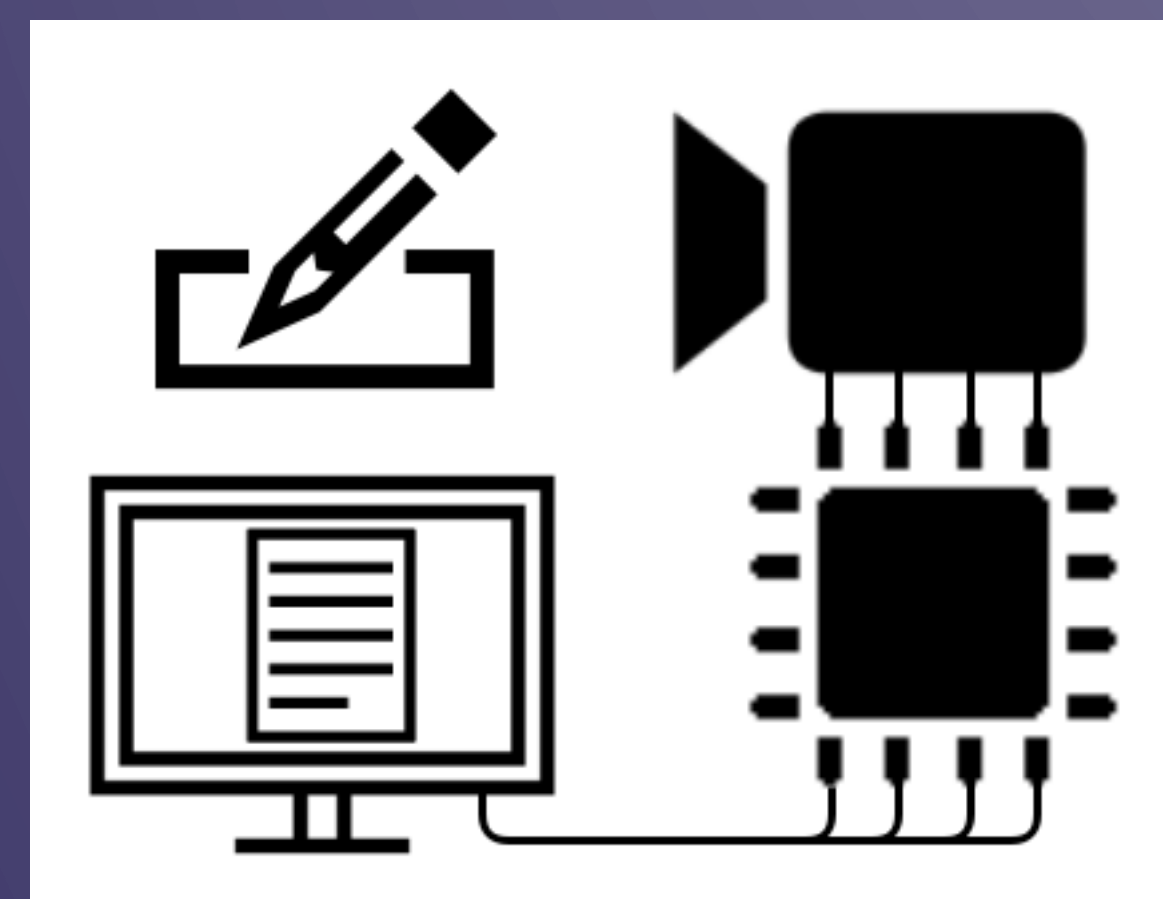


Project Goals

The objective of this project is to implement a neural network in hardware to perform handwritten digit and character classification.

