Drive for better vision

Hands-on Himax AI tool and Seeed Sensecraft AI

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Himax Technologies, Inc.
奇景光電股份有限公司

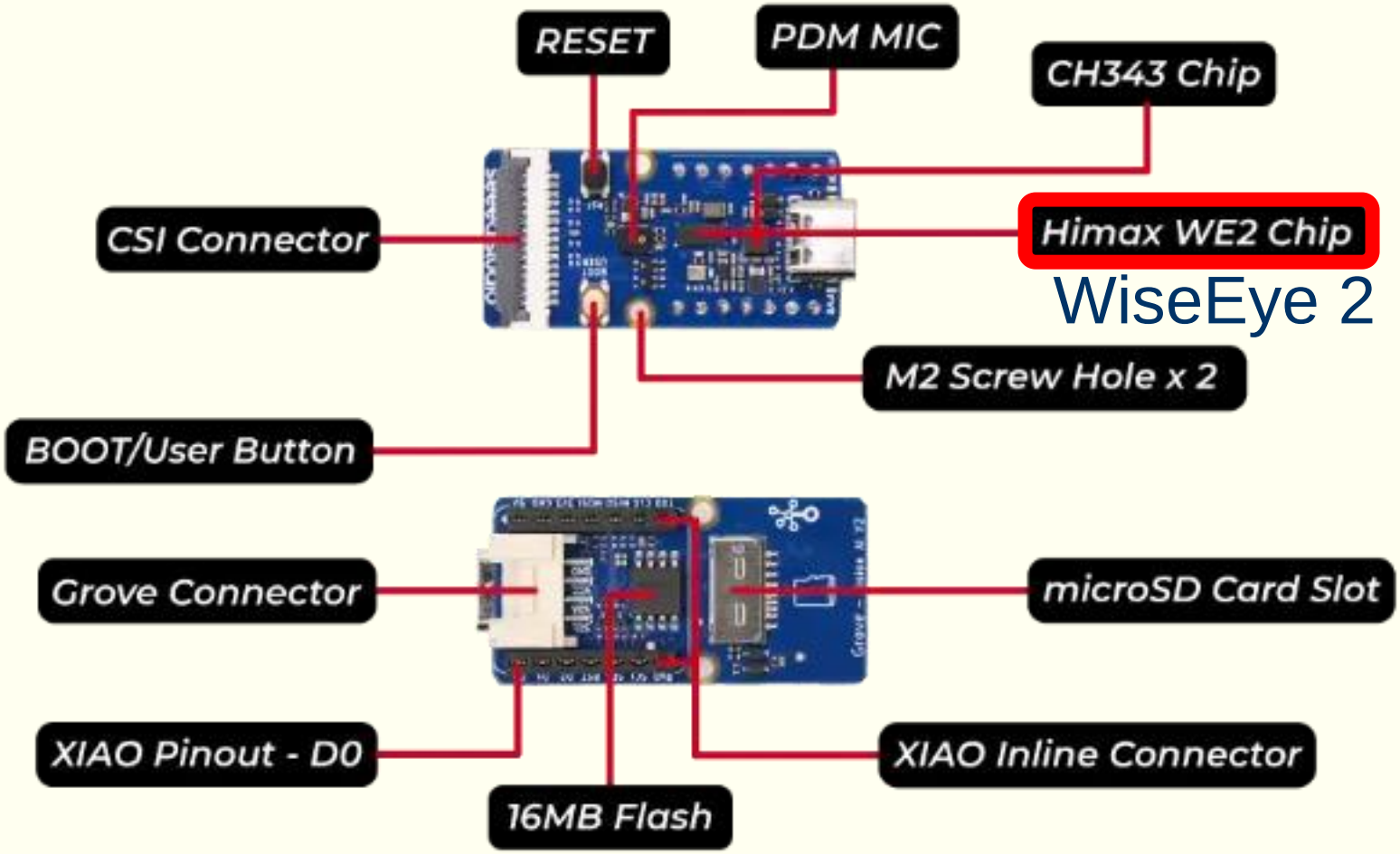
Outline

- Hands-on: Himax AI
- Hands-on: Seeed Sensecraft AI
