Change the Planet with PSoC

Proposal

What planet-changing IoT project do you want to build?

I want to build a system that can be used for exploring the surroundings and provides the user with a panoramic view and a 3D model of the surroundings. Some applications of this are in creating maps (the 360 degree view in Google Maps, for example) and use in research, particularly, in computer vision, to provide hardware both for data collection and processing. It could further be used to test more advanced algorithms.

The system will consist of a user controllable bot with a movable camera mounted on it for capturing images and the PSoC will process images as required and store the obtained results in the cloud service.

Which Cypress PSoC 6 Dev Kit would you like to use for the project and why? (can use multiple kits)

I am planning to use PSoC 6 WiFi-BT Pioneer Kit, along with a battery, motors, sensors and controllers for building a basic bot unit capable of exploring the surroundings. Pioneer Kit is arduino compatible and so can be easily used for controlling motors for the bot. A camera will be mounted on the PSoC which will capture images from various angles. The bot will be controlled by the user and will receive instructions via wireless communication (Bluetooth or WiFi). Pioneer Kit also provides ease of adding peripherals like a GPS unit to provide location information along with images. This may be useful when multiple such bots are used at the same time.

How will you use AWS IoT or other cloud services in your project?

The images taken by the camera will be processed by the PSoC board using image processing and computer vision algorithms to obtain a panoramic view and 3D model, which will be stored in the cloud (cloud service provided by AWS) and can be accessed by the user for further processing or direct use, without requiring to directly communicate with the PSoC bot.

What is your experience level with embedded IoT Design?

I have taken two courses relevant to embedded IoT systems design. In the course *Introduction to EECS via Interconnected Embedded Systems*, I learned working with Arduino Esp32 and adding peripherals like IMU, GPS and microphone to systems. For the final project, I worked in a team to build a multiplayer game involving an Arduino Esp32 and a Web GUI. Another course I have taken is the *Microcomputer Project laboratory*, through which I learned about the PSoCs. For the final project, I built an image editing tool using a PSoC 5LP board and a TFT display.