



NuvoMotion: AI Fitness Mirror

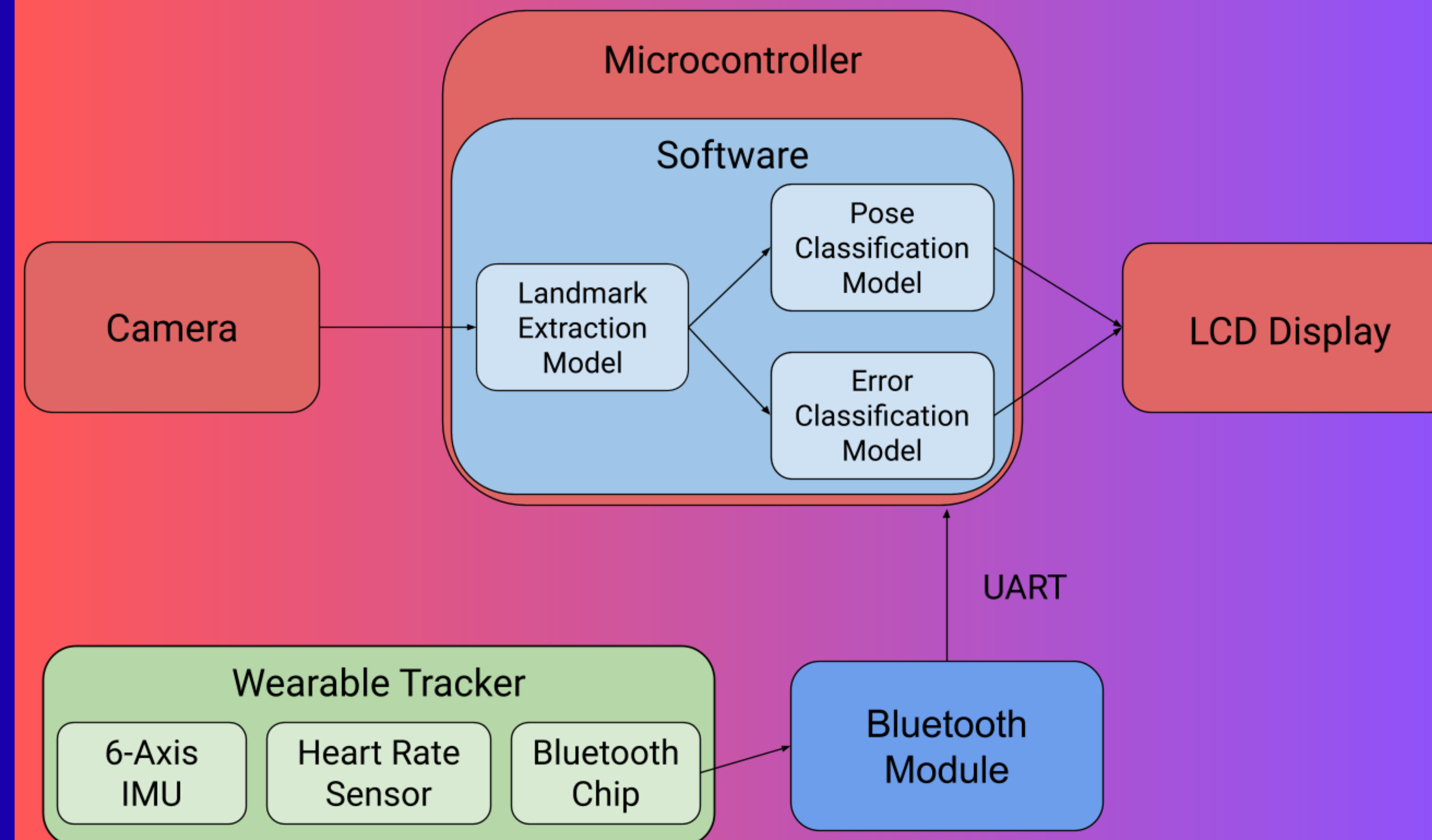
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Overview

The NuvoMotion AI Fitness Mirror delivers a real-time, on-device workout coach that automatically detects exercises, counts reps, and provides real time feedback on the display, allowing the user to recognize their errors and learn to correct them.

