Voice Recognition System for Beekeeping Hardware + Data Collection

CSE496
Second Presentation

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Project Scheme and Description

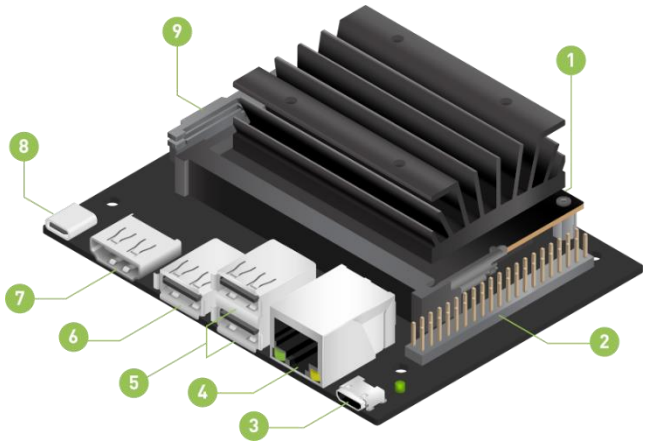
Beekeepers routinely inspect their hives to identify any potential issues.

Detecting problems through the voice of the bees can save time, enabling the beekeeper to attend to more hives.

The purpose of this project is to collect voice data from bee hives and enable the beekeeper to define the current status of the hive via the mobile application.

What has been done so far?

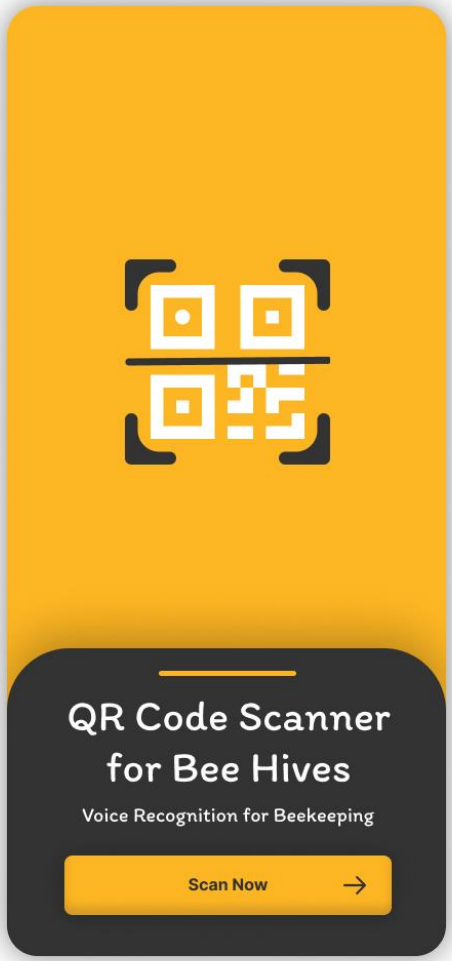
- Jetson Nano setup is complete.
- The audio was recorded using a microphone.
- Audio files are recorded in the specified format. (hivenumber-timestamp)
- Mobile application screens were designed.