- Development Flow


Hardware Overview
HIMAX
WISEEYE
2

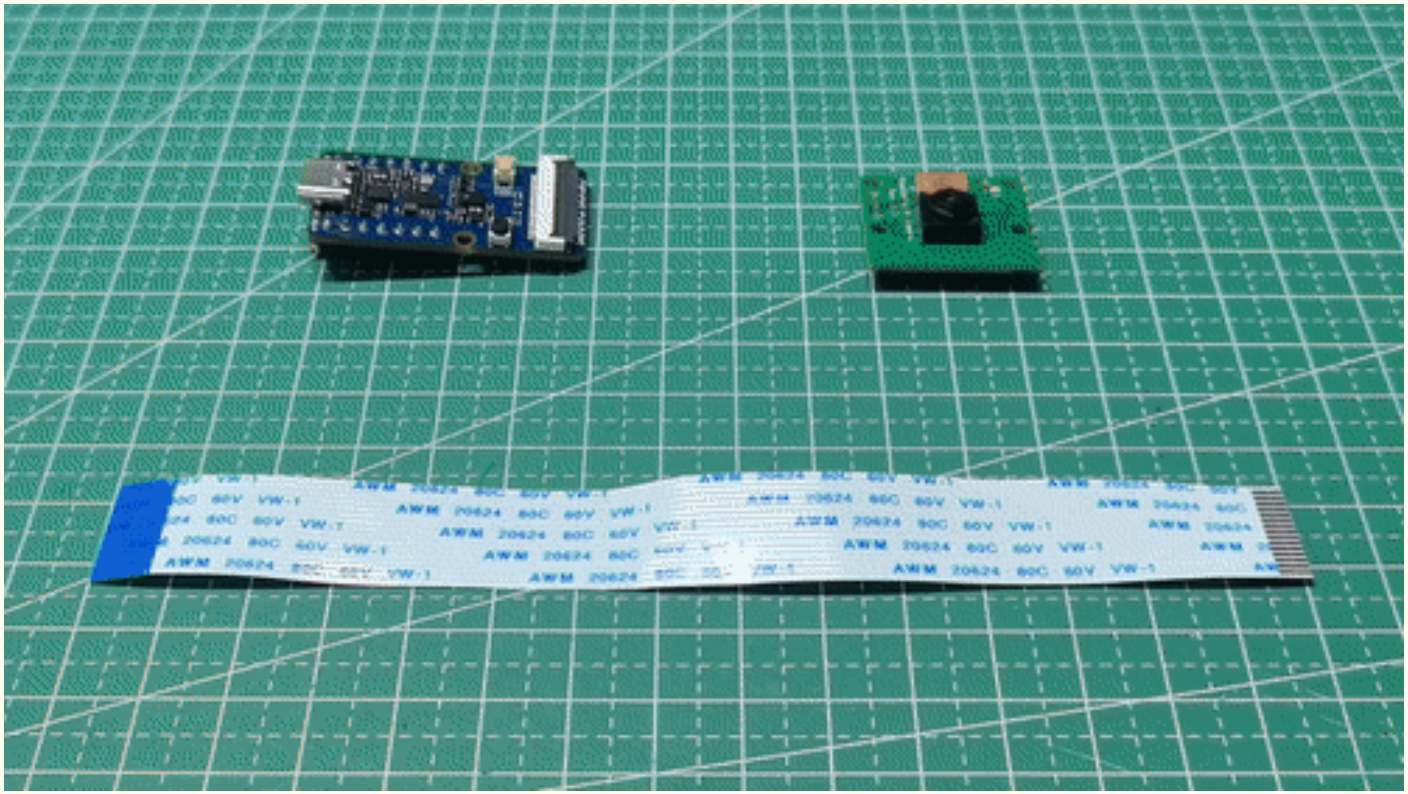
Hardware Overview

- Himax WiseEye2 (WE2) board kit



Hardware Overview

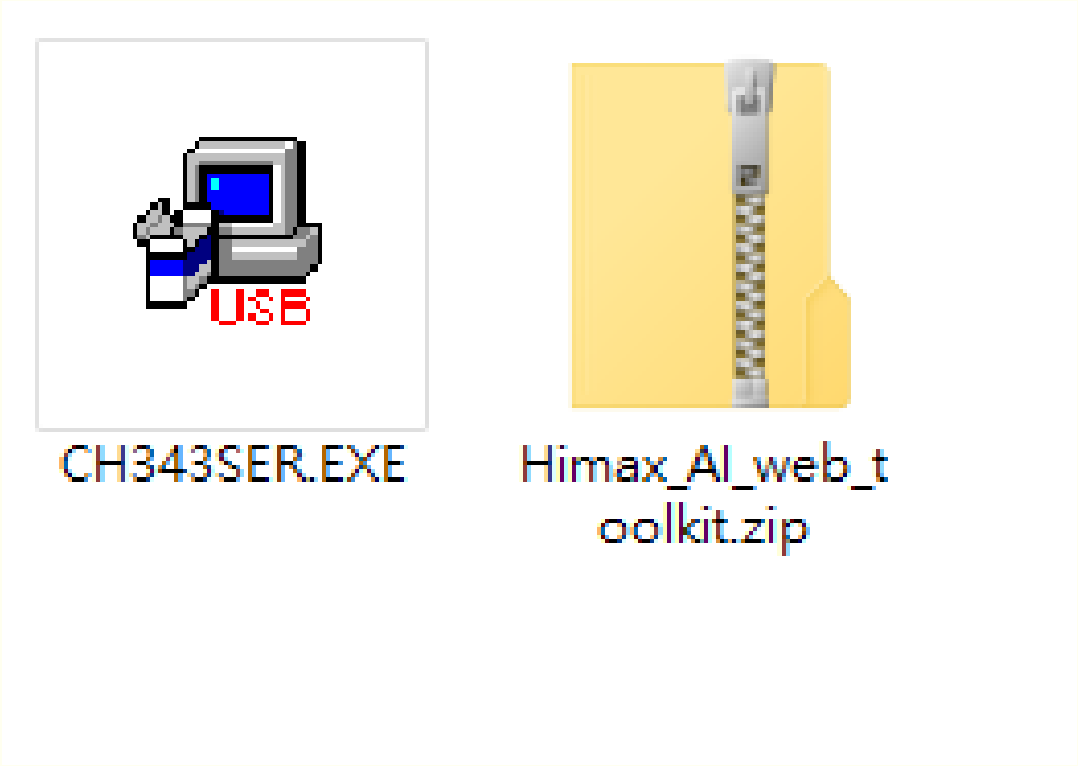
- Himax WiseEye2 (WE2) board kit connect with camera sensor