Exercise		Common Error
Pushups		Knees touching ground
Jumping Jacks		Arms not high enough, Legs not wide enough
Sit-Ups		Core not high enough
Squats		Squat not low enough
Lunges		Lunge not low enough

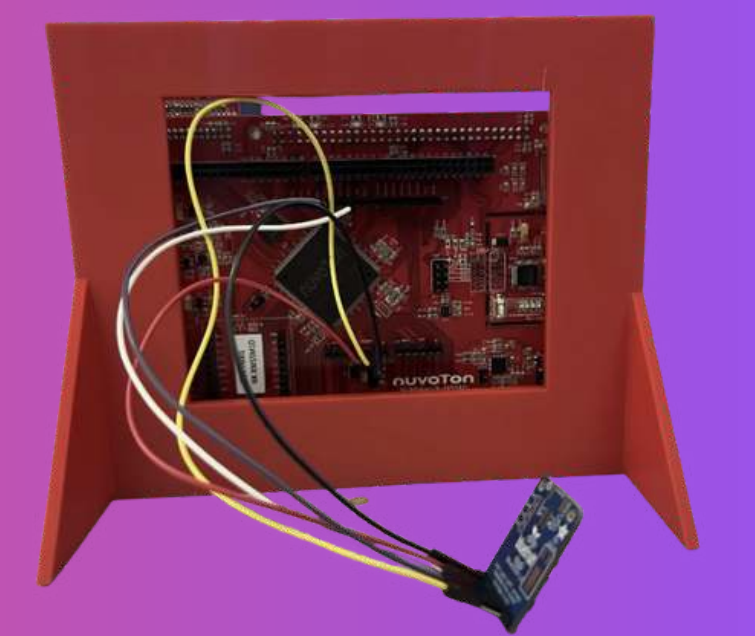
