# AML Lab

## Setting-up presentation

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# Introduction

Robots are capable of many things

--avoiding obstacles

--grasping objects

Key: Visual info. e.g. shape, location

Traditional methods –low efficiency

Deep Learning + Vision Tech.

# Introduction

Goal: Object classifying & 3D position acquisition

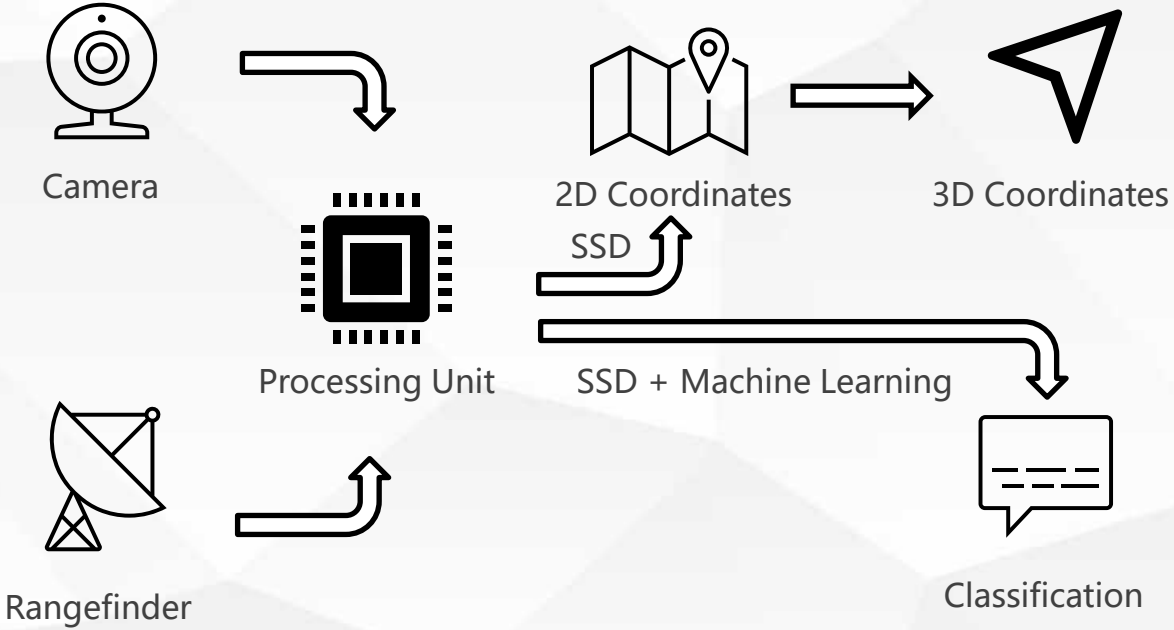
Challenges:
1. Converting 2D coordinates into 3D
2. Detecting speed

Solution: Single Shot MultiBox Detector (SSD)

Can work out a target’ s 2D position via video input quickly
With a rangefinder, can work out 3D position
Highly efficient classifying

# Proposed Approach





Assessment:

Criteria—Accuracy

When some classes have more instances
--calculate Micro and Macro averages

Visualizing—ROC(Receiver Operating Characteristic) curves

# Timetable

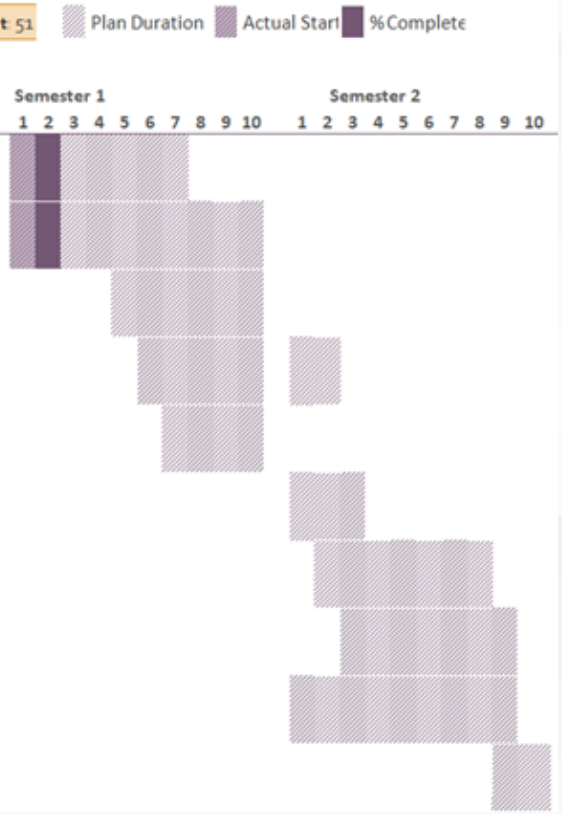


## Project Planner

*Select a period to highlight at right. A legend describing the charting follows.*

Period Highlight: 51 | Plan Duration | Actual Start | %Complete

| ACTIVITY | PLAN START | PLAN DURATION | ACTUAL START | ACTUAL DURATION | PERCENT COMPLETE |
|---|---|---|---|---|---|
| Project Discussions& proposals | 1 | 7 | 2 | | 50% |
| Literature review | 1 | 10 | 2 | | 20% |
| Hardware purchase | 5 | 6 | | | 0% |
| Hardware assembly and debugging | 6 | 7 | | | 0% |
| Implement object detection model | 7 | 4 | | | 0% |
| Data collection for localization | 1 | 3 | | | 0% |
| ML experiment to get object 3D coordinate | 2 | 7 | | | 0% |
| Arduino real practise | 3 | 7 | | | 0% |
| Final report | 1 | 9 | | | 0% |
| Project presentation | 9 | 2 | | | 0% |



# Budget estimated



| Hardware Components | Prices/GBP |
|---|---|
| Arduino NANO 33 BLE SENSE | 27 |
| Logitech C270 Camera | 26 |
| DFRobot URM04 V2.0 | 18 |
| Mechanical arm | 93 |
| Total | 164 |


# Thank you!

## References

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