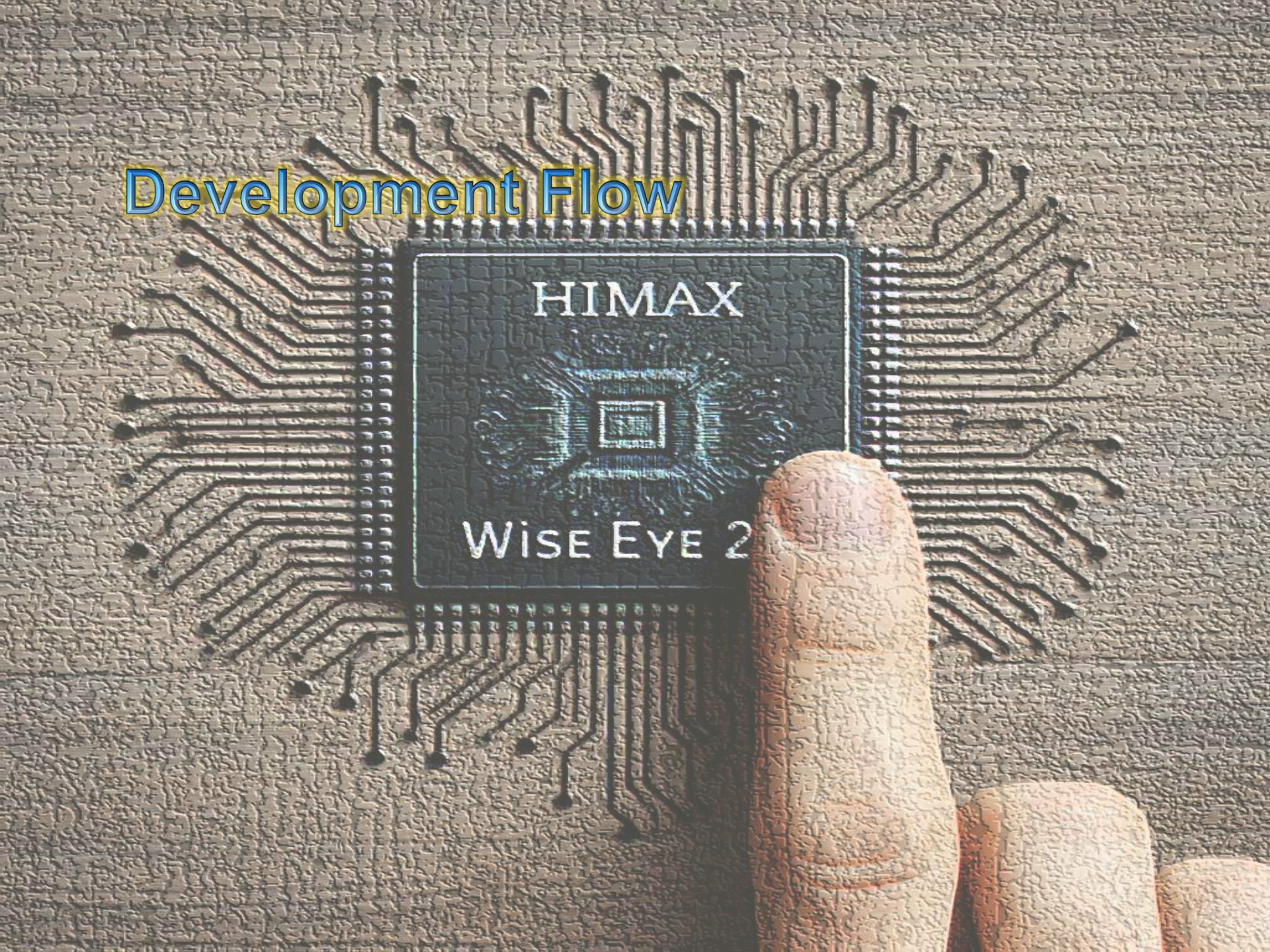

Hands-on: Himax AI & Seeed Sensecraft AI
HIMAX
WISE EYE 2

Pre-Requirement

- Download Himax AI Toolkit
- Install CH343 driver



Development Flow



Global Development Flow

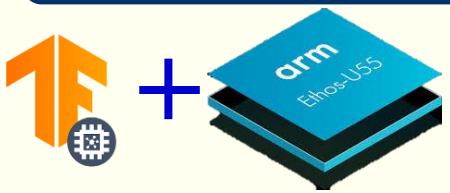
onnx2tf tool:
https://github.com/PINTO0309/onnx2tf
TinyNN:
https://github.com/alibaba/TinyNeuralNetwork

Model Optimization (Quantization) to int8 tflite

TensorFlow Lite
(int8 .tflite format)

Use python tflite interpreter
to check int8 tflite inference result

Pass Vela Compiler



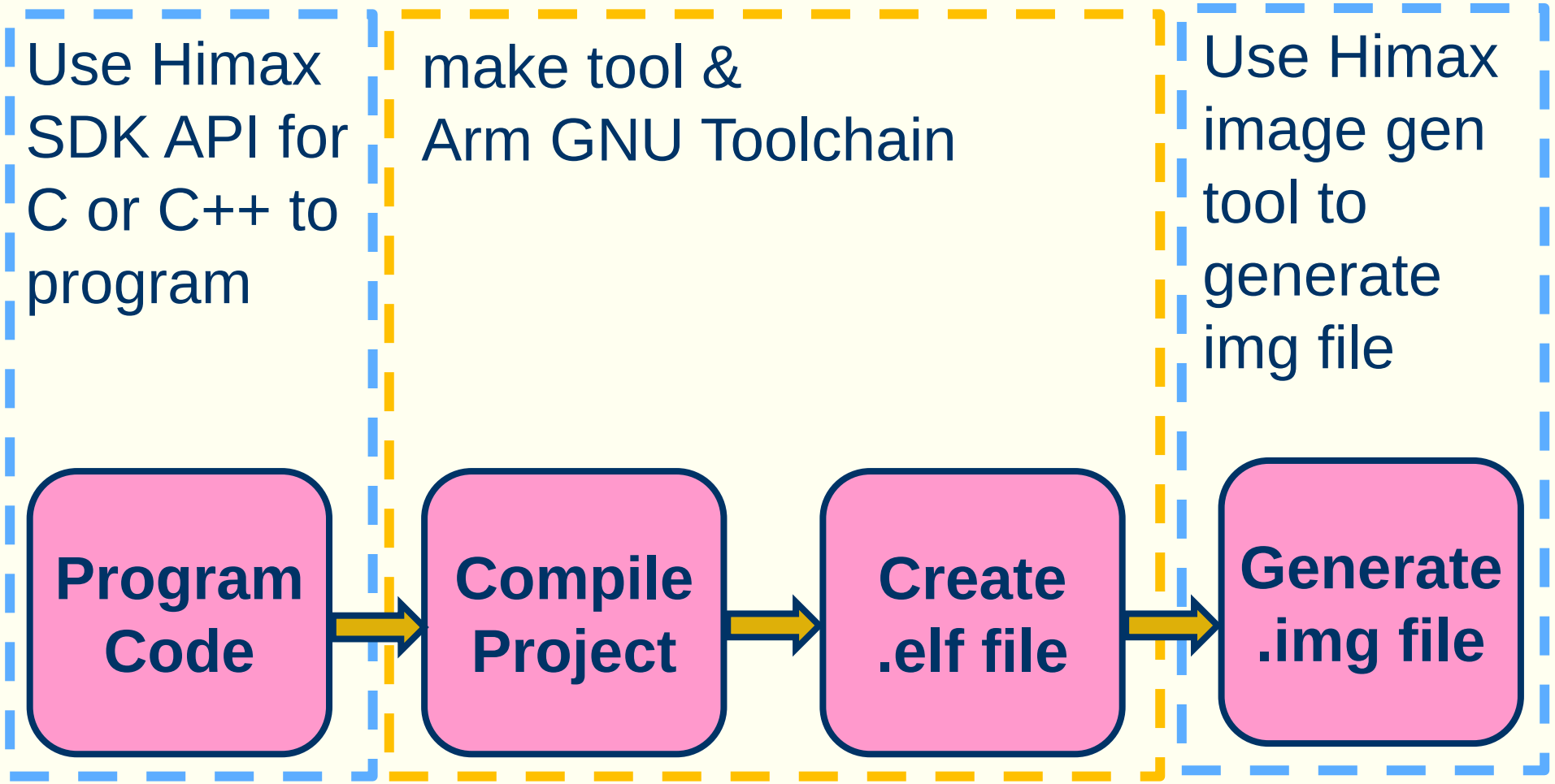
int8 vela model
(int8 .tflite format with ethosu operator)

