Image-to-Braille Converter

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Purpose

The purpose of this project is to design a device that will allow visually-impaired people to read text from books, newspapers, and handwritten letters.

Problem Statement

Digital Braille displays can cost on average thousands of dollars. We look to provide an affordable, portable, modular, and efficient device to assist the visually-impaired.

Technologies

- **OpenCV** (*Open Source Computer Vision*)
- **Tensorflow** - Machine Learning, Neural Networks
- **Python** - Interpreted Programming Language
- **Raspberry Pi** - Pre-Built Programmable Board

Schedule

Week 2: Plan and research for necessary products
Week 4: Begin training data set
Week 6: Design prototype
Week 8: Assemble and build prototype
Week 10: Have a prototype ready for debug phase

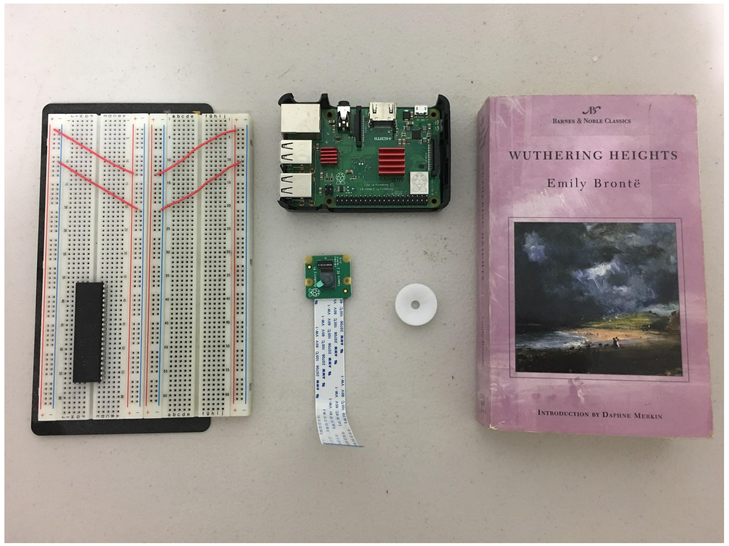

Figure 1: Some materials we will use: A breadboard, wires, a Raspberry Pi 3 Model B+, a Raspberry Pi Camera Module V2, and a copy of Emily Bronte's *Wuthering Heights*.

Approach

The device takes a live video-stream from a camera and recognizes alphanumeric characters. It feeds the characters into a neural network which predicts the correct letter or digit. It sends the prediction to the Raspberry Pi which acts on the controller and pins of a Braille display.

Progress

- Obtained parts
- Began writing character-recognition software
- Began testing hardware