



Juwon Lee — Architecture & Pipelines

System diagrams from selected projects

IoT · Hardware

AI · Vision

Web platforms

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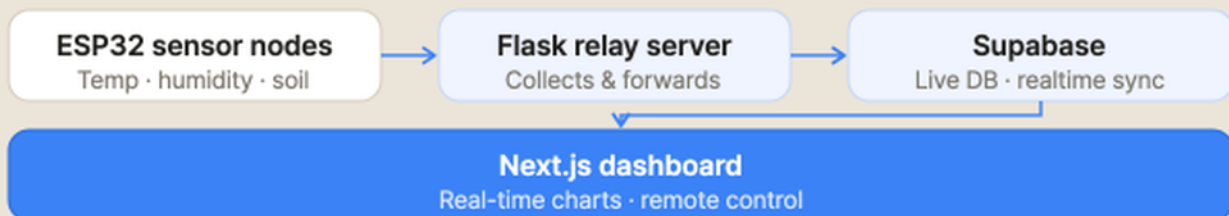


Doctor-Green

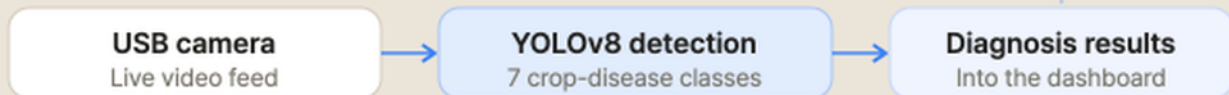
Smart-farm platform · IoT monitoring + AI crop diagnosis

☐ Hardware ☐ Server · Data ☒ Dashboard ☐ AI module

IoT live-data pipeline

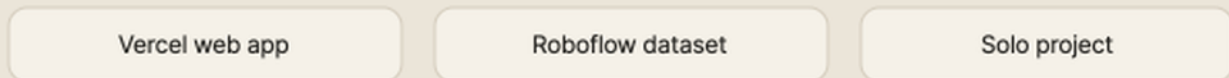


AI crop diagnosis



First training run reached mAP50 $\approx$ 0.95 across the 7 disease classes

Deployment





Raimi's AI Art Studio

Kids' AI art creation app · screen flow

☐ Screen

☐ Create mode

☒ Start · finish

☐ Global rule

• Entry · admin

App launch

URL load · kiosk

Intro

Meet Raimi · start

Home · pick mode

Blocks or Chat

Admin stats

?admin · usage stats · export

• Create · generate · result

Build with blocks

10-15 guided steps

Build by chatting

with Raimi · up to 8 turns

Generating art

Drawing + O/X quiz while waiting

↓ success

Result

Image + QR code takeaway

Review

On failure · retry

make again

• Global behavior

3-min idle → reset to intro

KO/EN language toggle

Home button everywhere



ATO · Companion & Care Robot

ESP32 hardware + multimodal AI medication care

☐ Input ☒ ESP32 core ☐ Output ☐ AI care

Inputs · interaction sensing

PIR proximity

Detects approach

Capacitive touch

Petting detection

Button

Direct commands

Core controller

ESP32 core

Arduino · C++ behavior engine

Outputs

Dual round-LCD eyes

Blink · gaze animation

Servo ears & arms

Emotive movement

DFPlayer audio

Sounds & voice

YAKMOA · medication care

Camera · multimodal AI

Recognizes the medicine

Dose schedule & reminders

Alerts at the right times

Medication care for digitally vulnerable users — ATO watches over daily doses



SEOUL RAIM

Docent work app · Information Architecture

☐ Entry · System ☐ Shared screens ☒ Manager only ☐ Sheets · Modals

• Entry · Auth

Login

ID · Password

Data loading

Skeleton screen

Role routing

Screen by permission

Login branches (conditional)

First login → password reset (init 0000)
2nd password · (dev) app / web choice

• Roles · Permissions

Docent

Full access

Part-time

Personal · status

Technician

Edit exhibits

Manager

Full + admin-PC

• Mobile app · Bottom nav

Home

Current shift card
Today's timeline
Attendance today
Count-duty banner

Notices

Tag filter chips
Must-read badge
Notice card · detail
Attachment viewer

Schedule

Personal (my shifts)
Full (ops · docent)
Group visits
Attendance sheet
Monthly calendar

Status

Silent · stamp counts
ON · OFF sharing
Today's exhibits
Exhibit status by floor

My info

Profile
Monthly activity
My leave
Inquiry · passwords
Log out

Admin · Manager only

Staff management
Counts · exhibits
Notices · schedule
AI schedule draft

• PC console · Manager (wide screen)

Dashboard

Stats · links

Schedule

Edit shifts

Notices

Compose

Status

Counts

Admin

Staff · AI

• Shared sheets · Modals (overlays)