Use FVP (Fixed Virtual Platforms)
to check int8 vela tflite inference result

Build firmware(FW) &
Flash FW and vela model to WiseEye2

Build Firmware

- WiseEye2 Firmware Development Flow



https://github.com/HimaxWiseEyePlus/Seeed_Grove_Vision_AI_Module_V2?tab=readme-ov-file#build-the-firmware-at-linux-environment

Program Code

Third-party library

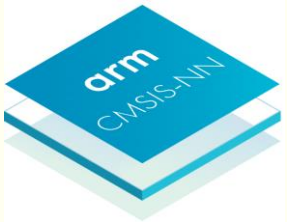
arm CMSIS-CV

arm CMSIS-DSP

Scenario app

Himax SDK

M-profile Vector Extension (MVE)



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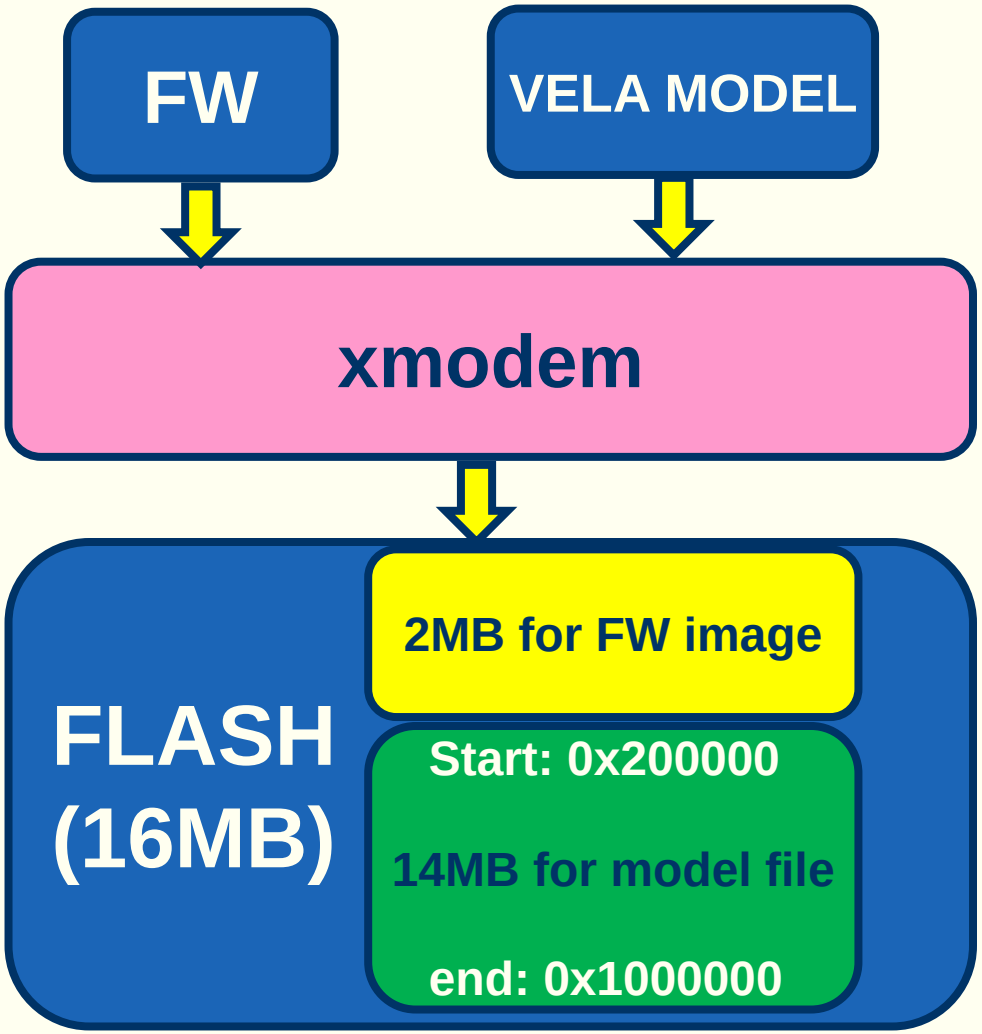
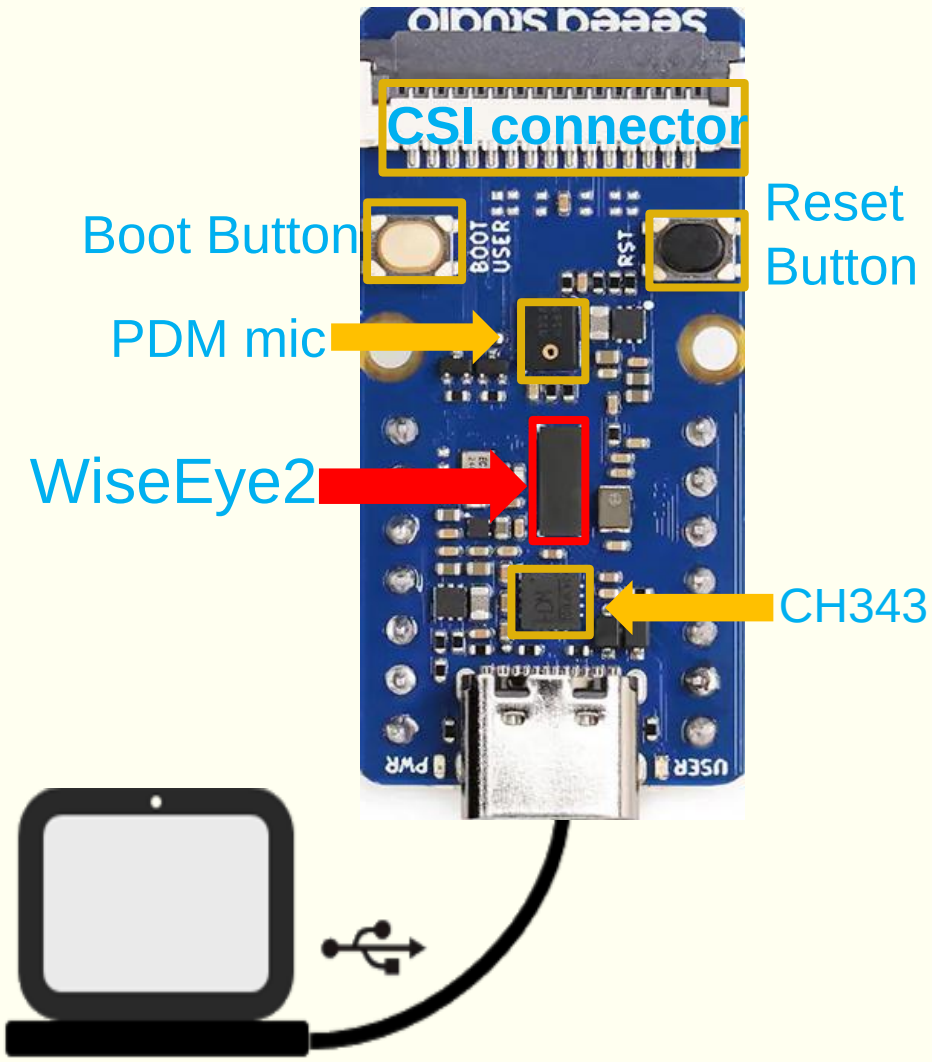
TensorFlow Lite
for microcontroller

