# EECE 371- Embedded Learning Systems

**Lab: Mon., March 18th 2019**

## Competition

Using similar model to Assignment 4, design the perceptron function in a Matrix/Vector representation on Arduino IDE.

The code should be designed to have different functions:

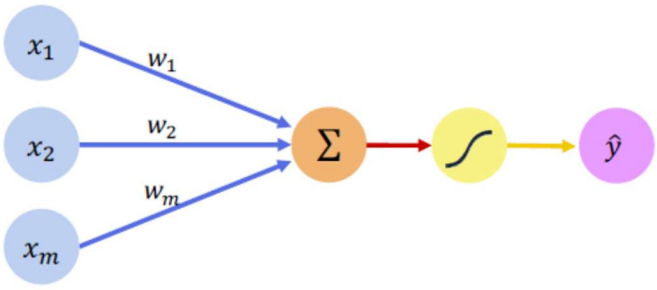
- Perceptron
- Activation Function (Supporting Relu, tanh, Sigmoid)
- Convolution (Taking a matrix of nxn convolving it by a filter of size pxp)

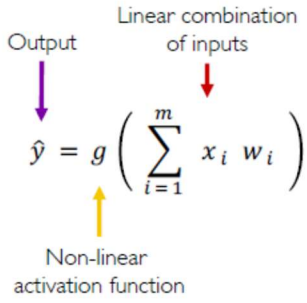
The best implementation is the one that achieves the least cost function below:

Cost function = 0.25 * Program Storage Utilization + 0.5 * Runtime/(Max Runtime from all implementations) + 0.25 * Accuracy (XOR test case)

There is a gift card for the winner

- You will need to find a way to report timing in your IDE code
- You will need to look up how to optimize matrix multiplication
- You will need to figure the best way to implement Activation function



Linear classifiers
cannot solve this