

Richard Harrison Presentation

by Richard Harrison

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IMAGE PROCESSING ROBOT

BY RICHARD HARRISON

COLEG SIR GAR

PROJECT OBJECTIVES

- CREATE A REJECT SYSTEM THAT WILL REJECT OBJECTS ON A CONVEYOR DEPENDING ON THEIR COLOUR
- USE A SOFTWARE PACKAGE TO CREATE A PROGRAM THAT UTILISES THE CAMERA
- ONCE AN INVALID OBJECT HAS PASSED THE CAMERA, THE PROGRAM MUST ACTIVATE THE REJECT ARM WHICH SHOULD PUSH THE INVALID OBJECT INTO A REJECT BIN
- SYSTEM MUST PASS ALL VALID OBJECTS

WHERE?

- THIS PROJECT WILL BE DONE IN THE CLASSROOM



SOLUTIONS

BASIC SYSTEM WILL CONSIST OF A CONVEYOR WITH A MOUNTED CAMERA AND REJECT ARM.

2 POSSIBLE SOLUTIONS:

- 1) USE A PLC, COGNEX CAMERA AND SIEMENS PROGRAM
- 2) USE AN ARDUINO BOARD, 1080P WEBCAM AND LABVIEW SOFTWARE

SOLUTION 1

PROS

- EXPANDABLE

CONS

- EXPENSIVE
- COMPLEX SOFTWARE
- OVERKILL FOR TASK
- PHYSICALLY BULKY

SOLUTION 2 ★

PROS

- FAR MORE COST-EFFECTIVE
- PHYSICALLY SMALL
- SIMPLER SOFTWARE

CONS

- NOT VERY EXPANDABLE

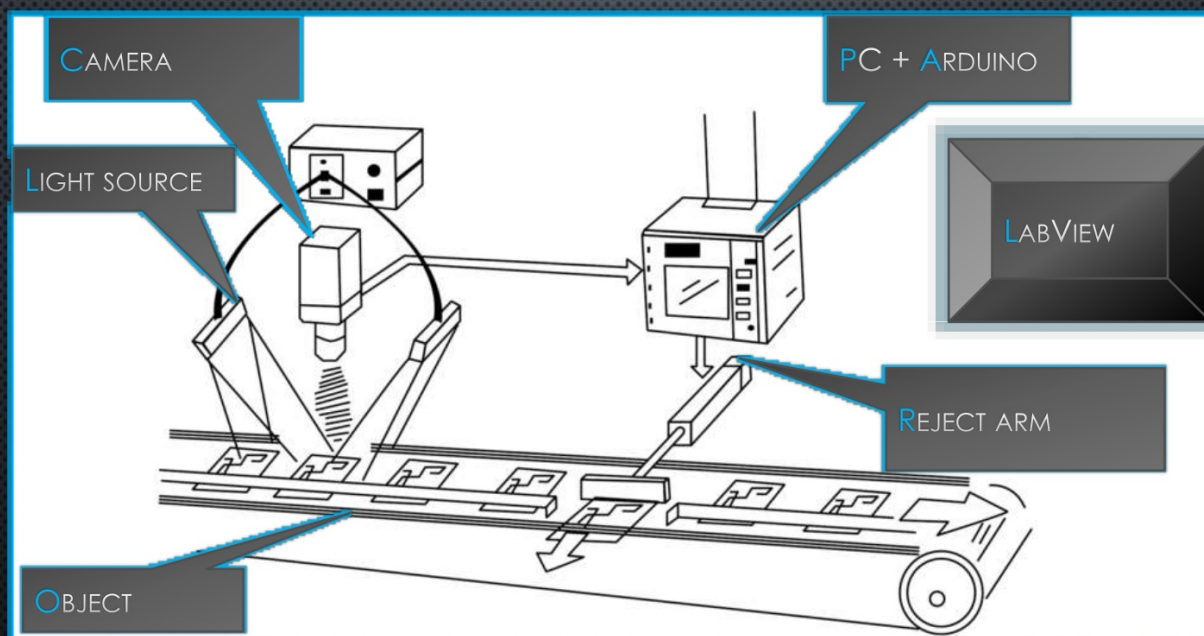


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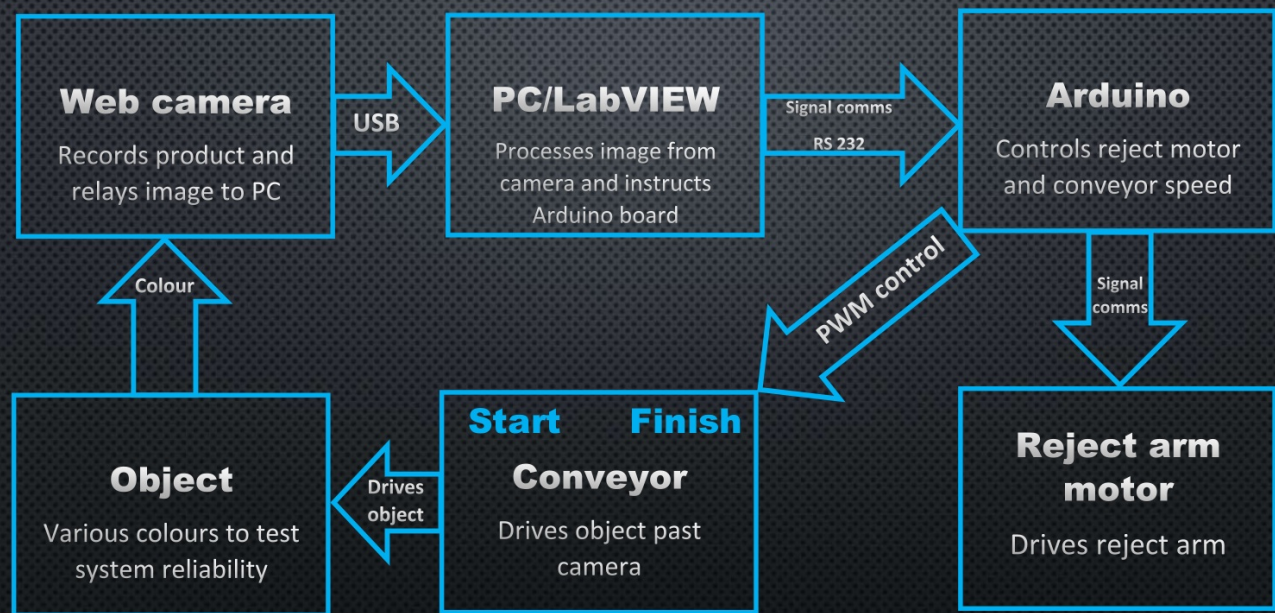


LabVIEW™

BASIC SYSTEM STRUCTURE



HOW IT WORKS



COST

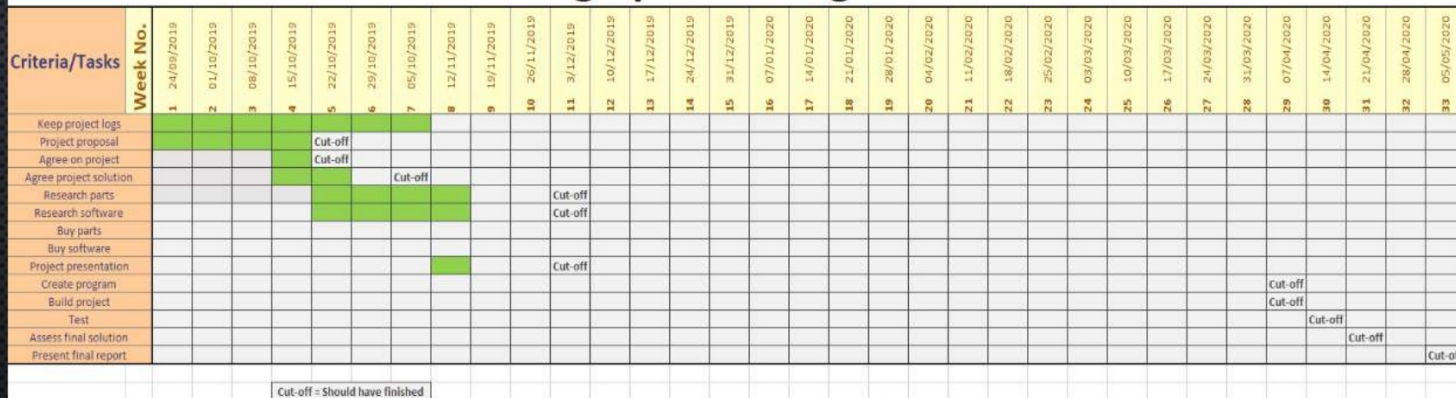
- Conveyor belt: £25
- Frame: £50
- 2 DC motors: £230
- Drive rollers: £5
- Webcam: £50
- Software: £1000
- Pusher arm: £5
- Arduino + motor shield: £40
- Total: £1405



GANTT CHART

TIME MANAGEMENT

Image processing robot





That's all Folks!

ANY QUESTIONS?

FINAL GRADE

GENERAL COMMENTS

64/100

Instructor

