

Test Project

Module E Vision

Autonomous Mobile Robotics

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Introduction

The Vision module focuses on the Competitor's skill in creating a machine vision algorithm to detect and analyze different objects. While the use of the robot is not required, Competitors may use their robots (or parts of it) if they wish. The task will be conducted in a secure, closed space to ensure equal chances for all teams. Spare cameras will be available for this module if required.

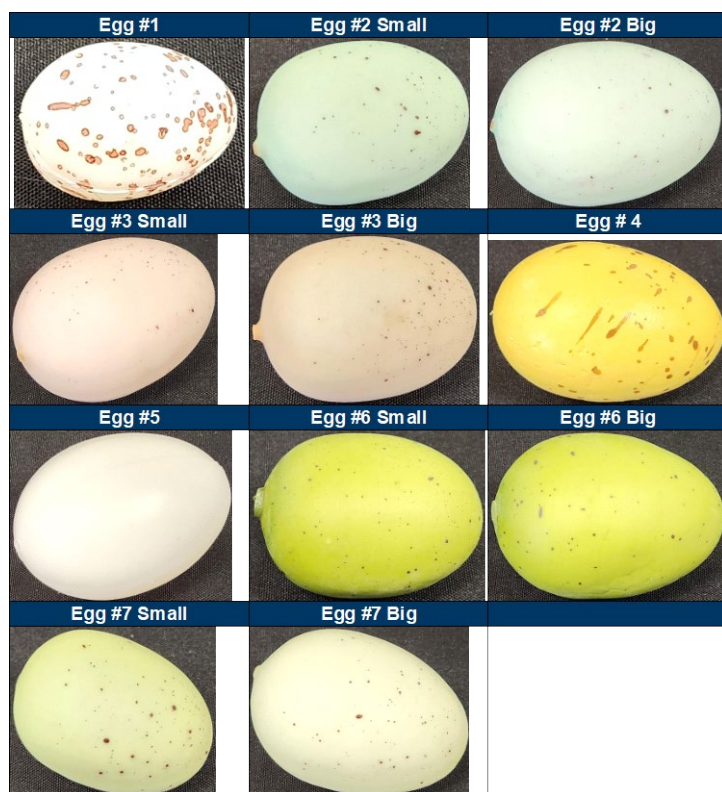
Description of project and tasks

Vision is expected to be completed in a total of a three-hour time block. Teams will be provided with a set of vision objects at the start of their three-hour time block. This time block includes the assessment period. At the two hour and 45-minute time block the experts will collect the vision objects from the competitors. After that, teams will have 15 minutes in the assigned assessment room to run the evaluation. Teams will remain at their assigned workbench either before or after assessment (possibly both) as per the timetable. They could use that time to continue preparing for other modules at the workbench or via shared court access.

Instructions to the Competitor

Competitors will be given a set objects to complete the task at the start of the time block. From the set of objects, a random sample will be chosen and used for evaluation. The set of objects used will be the same for all Competitors.

The vision algorithm must identify the following and indicate to the Experts the result. There are multiple colours and sizes of eggs, some eggs are of the same colours but have a small egg as well.



Six eggs will be chosen from the samples. The Competitors must use vision to identify the eggs. The same six eggs will be used for all Competitors however the order that they are placed into the camera's FOV (Field of View) will be randomized.

Competitors will be marked on a live stream video from the camera and vision programme. The Expert will place the object in the camera's FOV (Field of View), and the vision programme will either display the objects' identity on the camera feed or via a simple print a statement.

Objects will only be placed one at a time in the camera FOV.

In the assessment area competitors will tell the Expert where to place the object, however the Experts will randomly place the objects into the cameras FOV.

Typical test Run

1. Competitors enter the Vision Testing Area
2. Competitors setup and calibrate their camera.
3. Competitors tell the expert where to place the object.
4. Assessment begins.
5. Competitors clean up and leave the room.

Other

Remember that you have 15 minutes to complete all the steps in the task.