Flash FW and vela model to WiseEye2

FW should be not bigger than 1MB



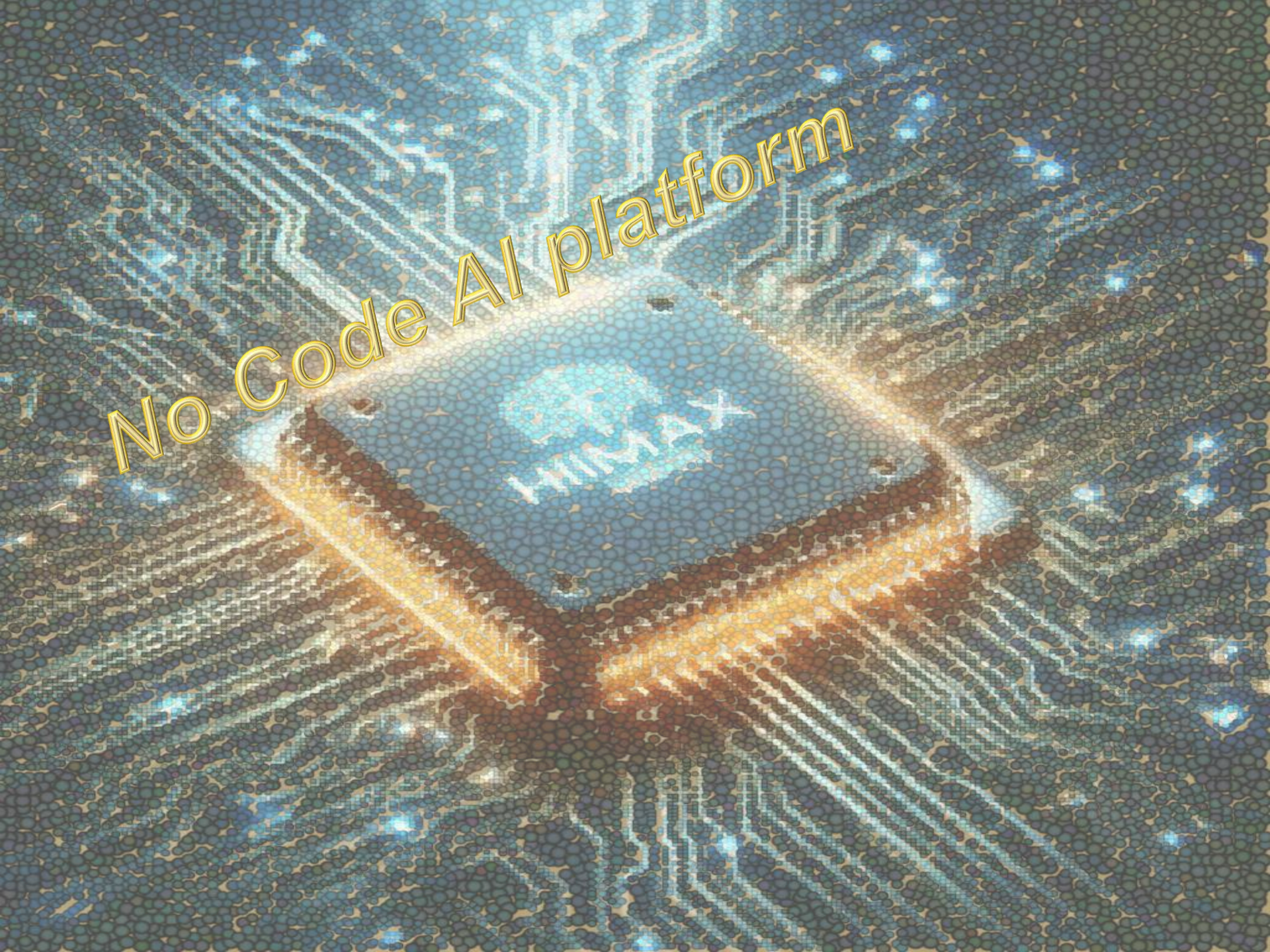


https://github.com/HimaxWiseEyePlus/Seeed_Grove_Vision_AI_Module_V2/blob/main/FAQ.md#1-how-to-find-the-device-memory-map-