Block Diagram



Hardware



Front View



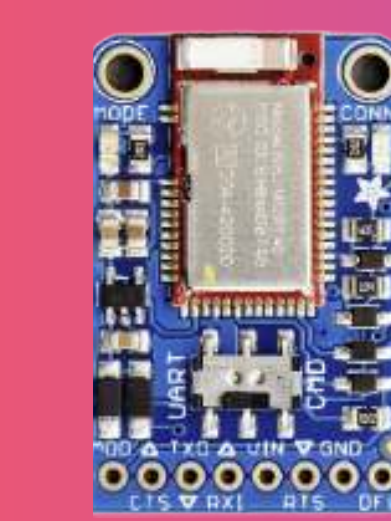
Back View



Nuvoton M55M1
Microcontroller



NuMaker-TFT-LCD5
LCD Display



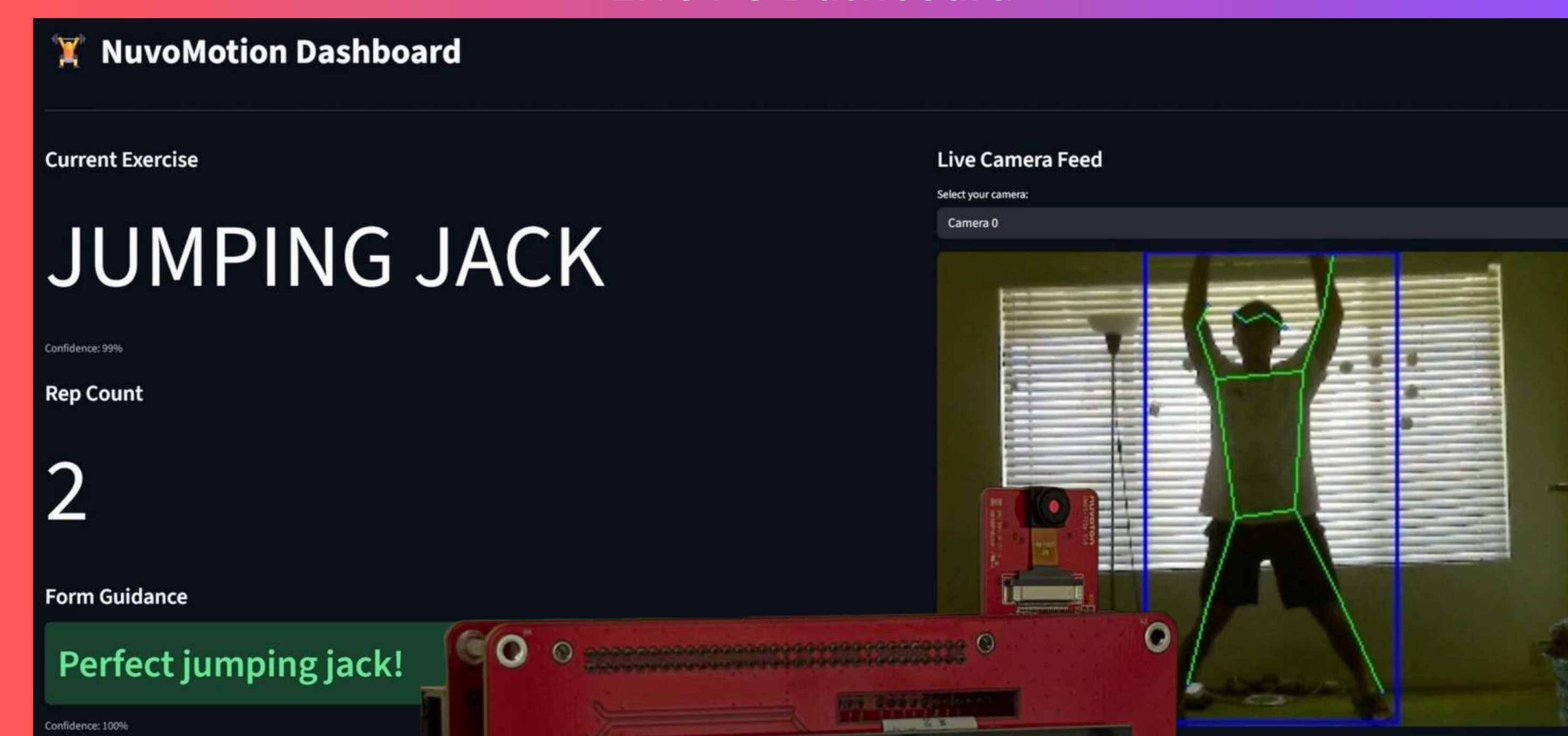
Adafruit Bluefruit