Alerts

Count input

ON · OFF share

Exhibit issue

Edit status

Exhibit report

Fault history

Mark resolved

Assign shift

Leave record

Activity log

Change password

2nd password

Inquiry

Zoom view

Notice · file



Smart-Farm Education Program

Museum × Yangpyeong Education Office · IoT + AI curriculum



Hardware



Server · Data

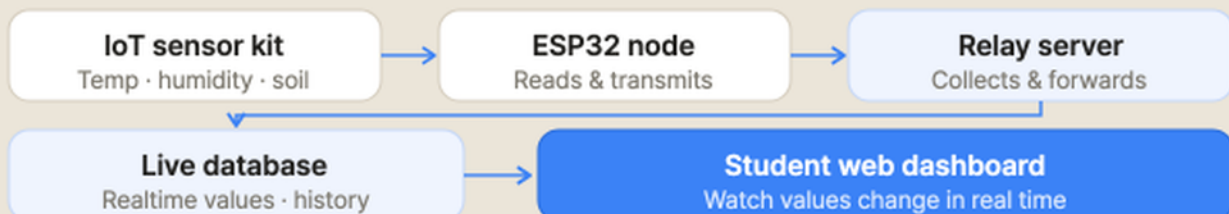


Student-facing

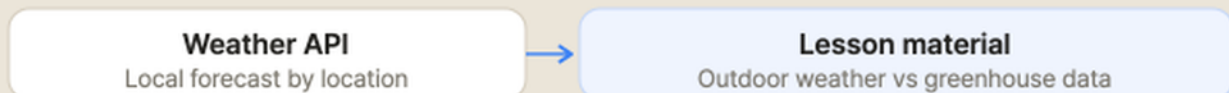


AI module

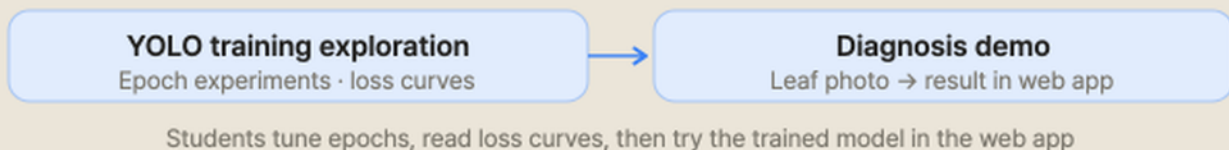
IoT live-data pipeline



Weather branch · location-based lesson data



AI module · crop-disease exploration



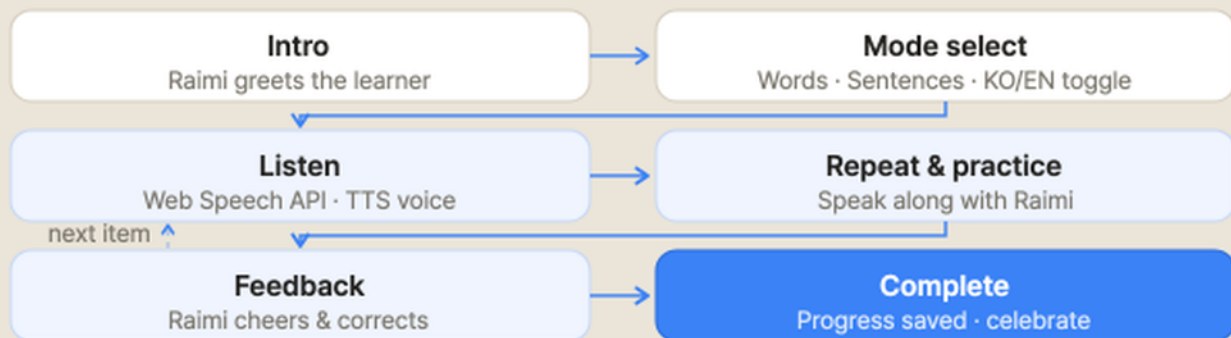


Raimi's AI Language Lab

Browser-only speech-learning PWA · no server

☐ Screen ☐ Speech step ☒ Milestone ☐ Note

• Learning flow · listen → speak → feedback



• Exhibition deployment · fully client-side

No backend · no server

Offline-capable PWA

Exhibition tablet ready

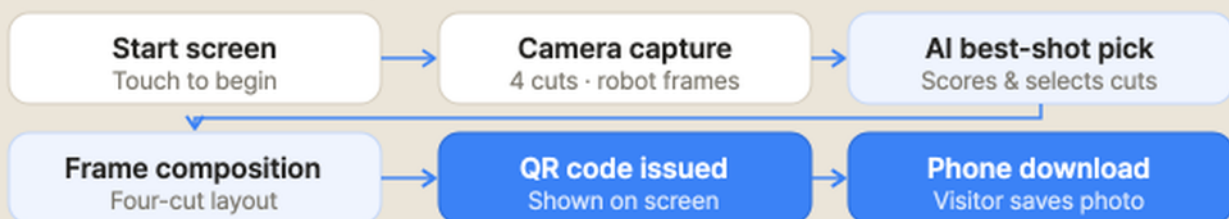


RAIM AI Photo Booth

Museum 2nd-anniversary four-cut photo booth

☐ Kiosk screen ☐ AI · compose ☒ Delivery ☐ Note

• Booth flow · from touch to keepsake



• Event notes

2nd-anniversary event

Robot character frames

No printer · QR only