How to build your own project

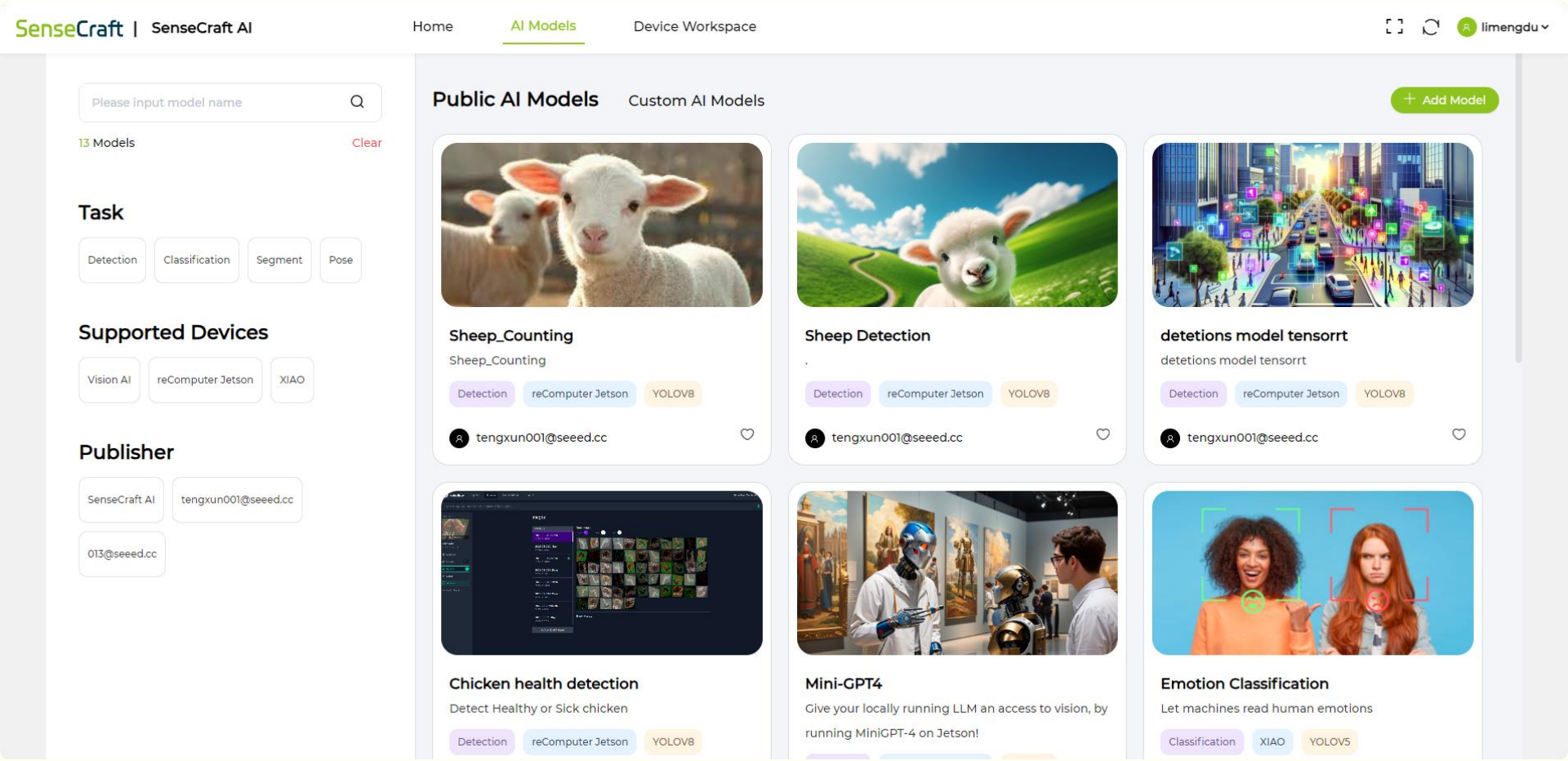
- For more information you can reference Himax Official GitHub
  - https://github.com/HimaxWiseEyePlus/Seeed_Grove_Vision_AI_Module_V2

scenario_app	project name
face mesh	tflm_fd_fm
yolov8n object detection	tflm_yolov8_od
yolov8n pose	tflm_yolov8_pose
pdm mic record	pdm_record
KeyWord Spotting using Transformers	kws_pdm_record
imu read	imu_read
peoplenet from TAO	tflm_peoplenet


No Code AI platform

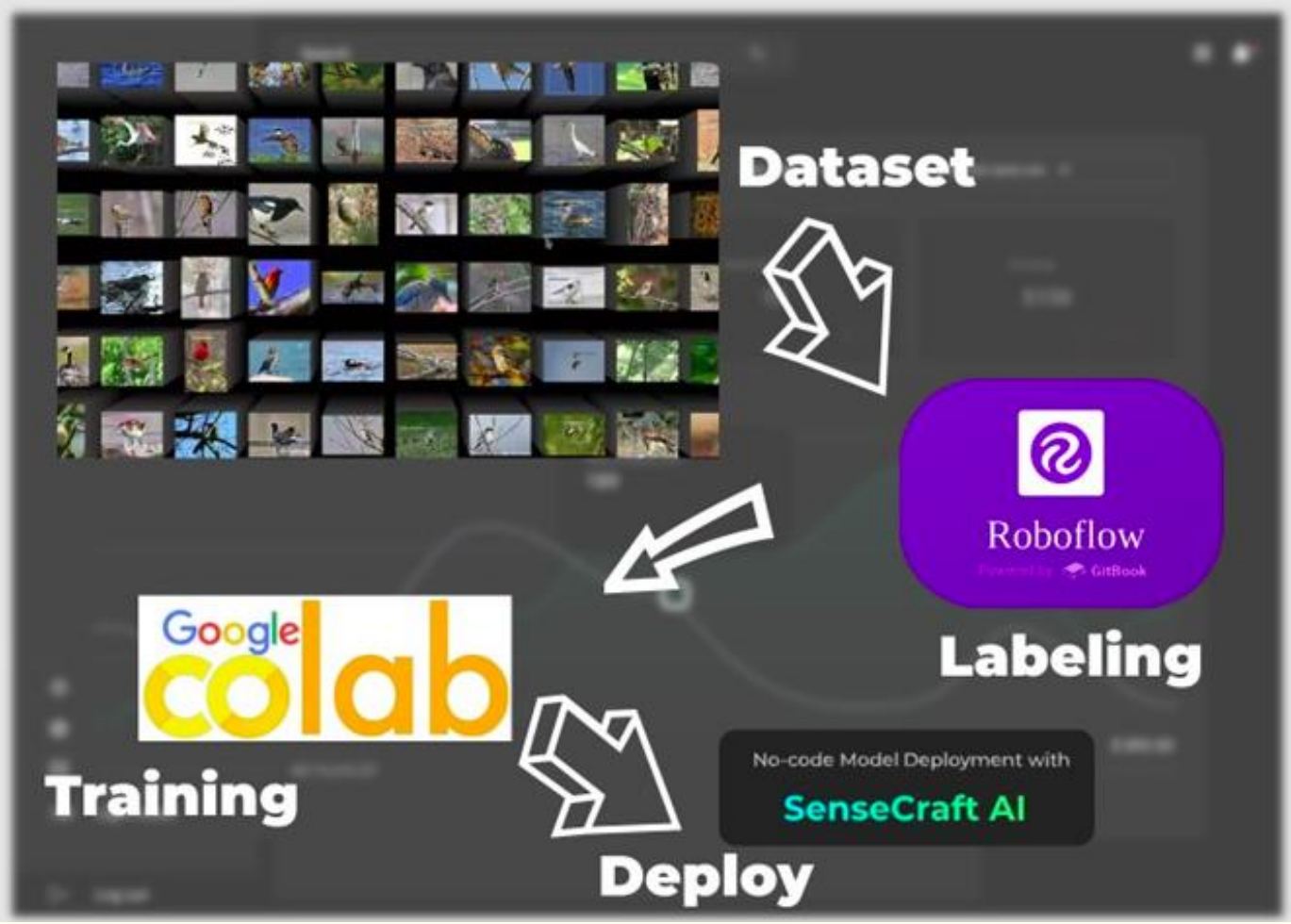
No Code AI platform

- Seeed SenseCraft AI
  - Local Device - SenseCraft AI (seeed.cc)