LE UART Friend



HM1055 CMOS
Image Sensor

User Interface

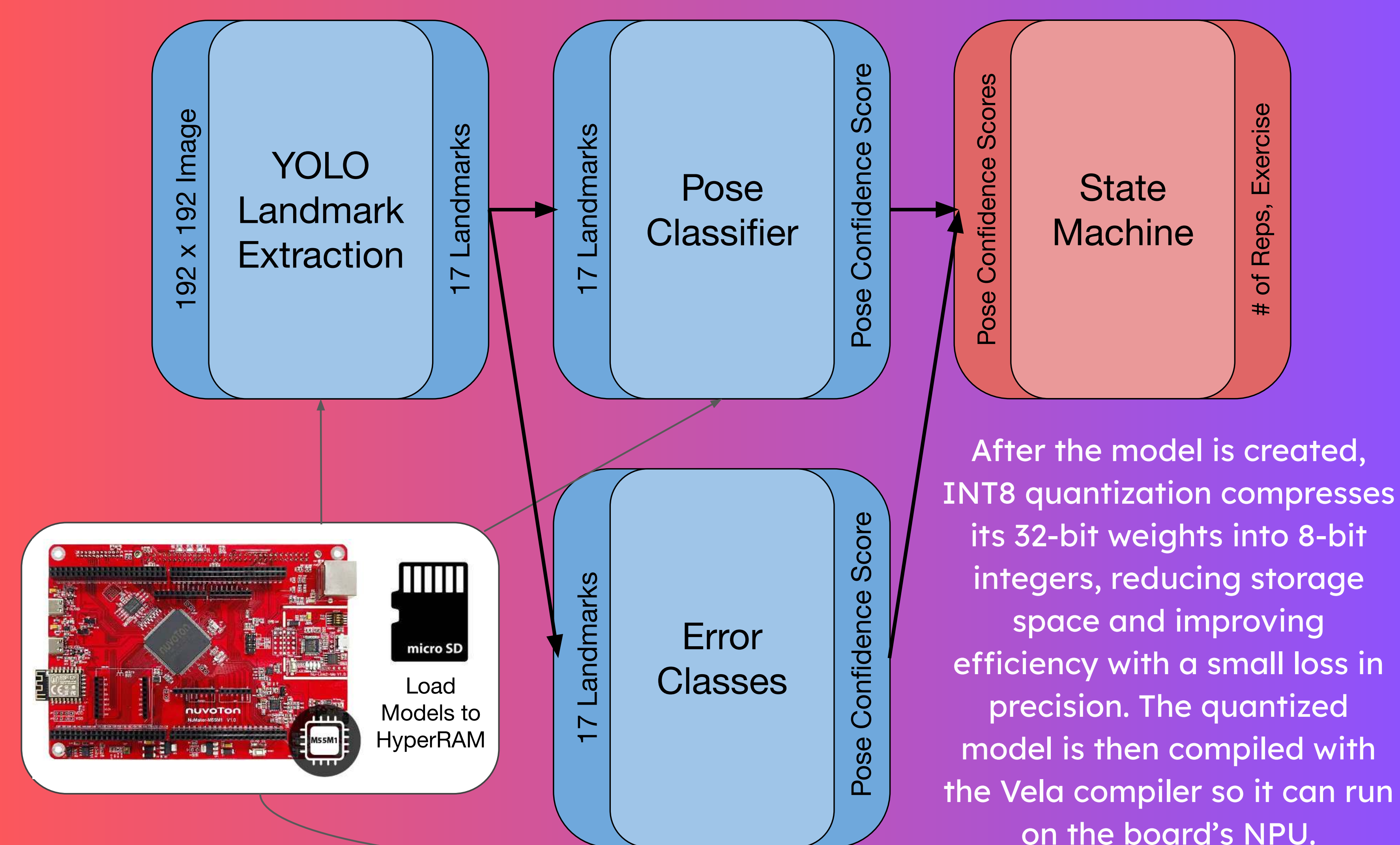
Live PC Dashboard



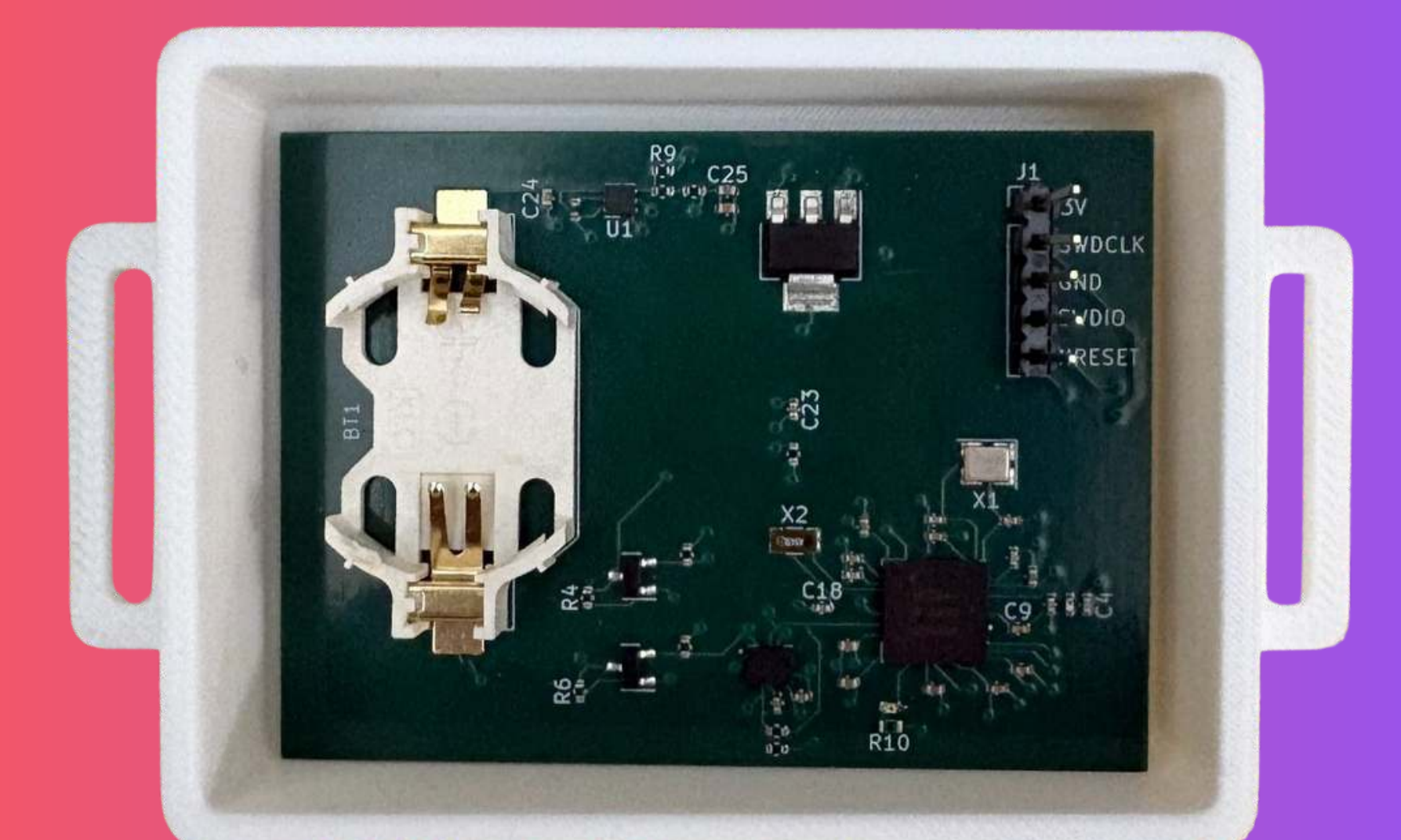
On-device
Computing

Exercise name
Rep count
Form feedback
Accelerometer +