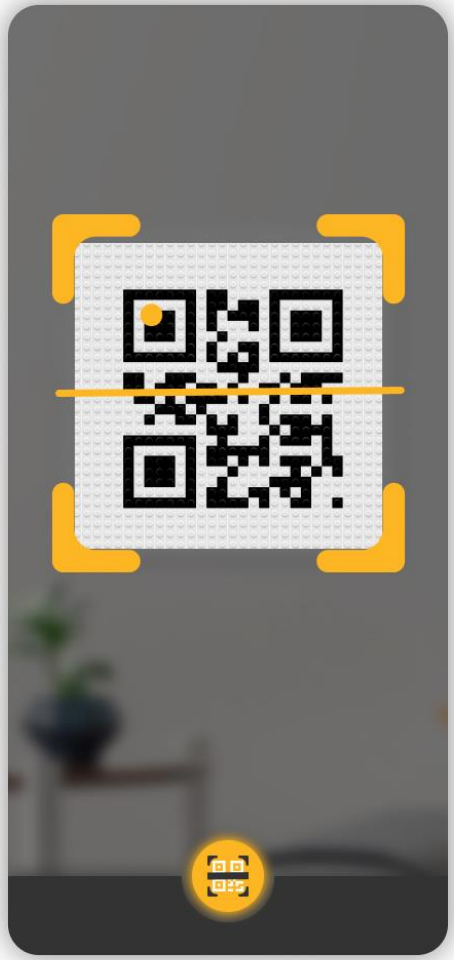


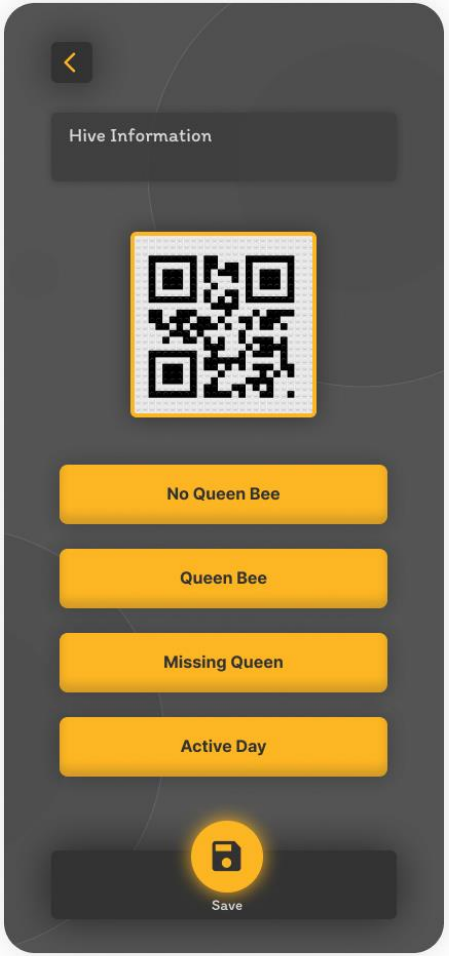
Failures in Jetson Nano Setup

- I attempted Nvidia's recommended instructions for Jetson Nano first on Windows and then on Ubuntu.
- I attempted installation again using command line instructions.
- I tried using Nvidia's Jetpack SDK application on Ubuntu.
- I tried the initial installation in headless mode, connected to a computer.

Mobile Application Design



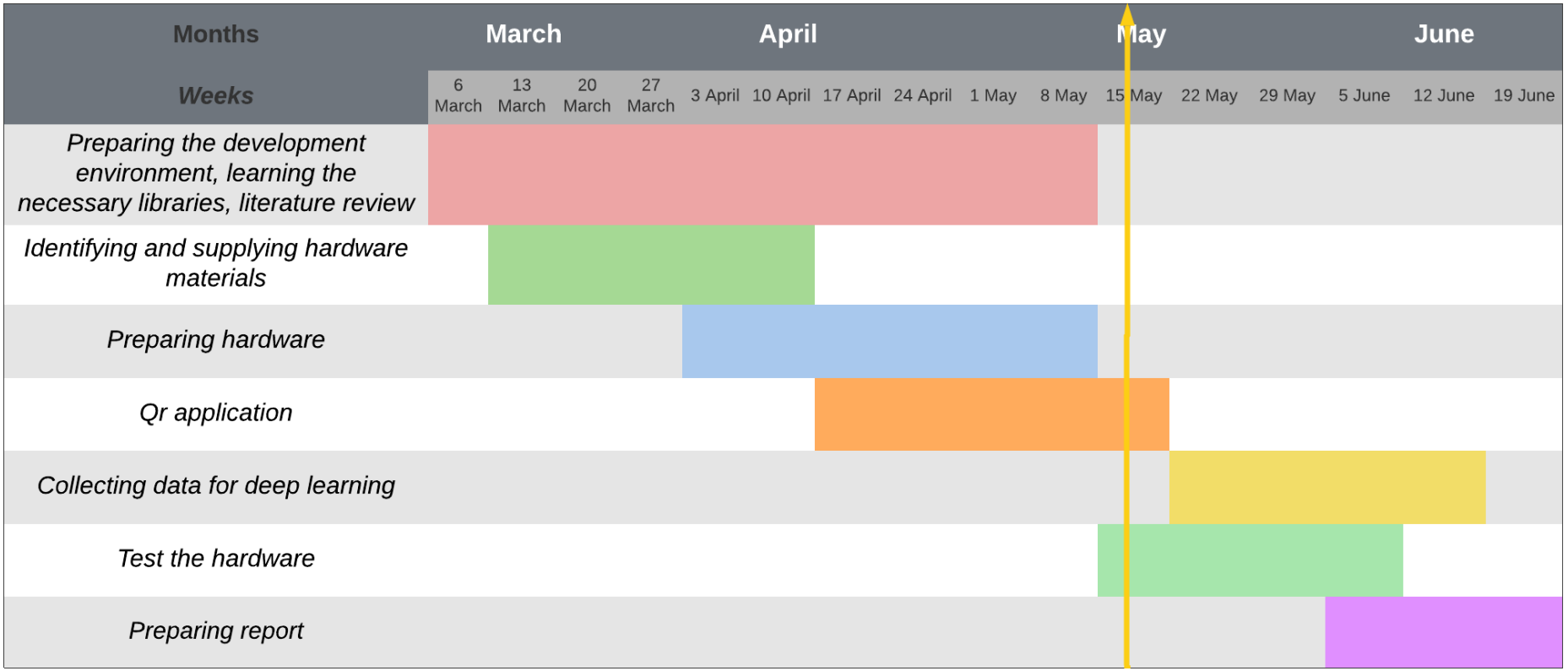




What to do next?

- Collecting data
- Generate QR codes for beehives
- Scan QR codes in the mobile app.
- Save the beehives status in the specific format (hivenumber-timestamp-label) in the mobile app.

Project Timeline



Success Criteria

- %75 memory usage in Jetson Nano per day (2 GB LPDDR4 Memory in Jetson Nano)
- %20 GPU usage in Jetson Nano (128-core NVIDIA Maxwell GPU in Jetson Nano)
- The mobile application use less than %10 of the CPU

Resources

1. https://developer.nvidia.com/embedded/learn/get-started-jetson-nano-2gb-devkit

2. https://www.kaggle.com/code/mpwolke/to-bee-wav/input

3. https://developer.nvidia.com/embedded/jetpack

4. https://developer.nvidia.com/sdk-manager

5. Microsoft Bing Create Image used for images

6. https://www.figma.com/community/file/1214837612730924876/QR-Code-Scanner-App