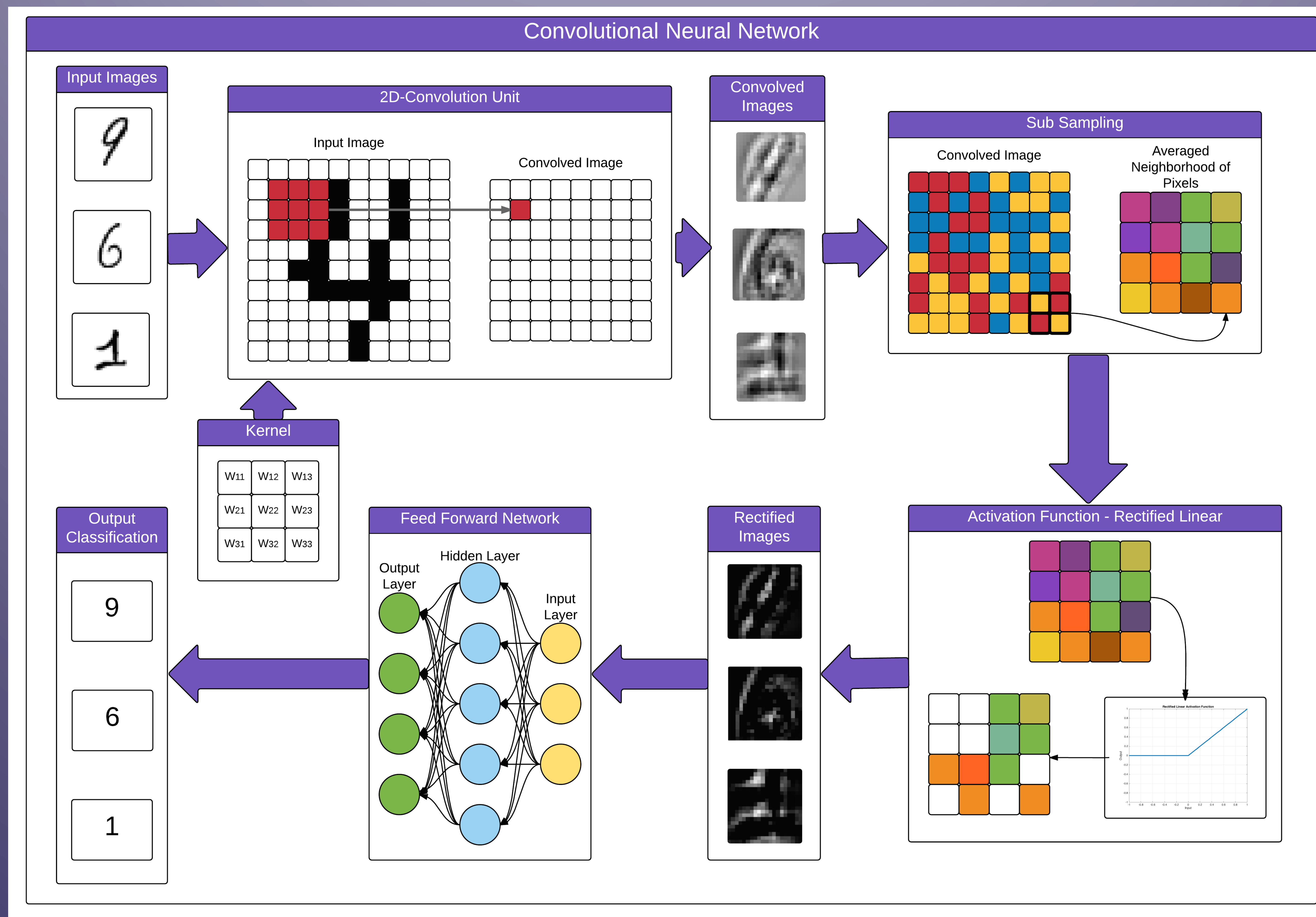
