Upper Limb Prosthesis Controlling by EMG Signals Using Machine Learning

Salman Daher

12th grade, National Center for the distinguished, Syria

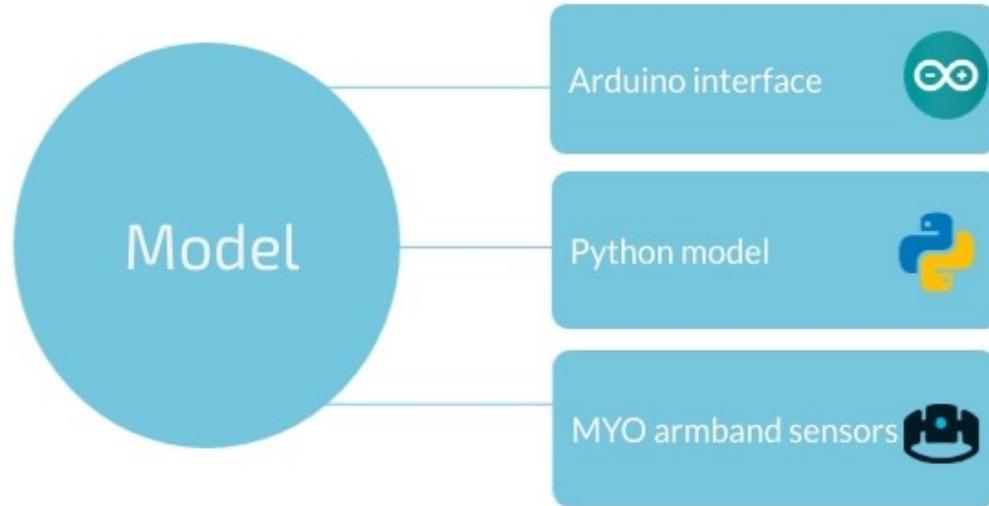Scientific Advisor : Mothanna Alkubeily, Tishreen University, Assistant Professor at the Department of Communication and Electronics, Ph.D.
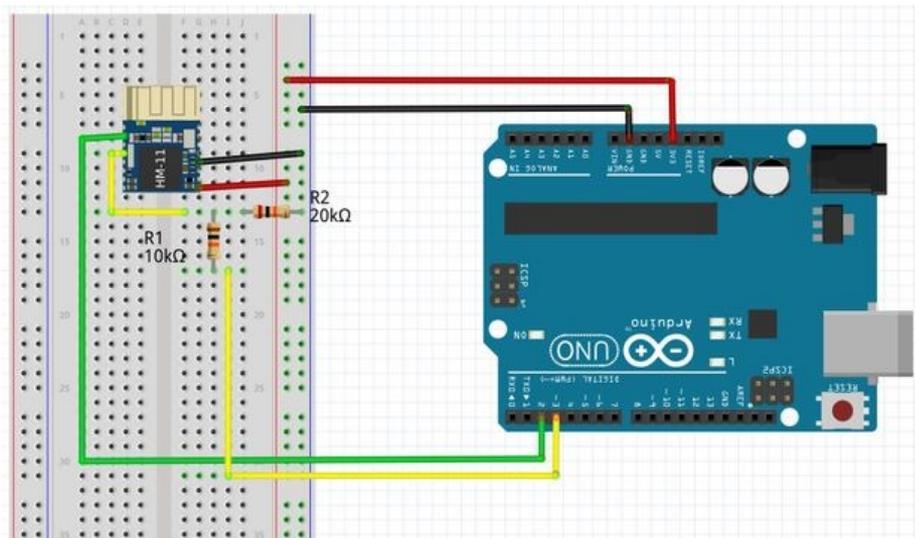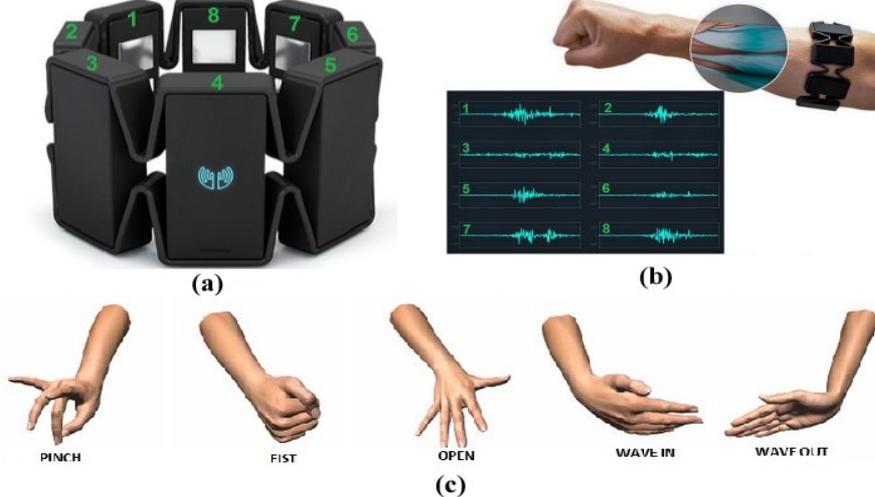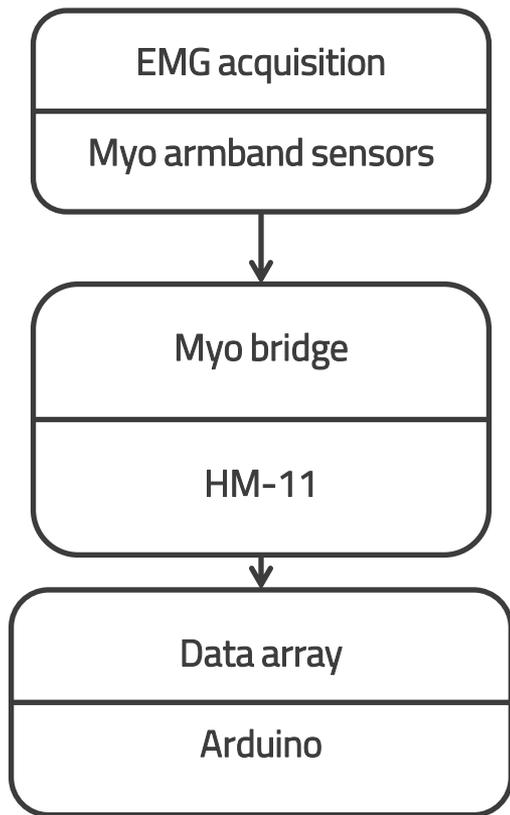
Introduction:

- The importance of Prosthesis

- Most popular methods of developing upper limb Prosthesis

The Full Model:

Methods:

(a)

(b)

PINCH   FIST   OPEN   WAVE IN   WAVE OUT

(c)

```
EMG acquisition
Myo armband sensors
        |
        v
Myo bridge
HM-11
        |
        v
Data array
Arduino
```

R2 20kΩ

R1 10kΩ

Methods:

Arduino Board → upper limb prosthesis → Response (Control)

Digital signals in Arduino

Classification of signals

Decision Tree classifier

Pinch1
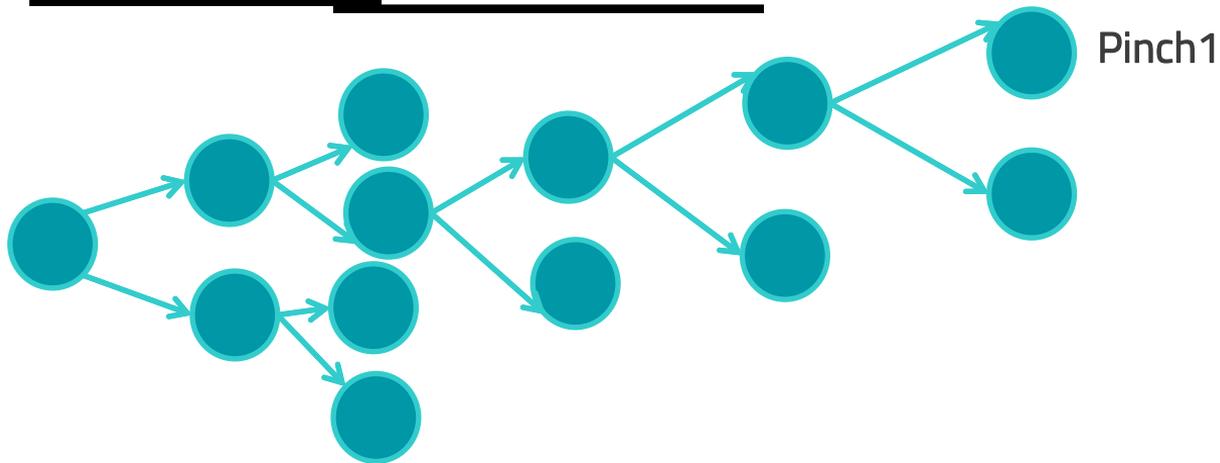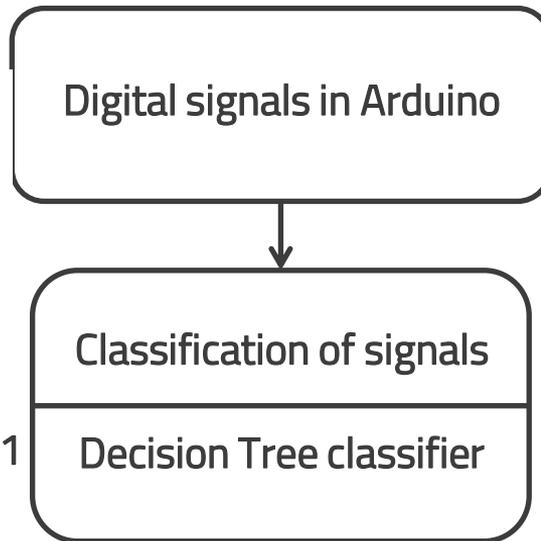
Diagram:
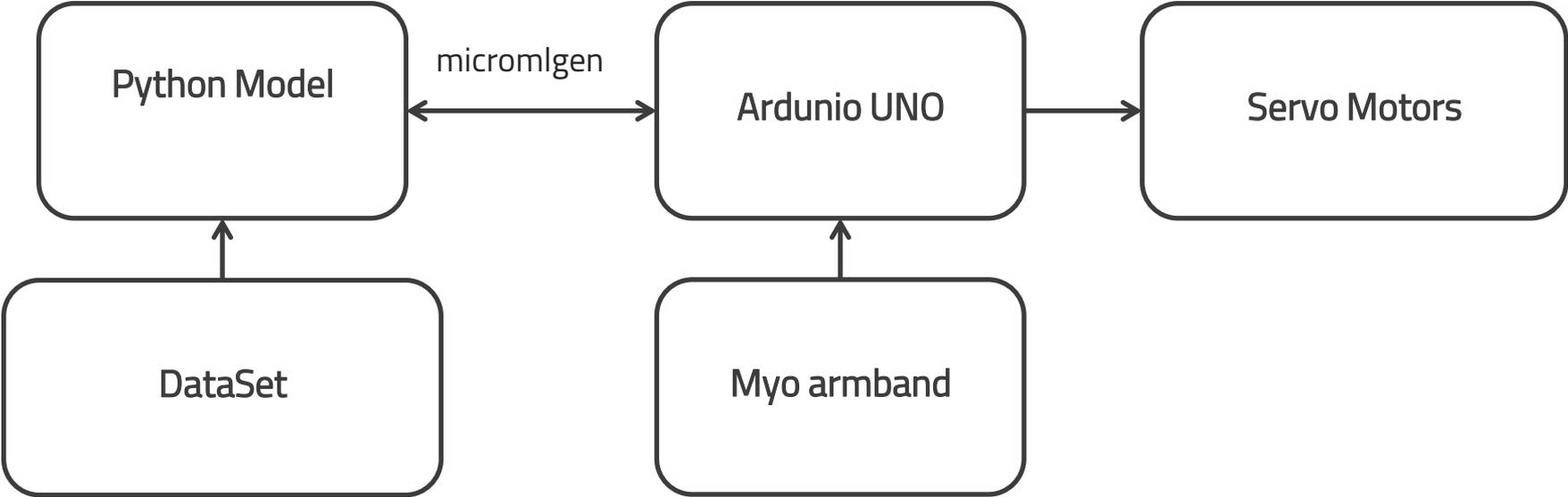
Simulation:

