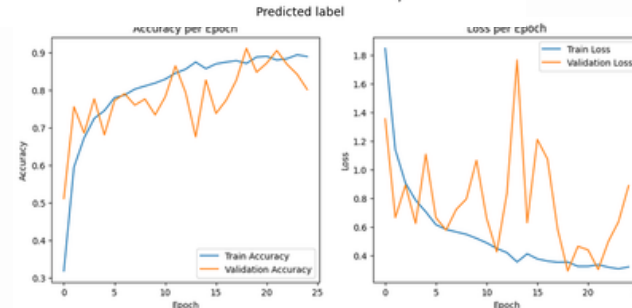
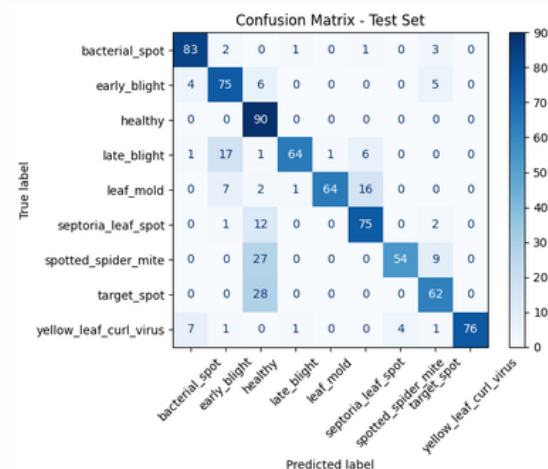
It started during a field trip to Desa Sengka, South Sulawesi, where we saw firsthand how tomato farmers struggled to catch plant diseases early enough to do anything about it. By the time the symptoms became obvious, the infection had usually already spread. There were no agricultural experts nearby, and proper lab testing was just not a realistic option for farmers working in the field every day. That visit stuck with us, and we started wondering whether pointing a camera at a leaf could actually give farmers the answer they needed on the spot.

We trained a CNN model on the PlantVillage dataset and connected it to a live camera feed using OpenCV. One thing we discovered during testing that we did not plan for was that the model would confidently make predictions even when there was no leaf in front of the camera at all. That was a problem we had to fix, so we added an HSV color filter that checks for the presence of a leaf before the model even runs. That one fix came entirely from real testing, not from any theory, and it ended up being one of the more important decisions we made in the whole project.

**Classification Report:**

	precision	recall	f1-score	support
bacterial_spot	0.87	0.92	0.90	90
early_blight	0.73	0.83	0.78	90
healthy	0.54	1.00	0.70	90
late_blight	0.96	0.71	0.82	90
leaf_mold	0.98	0.71	0.83	90
septoria_leaf_spot	0.77	0.83	0.80	90
spotted_spider_mite	0.93	0.60	0.73	90
target_spot	0.76	0.69	0.72	90
yellow_leaf_curl_virus	1.00	0.84	0.92	90
accuracy			0.79	810
macro avg	0.84	0.79	0.80	810
weighted avg	0.84	0.79	0.80	810

Seeing it work in real time for the first time was genuinely exciting. The model achieved strong classification performance across 9 disease categories with each prediction running in under a second. Getting the research published in INTRO Jurnal Informatika dan Teknik Elektro was also something we were really proud of. But what stayed with me the most was realizing that making a model perform well on paper and making it actually usable are two completely different challenges, and that second part is where the real work happens.



Project Title

PilahPilih

Year Accomplished

2026

Role/Position

Project Manager
Database Designer
Back-end Developer

Publication Link

<https://github.com/bigbosspramana/PilahPilih>

Project Description

A marketplace platform that reduces food waste by connecting farmers with buyers who prioritize quality over visual perfection, offering fresh produce at below market prices.

The idea came from something we kept seeing around us. Tons of fresh produce and seafood getting thrown away not because they had gone bad, but simply because they looked imperfect. Supermarkets would reject them on sight, and that was the end of the road for a perfectly edible harvest. We noticed that certain buyers like catering businesses and home cooks genuinely do not care what their ingredients look like, yet they had no easy way to access these products at a fair price. We were inspired by the story of Mike Yurosek, a farmer in California who turned rejected carrots into one of the best-selling snack products in America just by reframing how people saw them. We thought the same logic could work here.