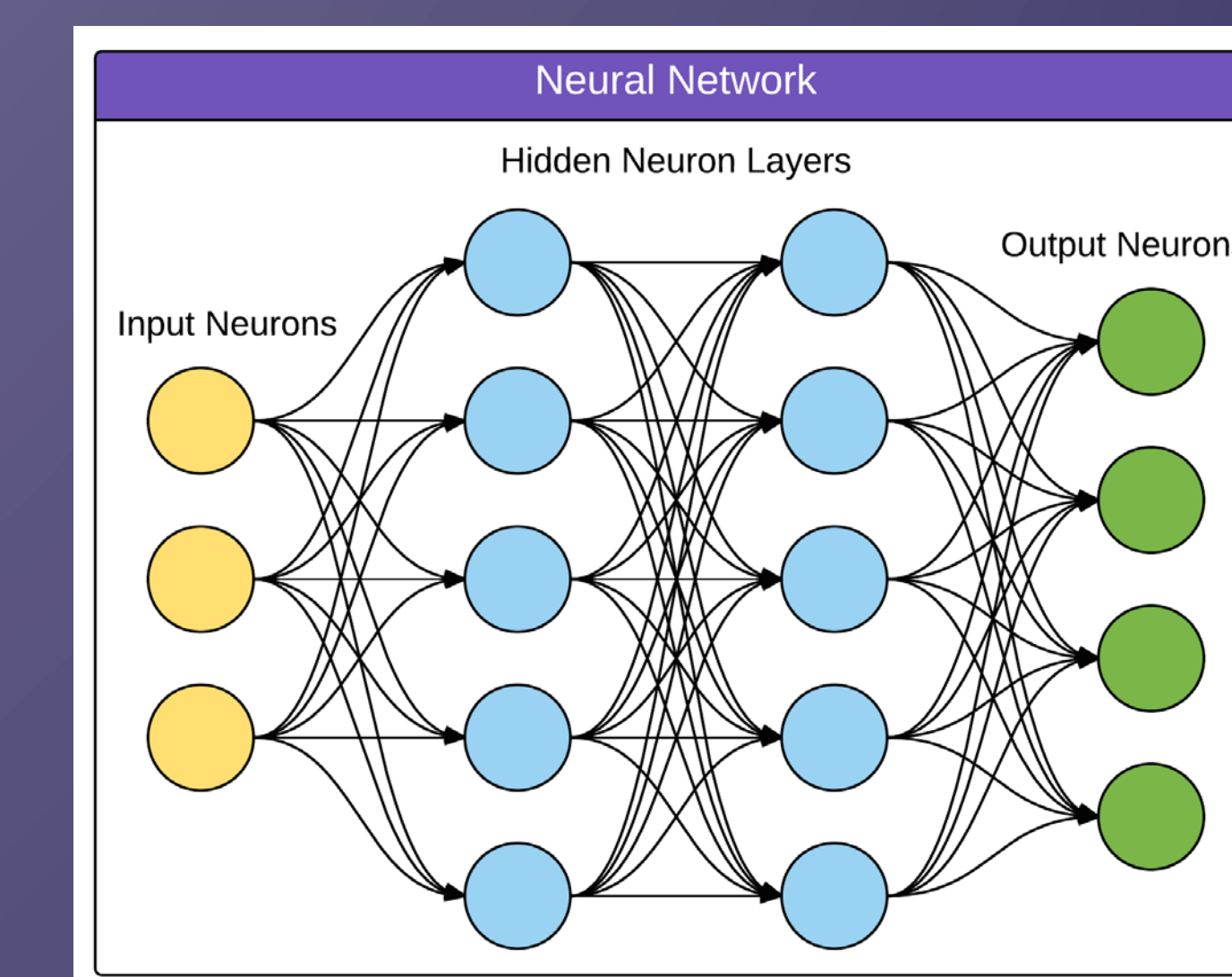