Video!

Results:

- Accuracy rate up to 98%.

- Chart demonstrate the errors:

Comparing between Predictions and real data
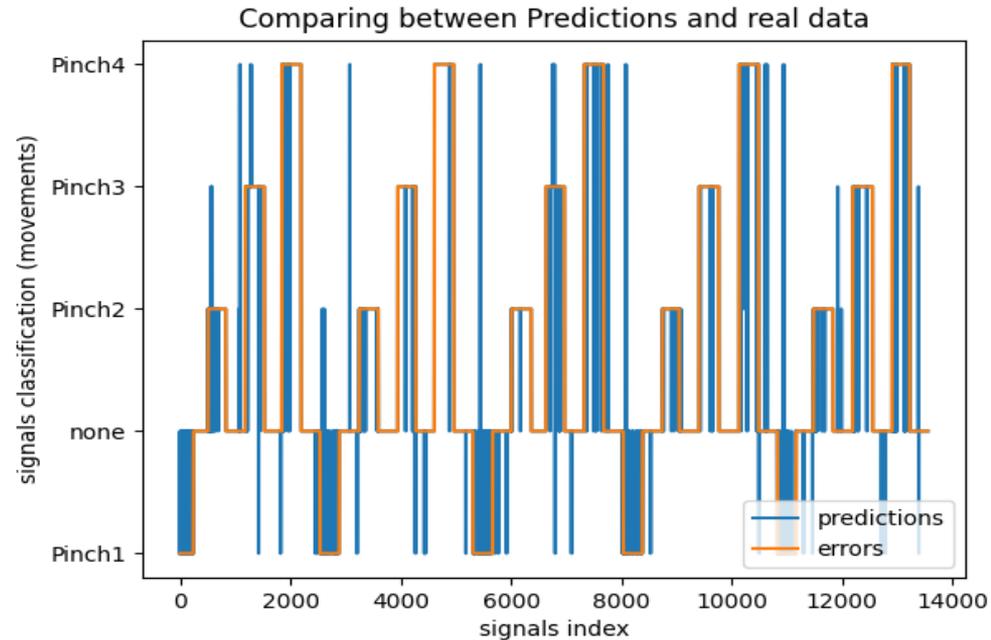
Conclusion and Future Work

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THANKS FOR LISTENING