Best Usage of MATLAB and Simulink in Robocon India 2018

This document outlines the basis on which the points for the Best Usage of MATLAB and Simulink in Robocon India will be awarded. There are two areas that will be considered.

1. Implementation or Modeling of Functionality
2. Prototyping of the functionality on hardware

1. Implementation or Modeling of Functionality:

This area includes the implementation or modeling of various functionalities on the robots and this includes data acquisition, data analysis and visualization, optimization, image/signal acquisition & processing, computer vision, plant modelling, and control design and tuning. e.g. line following algorithm, object tracking algorithm

The points awarded for this component will be based on:

a. Algorithm innovation
b. Software architecture/implementation
c. Use of MathWorks workflow – Technical Computing, Model-based Design, Physical modeling etc.
d. Extensibility to use in actual robot
e. Performance of the algorithm

You will be awarded for each unique algorithmically independent functionality implemented. You can score up to 10 points per functionality.

2. Prototyping of the functionality on hardware

This area includes the prototyping of the functionalities on hardware which may include custom hardware or mass market hardware. This will be considered for every algorithmically independent function that has been prototyped and/or implemented on target hardware using MathWorks code generation tools like Embedded Coder and Support Packages for Arduino, Raspberry Pi and other hardware.

The points awarded for this component will be based on:

a. Choice of hardware for prototyping
b. Prototyping technique used - Manual coding/auto code generation
c. Integration - Extensibility for the use on the actual robot
d. Demonstration on this feature/functionality on the robot

You will be awarded for each unique algorithmically independent functionality prototypes. You can score up to 15 points per functionality prototype implementation.

On the day of the competition, the MathWorks team will interact with you either in your team's pit or in the gaming arena (announcement will be made during the event).

For questions on the above, email Support_Robocon@mathworks.in

You will need to prepare a set of slides using the format provided below briefly describing the workflow for each of the algorithmically independent functionality and hardware prototyping.

Slide format:

Initial slide: Your college name and team name

Slides on Implementation or Modeling of Functionality (one slide per functionality)

- *Implementation or Modeling of Functionality using MathWorks tools for the design of your robot*
    - *Features include data acquisition, data analysis and visualization, optimization, image/signal acquisition & processing, computer vision, plant modelling, and control design and tuning. e.g. line following algorithm, object tracking algorithm*
    - *Comment on the challenges faced, extensibility of your algorithm, algorithm performance*
    - ***Use one slide (at most) per algorithm/functionality***

Slides on Prototyping of functionality on hardware (one slide per functionality)

- *Prototyping and/or implementation of an algorithm/functionality using MathWorks tools for the design of your robot*
    - *Comment on the type of hardware used, hardware implementation, verification of the implemented functionality, integration of the functionality with the rest of the hardware*
    - ***Use one slide (at most) per algorithm/functionality***