My responsibility covers the backend and database design using Laravel 13, MySQL, and Redis. One of the more interesting challenges has been building the AI matching and recommendation system, which needs to read buyer interaction logs quickly without overloading the main database. That is where Redis came in, caching the interaction data so the recommendation engine can work efficiently without hitting MySQL on every request.

Building PilahPilih has been one of the more eye-opening experiences for me so far. Designing a system that handles two purchase flows, a cart checkout and a direct buy, taught me how something like Shopee actually works under the hood, and how much thought goes into making that feel seamless for the user. Working on the AI recommendation side also changed how I think about personalization, understanding how interaction logs translate into something that actually feels relevant to a specific person is not as straightforward as it sounds, and figuring that out while building it has been one of the more rewarding parts of the whole process.



Project Title

Indonesian License Plate Recognition

Year Accomplished

2026

Role/Position

ML Engineer

Publication Link

https://github.com/chaidenfoanto/Indonesian_Plate_Recognition

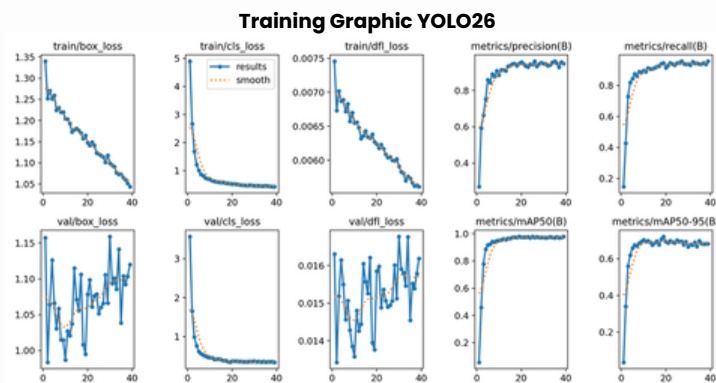
Project Description

A comparative study that tests three license plate recognition pipelines on real Indonesian plates to find out which combination of detection and character recognition works best.

The motivation behind this project came from a simple question I kept thinking about. Pretrained models for Indonesian license plate recognition already exist, but I wanted to understand what actually makes them work, and whether training my own character recognition model from scratch could do better. Indonesian plates come in different formats, lighting conditions, and distances, and I was genuinely curious whether the extra effort of building something custom would be worth it compared to just using a general-purpose OCR engine like EasyOCR.

I built and tested three different pipelines to find out. The turning point came during the third phase when I tried using my custom YOLO26 model alone as the plate detector. It completely fell apart, producing bounding boxes all over bumpers, windows, and body panels instead of just the plates. That failure made something click for me, detecting where a plate is and reading the characters on it are two fundamentally different tasks that need two completely separate models. That single realization led me to design the hybrid pipeline that combined YOLOv8 for detection and YOLO26 for character recognition.

What surprised me at the end was that the baseline YOLOv8 and EasyOCR still outperformed the hybrid I built. EasyOCR handles characters with whole-word context while YOLO26 reads each one independently, and that difference showed clearly in the results. It was an honest finding, and it taught me that building something more complex does not always mean building something better.



Final Annotation Hybrid YOLOv8 + YOLO26



Final Annotation YOLOv8 + EasyOCR



Final Annotation YOLO26 Only



Project Title

Hand Gesture Puzzle
Game

Year Accomplished

2026

Role/Position

CV Engineer
Game Developer

Publication Link

[https://github.com/chaide
nfoanto/cv-puzzle-game](https://github.com/chaide
nfoanto/cv-puzzle-game)