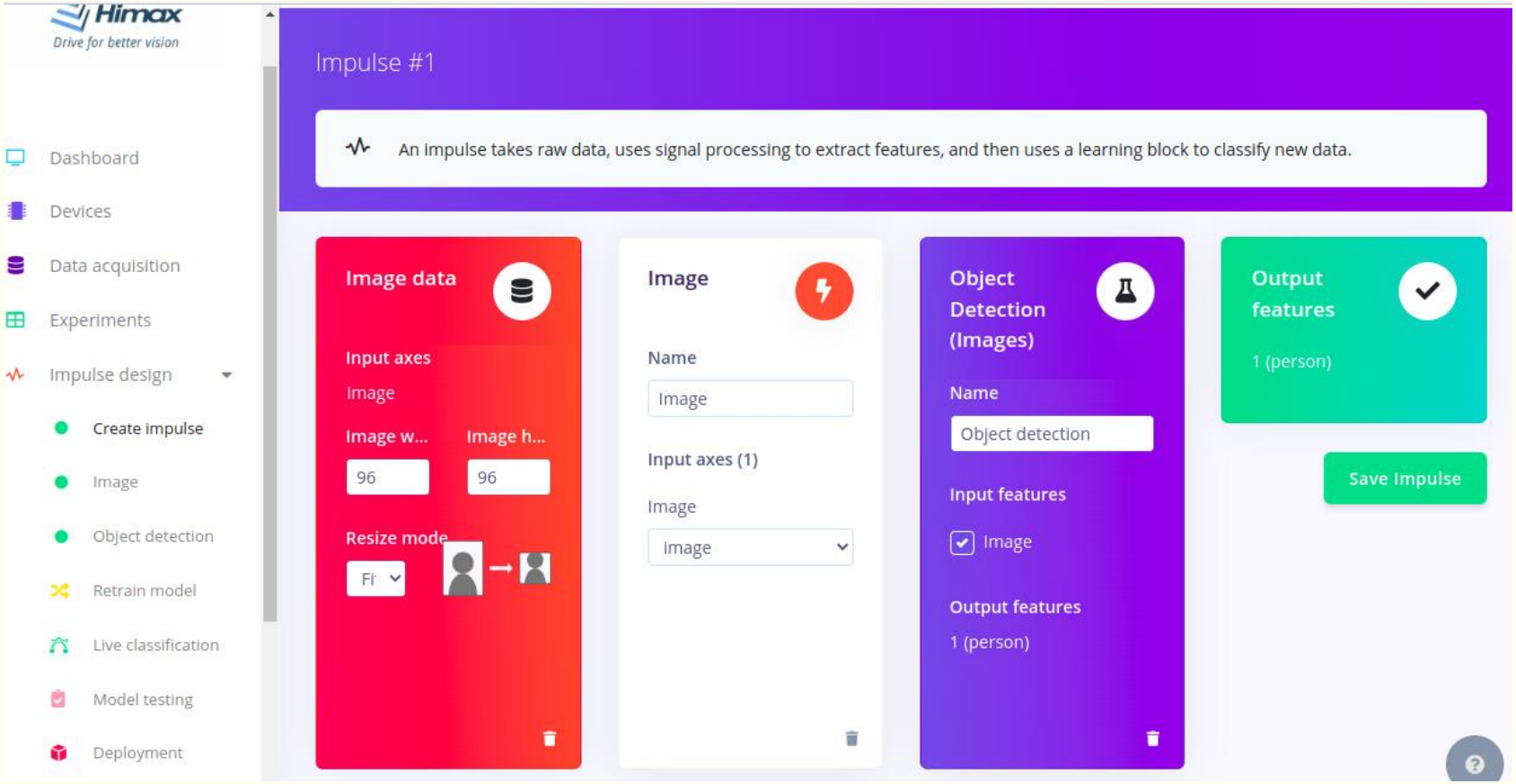
No Code AI platform

- Seeed SenseCraft AI
  - Quick Start | Seeed Studio Wiki



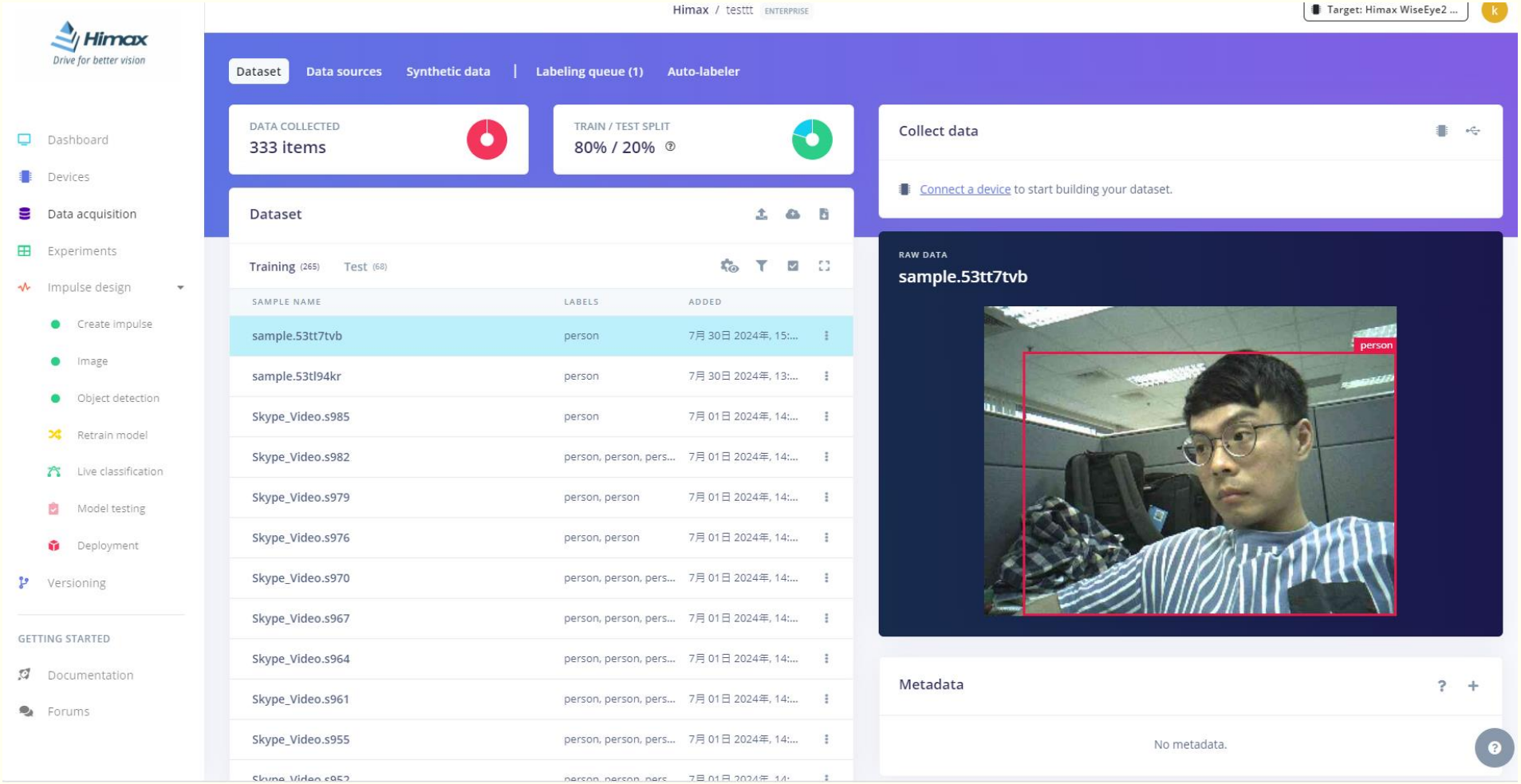
No Code AI platform

- Edge Impulse
  - https://docs.edgeimpulse.com/docs/edge-ai-hardware/mcu-+-ai-accelerators/himax-seeed-grove-vision-ai-module-v2-wise-eye-2



