Misty World

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Abstract

People love traveling, but it is not trivial and easy to record the process, including location, pictures, videos, etc. In this project, we proposed and designed a new system, Misty World, that contains an Android mobile app and a microcontroller subsystem to address this issue. While the mobile app provides a Google map to record the user's location, the microcontroller system uses different sensors and hardware to support the user, such as accelerator, mini camera, microphone, etc. The primitive results show that the system not only can help the users record their travel information via our sensor-based microcontroller system, but the Android mobile app also can provide location information as a record.

Introduction

The speed of today's society is accelerating and people are all in rush. In addition, more and more people hope that they can easily take pictures or even record videos while doing outdoor activities. Although there are some commercialize projects designed for this purpose, these devices are expensive and not comprehensive for our needs.

In this project, we propose a new system, Misty World, to allow people to record their own traces. By recording the user's trace, supplemented by multimedia materials, such as text, pictures, videos, etc., the system can also visualize the location information on the map. The combination of these information can provide a good memory for the users.

Methods & Materials

To demonstrate the capability of recording the user's travel, we tried and used a lot of hardware materials, including Arduino Uno and Mega 2560 microcontrollers, accelerator, mini camera, Bluetooth module, microphone and Android phones. Specifically, we have:

- Assembled different devices to record the users' travel and designed a mobile app to visualize data, including location information

- Optimized the step counting algorithm to reduce memory usage and created a new algorithm to calculate the number of steps

- Created a wireless connection between Arduino microcontroller board and the Android mobile app by using nRF8001 Bluetooth breakout

- Used a SD card to temporarily store camera information in case unexpected problems happening during the data transmission via Bluetooth transmission

Results

- The project successfully demonstrated the capability to connect hardware (Arduino) and software (Android) via Bluetooth to address the found issue.

- We successfully developed mobile app to achieve the desired function.

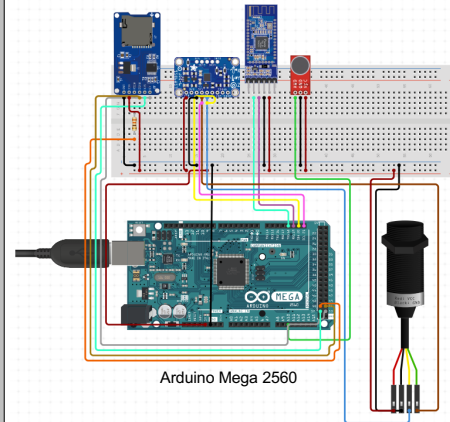- We are still working on integrating personal drones to support the travelers.

Arduino Mega 2560

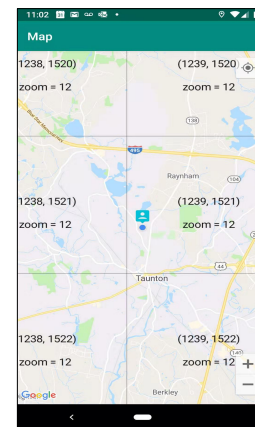**Figure1: The Circuit design of the microcontroller system with different sensors and hardware.**

Figure2: The designed Android mobile app that support the users to record traveling locations.

Conclusions

In this project, we have demonstrated the idea to create a customized system to help the users explore and and record the details, including showing trajectories on the map. The users can easily share their traveling memories with friends and family and mark the places they need.

Currently, we are still integrating a personal drone to support the travelers. This device not only is expected to take photos/videos for the users, but it can be extended to provide personal safety support to the travelers.

Acknowledgements

Bibliography

1. Arduino documentation. https://arduino.cc
2. GitHub. https://github.com