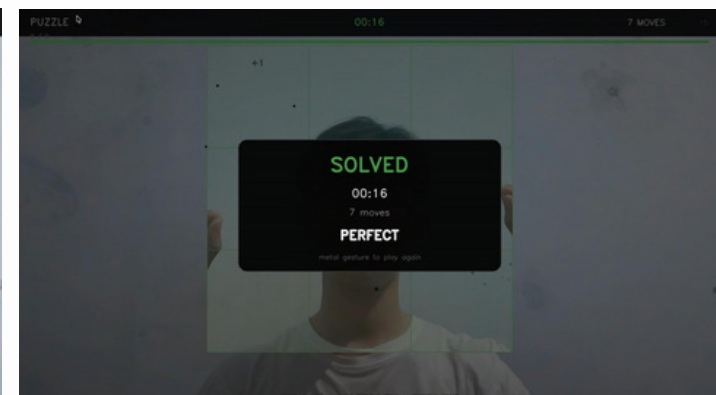
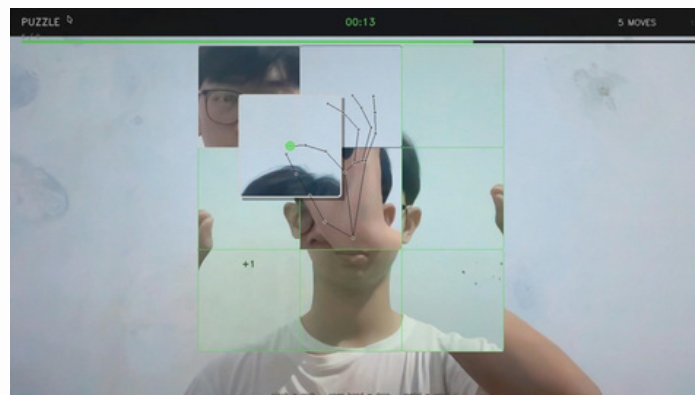
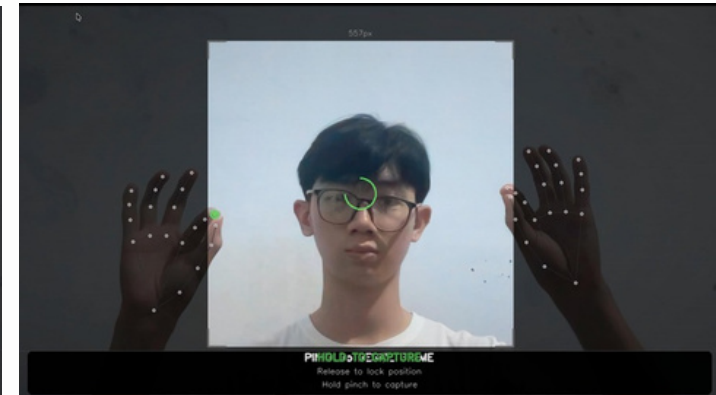
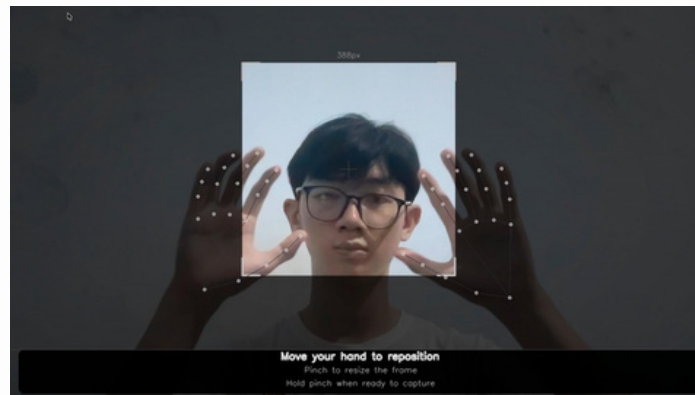
Project Description

A real-time puzzle game controlled entirely by hand gestures, where players use a live camera to capture a photo, slice it into pieces, and reassemble it using hand gesture.

The idea came from a video I stumbled across on TikTok, someone had built a hand-controlled puzzle system using a camera and it immediately caught my attention. When our Computer Vision coursework gave us the freedom to build anything, that video was the first thing that came to mind. I wanted to try building something similar and see how far I could take it on my own.

I built the whole system in Python using OpenCV, MediaPipe, and NumPy. MediaPipe handled the hand tracking and finger landmark detection, while OpenCV took care of everything visual from reading the camera feed to drawing the UI. Two things that turned out to be more challenging than expected were smoothing and debounce. Without EMA smoothing, the crop frame would jump around erratically every time the hand moved slightly. Without debounce on the pinch detection, puzzle pieces would drop randomly whenever MediaPipe lost tracking for even a single frame. Both problems were not obvious until I actually played the game myself and felt how frustrating it was.

What came out of it was a fully playable puzzle game where everything, capturing the photo, picking up pieces, swapping them, and resetting the game, is controlled purely through hand gestures. Building this taught me that the gap between something working technically and something actually feeling good to use is huge, and that a lot of the real engineering work lives in the small details like smoothing and timing that users never consciously notice but would immediately feel if they were missing.



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