**282.762 – Robotics and Automation – Assignment 2**

**Aim:**

To develop an application that can determine the location and colour of tennis balls in an image.

**Objectives:**

* To find the location and colour of tennis balls in an image.

**Description:**

You are required to write a program that can determine the location and colour of tennis balls. The program’s input will be a picture of a workspace. The program’s output will indicate where the tennis ball is and what colour it is.

**Constraints:**

* You must use the sample images provided.

**Resources:**

* You will be provided with sample images.

**Method of Assessment:**

* You will be required to submit your program for testing.
* You will be required to submit a report about you program.

A grade out of 20 marks will be given for correctly identifying the colour and locations of the tennis balls.

A grade out of 30 marks will be given for the report.

Assignment 2 will be out of a total grade of 50 marks.

**Additional Information:**

Assignment 2 assesses the following learning outcomes:

1. Use artificial vision and optimization methods in artificial vision.

Assignment 2 accounts for 30% of the 282.762 paper’s grade.

Assignment 2 is an individual project.

The report should be no more than 5000 words.

**Location and Colour Identification Rubric:**

The following rubric provides an overview of how marks will be allocated for each sample image.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Demonstration** |  |  |  | **4 Marks** |
| 0 | 1 | 2 | 3 | 4 |
| No location and colours given. | Some locations and colours given. | Some locations and colours given. | Most locations and colours given. | All locations and colours given. |
|  |  |  |  |  |
| No effort applied. | Minimal effort applied. | Below average effort applied. | Average effort applied. | Above average effort applied. |

**Report Marking Rubric:**

The following rubric provides an overview of how marks will be allocated for the report.

|  |  |  |  |
| --- | --- | --- | --- |
| **Introduction/Aim/Objective** |  |  | **5 Marks** |
| 0 | 1 - 2 | 3 - 4 | 4 - 5 |
| No introduction, aim, or objective provided. | Simple introduction, aim, and objective provided. | Average introduction, aim, and objective provided. | Above average introduction, aim, and objective provided. |
|  | E.g. Copy of project brief’s introduction, aim, and objective. | E.g. Copy of project brief’s introduction, aim, and objective.  Some personal aims, objectives. | E.g. Reference to project brief’s introduction, aim, and objective. Personalised introduction, aim, and objective. Clear overview of project. |
| No effort applied. | Minimal effort applied. | Average effort applied. | Above average effort applied. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Methodology/Solution** |  |  | **15 Marks** |
| 0 | 1 - 5 | 6 - 10 | 11 - 15 |
| No Methodology provided. | Simple methodology provided. | Average methodology provided. | Above average methodology provided. |
|  | E.g. Simple description of what was done. | E.g. Moderate description of what was done and how. | E.g. Detailed description of what was done, how, and why. |
| No effort applied. | Minimal effort applied. | Average effort applied. | Above average effort applied. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Results/Discussion/Conclusion** |  |  | **5 Marks** |
| 0 | 1 - 2 | 3 - 4 | 4 - 5 |
| No results, discussion, and conclusion provided. | Simple results, discussion, and conclusion provided. | Average results, discussion, and conclusion provided. | Above average results, discussion, and conclusion provided. |
|  | E.g. Simple description of project outcome, minimal discussion, and simple conclusion provided. | E.g. Moderate description of project outcome, some discussion, and average conclusion provided. Some critical evaluation of processes and methodology provided. | E.g. Detailed description of project outcome, detailed discussion and above average conclusion provided. Detailed critical evaluation of processes and methodology provided. |
| No effort applied. | Minimal effort applied. | Average effort applied. | Above average effort applied. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Presentation/Structure** |  |  | **5 Marks** |
| 0 | 1 - 2 | 3 - 4 | 4 - 5 |
| No presentation. | Simple presentation and structure. | Average presentation and structure. | Above average presentation and structure. |
|  | E.g. Report consists of a “wall of text”. No figures. No tables. No clear structure. | E.g. Report has some structure. Includes some figures. Includes some tables. | E.g. Report has appropriate balance between text, figures, and tables. Excellent structure; includes table of contents, list of figures, sections, and captions. |
| No effort applied. | Minimal effort applied. | Average effort applied. | Above average effort applied. |