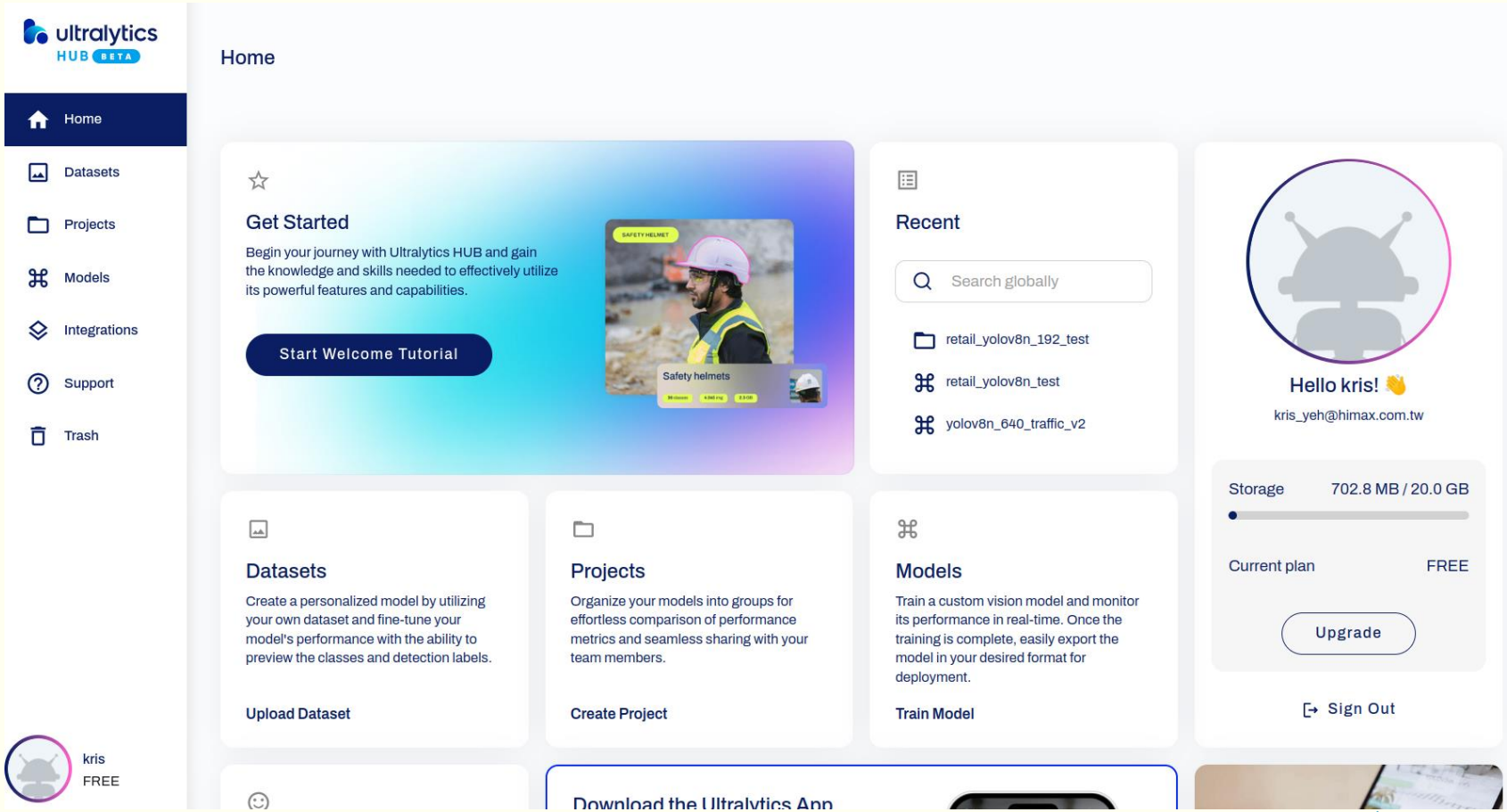
No Code AI platform

- Edge Impulse



No Code AI platform

- Ultralytics Hub (Yolov8)
  - https://hub.ultralytics.com/
  - https://github.com/HimaxWiseEyePlus/YOLOv8_on_WE2



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