**Overview**

Micromouse is a project that fuses advanced algorithms, precise hardware design, and agile movement capabilities to create an autonomous robot that can traverse, solve, and race through an unfamiliar maze. These miniature robots demonstrate sophisticated maze-solving algorithms and real-time decision-making processes, showcasing their ability to navigate complex mazes with precision and efficiency. Equipped with sensors for environment perception and integrated with specialized motors and wheels, Micromouse robots exhibit precise movement control, allowing them to traverse maze environments swiftly while avoiding collisions. Micromouse robots showcase dynamic decision making, precise controls, and efficient hardware.

**Project Details**

- Navigation and calculating fastest path: Utilizing maze mapping to determine the most efficient route through the maze, efficient navigation to cut exploration time, and simulation testing for pathing algorithms.

- Mouse build: Focusing on keeping the Micromouse build as light as possible to optimize speed and maneuverability.

- Sensing: Incorporating various types of sensors, including infrared (IR) and proximity sensors, for accurate environment perception.

- Motors: Implementing encoders and PID (Proportional-Integral-Derivative) loops to track distance traveled and ensure precise movement control.

- Movement: Prioritizing efficient and consistent movement for traversing and racing, including strategies for keeping the car straight and centered within the maze.

**Design**

The design philosophy behind our Micromouse focuses on creating a lightweight, fast, easily adjustable, and adaptable robot. This includes selecting materials and components that minimize weight without compromising structural integrity, optimizing the chassis for speed and agility, and designing mechanisms for quick adjustments and modifications to adapt to different maze configurations and racing conditions.

**How to Join**

All students, regardless of grade, major, or experience level, are welcome to join our Micromouse project. Club meetings are held every Monday at 6 PM in room 1211. Whether you're interested in robotics, programming, hardware design, or simply curious about exploring the fascinating world of Micromouse, we encourage you to join us and be part of this exciting journey!