2104-Group-P2J

ICT2104-Embedded Systems Programming

About our project

> An autonomous robot that is capable of **mapping areas** around itself, **sending the map data** to a storage location to be built into a feasible 2D map capable of tracking where and when routes happened. This idea designated Mini Robotic 2D Mapper (MR2M) was further supported by the realization that there were many diverse potential ways the product could go, these ways included but were not limited to, autonomous space mapping, and the mapping and navigation of cave systems. - Since the project is currently in its startup phase, our team is attempting to build an MR2M robot with minimal materials and deploying it within a safe environment.

Pre-requisites

- Code Composer

What you need

- MSP432
- ESP8266
- TB6612FNG Motor Controller
- HC-SR01 Ultrasonic sensor
- IR wheel encoder
- Battery holder
- Schematic (provided in the documentation)

Project setup

To use our project, you have to install Simplelink_msp432p4_sdk_3_30_00_13 library in your Code Composer Studio.

How to use

> Download or pull our source codes into your Code Composer Studio and launch the project

How to run the main program - Project2104_Integrated

- Follow the pin connected according to the provided schematic
- Run the main.c codes

ESP8266

- It's a wireless SoC
- It has GPIO, I2C, ADC, SPI, PWM and some more
- It's running at 80MHz
- 64KBytes of instruction RAM
- 96KBytes of data RAM
- 64KBytes boot ROM
- The ESP8266 chip is made by Espressif
- Modules bearing this chip are made by various manufacturers

How to run ESP8266 - Project2104_Wifi_Independent demo file

- Ensure the wifi module and the computer that is running the codes are on the same network
- Check wifi module's IP address by using the ATCIFSR command in the comm. If not connected to any network, follow steps from here to connect. https://www.electronicshub.org/connect-esp8266-to-wifi/
- Run the main.c codes
- Open any browser and key in the IP address of the wifi module
- Wait for 40 seconds for the data to be displayed

Progress

> The project as of upload is still in its prototype phase, the mapping boundary algorithm could be improved on.