Title

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Abstract:

Write this after completing the paper.

Introduction:

An embedded system is a combination of hardware and software with a specific function that is physically embedded in a larger device. Embedded systems account for nearly all microprocessor production. The goal of this project is to program an embedded system that can control Pololu’s Zumo robot so that it can perform 3 tasks: fight other robots, follow a black line, and navigate a maze with obstacles.

Materials and Methods

For this project, the ‘CY8CKIT-059 PSoC 5LP’ prototyping kit from Cypress Semiconductor has been used to control the Zumo robot. Code is written to the PSoC by connecting it to a computer via USB and using PSoC Creator 4.2, also by Cypress Semiconducter. The Zumo robot’s hardware can be broken down into the following individual components: motors, 6 reflectance sensors, an accelerometer, an ultrasonic sensor, an infrared sensor and a Wi-Fi chip. A router acting as an MQTT broker is used to communicate between our computers and the robot. There is also a programmable button on the PSoC hardware itself. The libraries for controlling these components have been generously provided by Metropolia University of Applied Science.

Results

Completing the goal of the project required getting familiar with the hardware of the robot. To that end, 3 smaller tasks were laid out on a weekly basis.

Built into the hardware of the PSoC is a programmable button.

Discussion

Acknowledgements

Barr, Michael (1 August 2009). "https://www.embedded.com/electronics-blogs/barr-code/4027479/Real-men-program-in-C”. *Embedded Systems Design*. TechInsights (United Business Media). p. 2. Retrieved 2009-12-23.