Character Detection Through Hardware

Alan Ehret and John Shaver
Advised By: Dr. Peter Jamieson

What is a Neural Network?

- Inspired by biological neurons
- Can approximate any input/output mapping arbitrarily well
- Trained based on desired input/output pairs



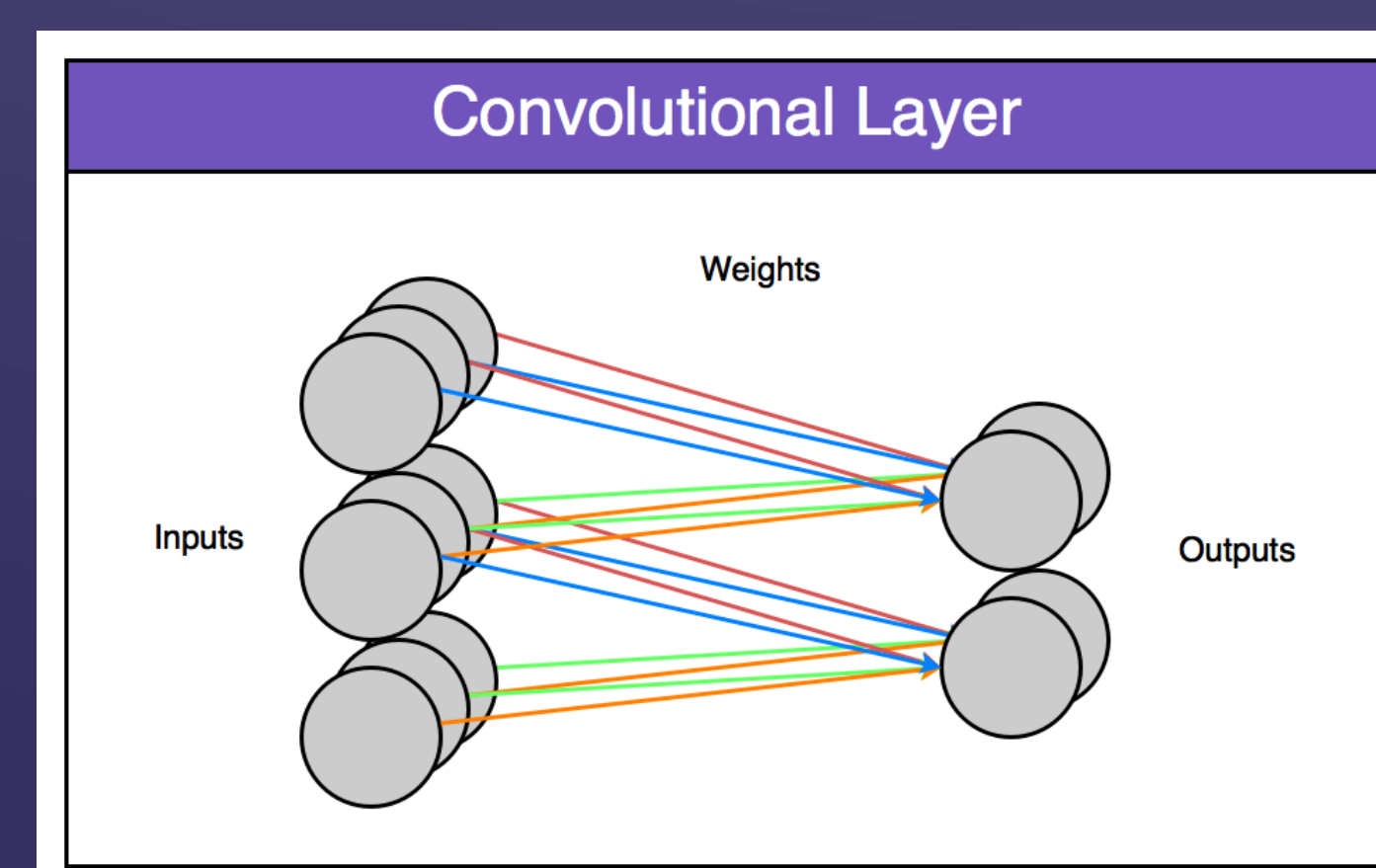
Current Results

- Chose architecture: Convolutional Neural Network
- Train network to ensure a high level of accuracy (about 97-99%)
- Design a block diagram to define I/O of each module

Why Convolution?

Fully connected layers in feed forward networks become computationally expensive for networks with high degrees of inputs and outputs

A small kernel weight matrix reduces the number of parameters in the network and connects only the pixels in a neighborhood.



Future Work

- Implement modules in Verilog (in progress)
- Implement image capture