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GRADING FORM: CSG-RUBIC

RICHARD
HARRISON

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RESEARCH-INFORMED LITERATURE

 Background research included relevant detail with a good explanation. 6.5/10 The depth of research was appropriate for the project at this stage with an understanding of the solutions considered.6.5/10 **13/20**

KNOWLEDGE AND UNDERSTANDING

 The problem was defined clearly. 3.5/5 Constraints and codes of practice relevant to the project have been identified and the requirements have been planned as part of the project.3/5 Environmental and sustainability issues were discussed and more detail on this needs to go into the project plan.2.5/5 A clear understanding of functional requirements has been demonstrated with good use of a block diagram.4/5 Good response to questioning with full knowledge of the project requirements. 6/10 **19/30**

ANALYSIS

 A full breakdown of the problem was delivered and showed a good understanding.3.5/5 Functional design requirements was discussed thoroughly and a very clear understanding was shown.7/10 Justification of final solution was clear and a good competitive alternative for comparison included.3.5/5 **14/20**

PRACTICAL APPLICATION AND DEP.

 Design specification was very clear with a good explanation.3/5 Reasons for final solution was logical and a good comparison carried out to justify the choice. 6/10 Project planning has been very well thought out .3/5 **12/20**

SKILLS FOR PROFESSIONAL PRAC.

 Quality of the slides was very good and clear to read. 3/5 The presentation delivery was clear and confident.3/5 **6/10**