Heart rate data

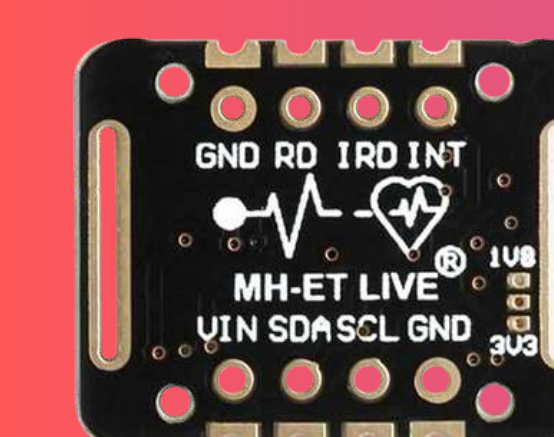
Model Architecture



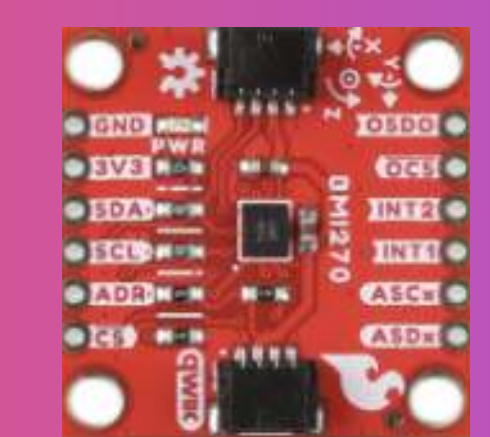
Wearable Tracker



PCB inside enclosure



MAX30102
Heart Rate Sensor



BMI270
6-Axis IMU



nRF52840
Bluetooth Chip