ECE 4380

AI Project Midterm

Ring Camera with AI

Team Name: AI Hardware Team
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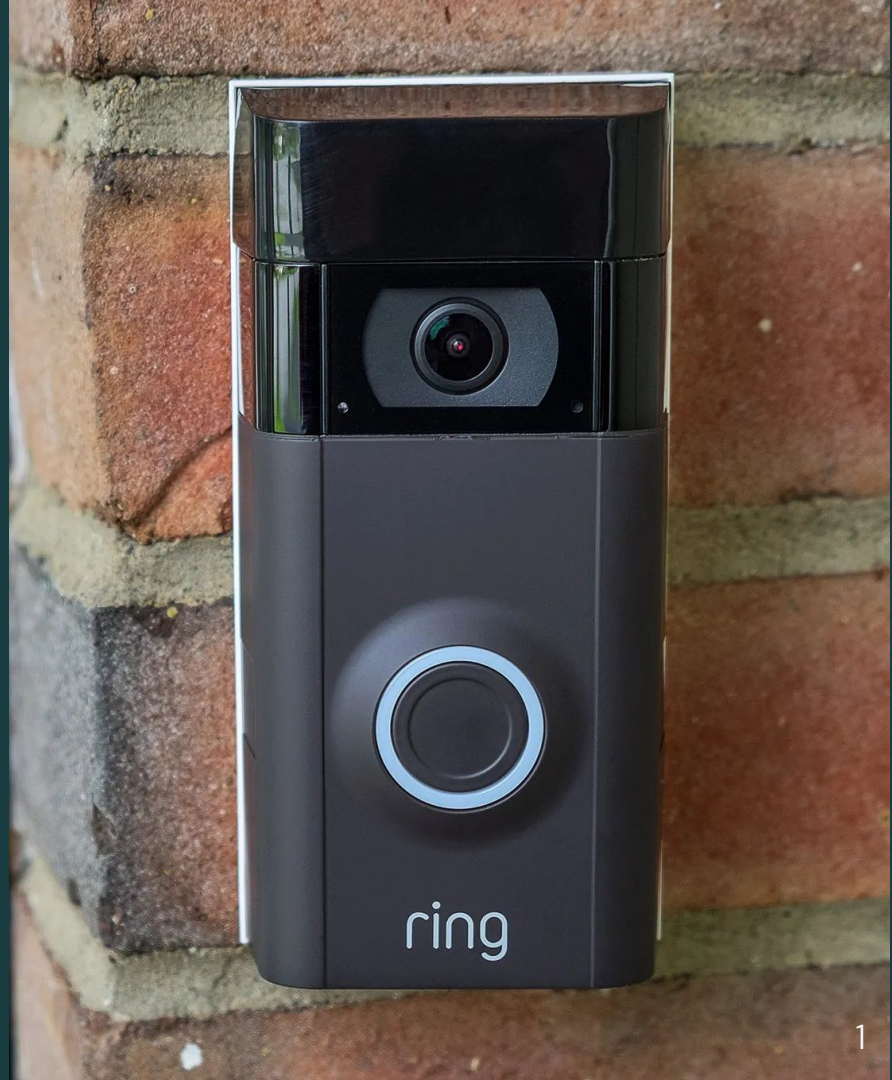
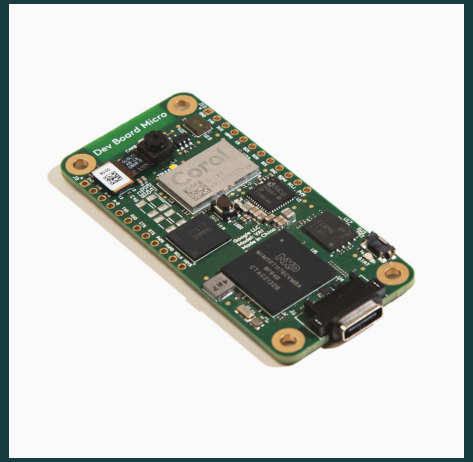


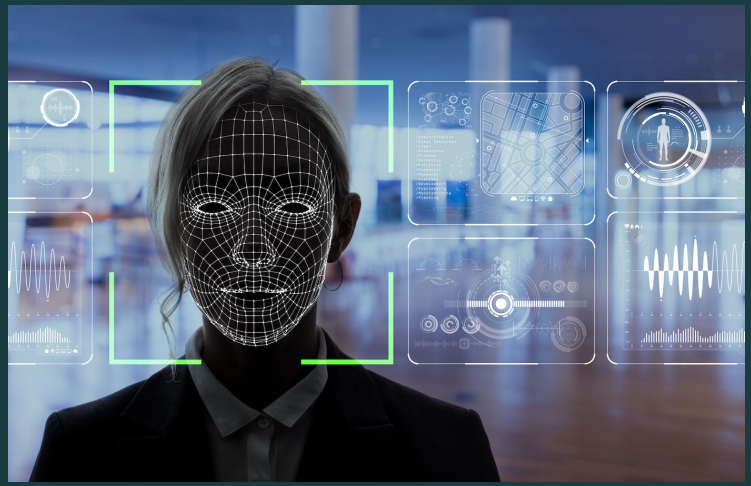
Overview

- Identify specific humans on a “Ring” camera using facial recognition with Google Coral
- Possibly identify between known and unknown faces for homeowners
- Using the Google Coral Edge Dev Board Micro to deploy our trained model
- Google Coral -> built for running TensorFlow Lite models extremely fast



Facial Recognition Programs

- Software applications that identify or verify a person's identity by analyzing their facial features from digital images or video sources
- Use AI and machine learning, specifically artificial neural networks (ANN) to compare unique features to a set database



Deliverables

- Use our model to accurately identify 3 unique faces with an above 80 success rate in normal lighting conditions
- Maintain an average latency of 500ms from image capture to recognition
- Maintain a false positive positive rate of less than 2%
- https://github.com/Mircea-s-classes/ai-hardware-project-proposal-team1_ai/blob/main/docs/Project_Proposal.md

Data Training

- **TensorFlow Lite:** framework for running machine learning models on mobile, embedded and IOT devices
- Train our model for facial recognition in a TF framework
- **Data Collection:** obtain a labeled dataset of facial images
- **Model Training:** train the data set in a TF or PyTorch framework (using edge impulse) to be used by the device

Team Roles

Name	Role	Responsibilities
Grayson Turner	Team Lead	Coordination, documentation
Nate Owen	Hardware	Setup, integration
Sammie Levine	Software	Model training, inference
Marissa Cash	Evaluation	Testing, benchmarking

Current Status

- Core facial recognition program has been written
- Hardware environment setup is in progress
- Google Coral Edge TPU is connected but still being configured

Current Stage: troubleshooting and testing
Next Steps: switch to different hardware (Arduino TinyML)