LAWRENCE TECHNOLOGICAL UNIVERSITY ROBOFEST

RoboMed

RoboMed

Robótica y dispositivos orientados al área Médica

1. Descripción general de RoboMed

Objetivos de aprendizaje

- Asignaturas STEAM centradas en el diseño y aplicaciones de sistemas y dispositivos biomédicos
- Tecnología y aplicaciones de sensores.
- Programación computacional
- Resolución de problemas
- Desarrollo de Habilidades empresariales

Sinopsis

- Una competencia única de STEAM para proyectos relacionados con los campos Biomédicos y sanitarios así como dispositivos médicos

2. Edades y tamaño del equipo

- Senior Division (15-19 años)
- College Division (Estudiantes Univeristarios)

- Tamaño del equipo: máximo cinco (5) se Recomienda 2 o 3 estudiantes por controlador de robot utilizado

CARACTERISTICAS GENERALES

Antes del día de la competencia, los equipos deben proporcionar:

- Breve descripción escrita del proyecto
- enlace de video (subido al sistema de registro de Robofest)
- código fuente antes de la competencia para la revisión del juez. Los inspectores de código pueden recomendar puntos para la programación.
- Se puede utilizar cualquier micro controlador y cualquier lenguaje de programación

3. Requerimientos y limitaciones del proyecto(1/2)

Antes del día de la competencia, los equipos deben proporcionar:

- Breve descripción escrita del proyecto
- enlace de video (subido al sistema de registro de Robofest)
- código fuente una semana antes de la competencia para la revisión del juez. Los inspectores de código pueden recomendar puntos para la programación
- Los equipos deberán traer todo el material necesario para su presentación
- El proyecto debe estar relacionado con los campos Biomédicos y sanitarios.
- El proyecto debe incluir programación para uso de sensores y/o actuadores
- Se puede utilizar cualquier micro controlador y cualquier lenguaje de programación
- Se puede utilizar cualquier material que sea seguro para los humanos.
- La competencia RoboMed promueve una mentalidad emprendedora. Por lo tanto, se recomiendan oraciones sobre "Reconocimiento de oportunidades" y "Creación de valor" en la descripción del proyecto.

Debido a que parte de los requerimientos de esta competencia es que la presentación sea en ingles toda regla y rubricas estarán en ingles para que sea mas fácil la transición a el proyecto internacional en caso de ser seleccionado

3. Project Requirements/Limitations (2/2)

- The demonstration space for each team is limited to a maximum of 64 square ft. including 6ft or 8ft table that is provided by the host. Teams may choose to demonstrate robots/devices on the floor. Exceeding maximum space allowed may result in deduction of points
- Projects which have been entered in a previous competition category of any kind can be entered, but team must:
  - Add new features and/or significantly improve or change one or more features
  - Describe the addition/changes in the project description text area of the team registration page
  - Inform judges during the official presentation that their project is a “continued” form of a previous project
- Video requirements
  - Approximately 4 minutes, maximum of 5 minutes
  - Includes the Team ID, Team Name and team member introduction
  - Video should be submitted one week prior to the competition

4. Project Presentation

- Teams must present their project to the group of Judges with a formal presentation at a time specified by the Site Host
- Teams will have a maximum of 4 minutes to explain and demonstrate their project to the Judges
- Teams are responsible for keeping track of their 4-minute time limit
- Exceeding time limit may result in deduction of points
- Teams may also present & demonstrate their project to spectators throughout the in-person event

5. RoboMed Judging

- The Judges will use the rubric posted on the “RoboMed” page at robofest.net
- In addition to the formal presentation, Judges will visit the team tables individually to ask additional questions, evaluate robots, and inspect program code at any time within the Official Judging time blocks, as noted in the program
- “Secret Judges” may visit teams throughout the day to ask questions, check displays and observe interactions with spectators. These judges will not identify their roles
- Age-appropriate math and science applications will be judged
  - Advanced level skills are fine to use, however, they may not necessarily result in the highest scores in the STEM learning category on the rubric

6. Project Recommendations

- It is requested that teams bring poster boards or other visuals to describe their projects
- In addition to submitting the required 4 minute video, it is highly recommended that each RoboMed team set up a team website and/or publish a video clip on a video sharing site such as YouTube
  - Judges will use videos to preview the team projects prior to the competition day
  - Teams should plan to bring a laptop to show their video and/or display their website during the competition

7. Code Submission Instructions

- RoboMed teams must submit their source code 1 week prior to the competition
- Judges will assess how well the code is designed, structured and commented.
- Guidelines:
  - Pdf format (print programs or images can be pasted into google slides or Powerpoint, then saved as pdf)
  - Arrange code to help make it easy to understand
  - If needed, add comments to help explain
  - Highlight aspects of code that are important
  - 1 file per team
  - Include team number and team name in file name (ex: 2913-4_Xteam.pdf)

8. Judging Rubric

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Robofest RoboMed Judging Rubric

Division: ____Sr. ___ Coll. Team Name: _____ Team ID: _____

Judge Name: _____

Brief project description:

5: Strongly Agree	excellent, outstanding, advanced, exemplary, or amazing
4: Agree	good, accomplished, or proficient
3: Neutral	average, intermediate level, or acceptable
2: Somewhat Disagree	attempted but needs work
1: Disagree	little attempted or needs lots of help

Judging Category	Sub Categories	Weight	1 ~ 5 Score
1. STEM learning	This project truly demonstrates applications of science, engineering, and math for medical & healthcare related projects.	7%	
	Students have an age appropriate understanding of the science, engineering and math concepts they applied to the medical robotics project.	7%	
2. Project idea and originality	The project idea is very original and showed impressive creative thinking and problem solving skills.	9%	
3. Project demo performance (robot)	The official live robot demo during the webinar is free from problems and very impressive.	9%	
4. Project presentation	Project presentation is clear, well organized, and delivered effectively within the allowed time.	8%	
	Information on the team poster, brochure and signage is clear, well designed, and able to be understood even by robotic novices. Project remained within allowed size parameters (max 64 ft^2 or 5.95 m^2 including table).	4%	
5. Solution design	The solution design is creative, effective, user-friendly, and sturdy.	8%	
6. Project complexity & intelligence	The project is complex with multiple intelligent & interactive features/functions, sensors, and components.	8%	
7. Practicality & Entrepreneurship	The demonstrated project shows potential as a useful and practical application of robotics technology for real-world biomedical applications.	8%	
	Team members have the entrepreneurship mindset and business plans on how to commercialize their systems.	8%	
8. Programming	Students are able to explain their programming code during live presentation.	4%	
	Programs are well designed, structured, and commented (code document must be submitted to Robofest*).	10%	
9.Team independence	Based on my observations and interaction with the team, I believe the project was mostly designed, developed, and programmed by students, not by adult coaches, parents, or mentors. The students were able to clearly and confidently explain each part of their project.	5%	
10. Video	The video gives a clear explanation of features of the project, including the Team ID, Team Name and Team member introduction (min 4 minutes/max 5 minutes).	7%	

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