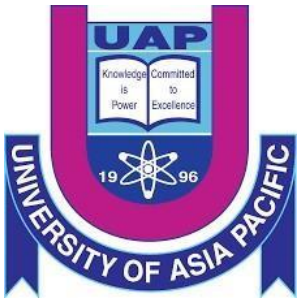

University of Asia Pacific

Department of Computer Science and Engineering (CSE)

Course Title: Peripheral & Interfacing Lab
Course Code: CSE-316

Submission Date: 4-05-2024

Submitted to

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Section: A1
Semester: 3rd year 2nd semester

Name: FireBot Uno

Subtitle: FireBot Uno: Blaze Solutions with Arduino Precision

Description:

Constructed around the Arduino Uno microcontroller, the FireBot Uno integrates vital components: two wheels, one servo motor, two relay modules, two DC motors for wheels, one submersible pump, a chassis board, an IR sensor, and two fire sensors. Its power is supplied by three batteries: one for the water pump and two for the rest of the components. The FireBot Uno boasts dual functionalities: fire detection and extinguishing, and obstacle avoidance. Its core functionality is managed by the Arduino Uno. The fire sensors swiftly identify fires, while the DC motors and wheels enable precise movement. The servo motor enhances maneuverability, and the IR sensor ensures obstacle avoidance.

At the heart of its firefighting capabilities lies the robust 18650 battery, seamlessly linked to a purpose-built water container. Fueled by a dedicated battery, the submersible pump executes controlled water release, swiftly extinguishing detected fires. The FireBot Uno's design underscores functionality, with components organized on the chassis board for efficiency and effectiveness. This seamless convergence of hardware and software defines the FireBot Uno as a sophisticated and efficient firefighting solution, skillfully combining precision and purpose in its autonomous mission to safeguard environments from potential fire hazards while navigating obstacles with precision.

Outcomes of FireBot Uno:

- Fire detection and suppression using a flame sensor and water release mechanism.
- Navigate obstacles with the 2 wheels, 1 servo motor, and IR sensor.
- Incorporate an Arduino Uno microcontroller for intelligent decision-making.
- Enable precise movement with 2 DC motors for wheels.
- Utilization of a compact design for firefighting applications and obstacle avoidance.

Features of FireBot Uno:

1. The intelligence of the system is controlled by Arduino Uno.
2. The chassis is propelled by two DC motors on each wheel.
3. A servo motor ensures precise maneuvering, complementing the compact design.
4. 2 relay modules enable separate control: the submersible pump and motor direction.
5. Integration of flame sensors allows early fire detection for timely response.
6. An IR sensor facilitates obstacle avoidance, enhancing navigational capabilities.
7. A submersible pump, powered by a dedicated battery, extinguishes detected fires.
8. Chassis board provides a stable platform for mounting components and sensors.
9. Three batteries sustain operations: one for the pump, two for other system functions.
10. Seamless integration of components ensures: firefighting and obstacle avoidance.

Reference: https://echithi.com/home/