

Wireless Automobile Detection, License Plate Processing, and Data Availability Network Proposal

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Abstract

300 words or less. Talk about the motivation behind this project. Why it is important.

1 Project Description

A description

1.1 Introduction

Introduction. Talk about the motivation behind this project. Why it is important.

1.2 Related Work

[1] describes an implementation of a system to detect automobiles entering and exiting a parking lot using a magnetometer and wireless nodes based on the commercially available Arduino Fio microcontroller platform. This system uses the ubiquitous IEEE 802.15.4 communications standard to communicate automobile detection data to a central base-station based on the small, commercially available Raspberry Pi Linux computer. The

project described in this proposal will augment and extend this project while collaborating closely with Stillwell, to the point of a real world deployment at the Colorado School of Mines.

2 Proposed Work

2.1 Automobile Detection

The automobile detection subsystem provides a means for detecting ingress and egress of vehicles from a parking lot. This subsystem is to be placed on the side of the road next to each parking lot entrance and exit. Automobiles will be detected using a magnetometer which perceives the induced change in the local magnetic field as the metallic structure of the vehicle passes by as described in [1]. The automobile detection subsystem will be based around the commercially available Arduino Fio 16-bit platform which utilizes the ubiquitous Atmel ATMEGA328p microcontroller.

The hardware to be used for automobile detection will be contained in the same enclosure as the license plate image acquisition hardware.

The use of a magnetometer ensures that solely automobile and other large vehicles such as motorcycles are detected while pedestrians are ignored.

Work on the automobile detection subsystem will involve a variety of tests and analyses to ensure system and data integrity.

2.2 License Plate Image Acquisition

Kevin

2.3 Central Basestation

Everyone

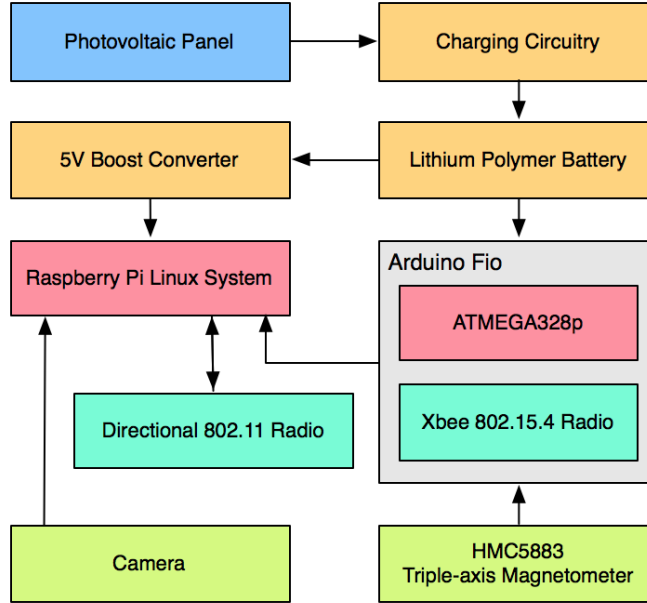


Figure 1: Automobile Detection Subsystem Architecture

2.4 Server Processing

Once an image has been determined to contain a license plate, it will be transmitted from the Acquisition Raspberry Pi to a server online via the Central Basestation Pi. The server will then be responsible for using optical character recognition (OCR) technology to extract the digits of the license plate from the image. Upon successful completion, the textual representation of the license plate will be stored in a database residing on the server to be later integrated into a front-facing web application.

The subsystem encapsulating server processing will require a review of OCR software that might be suitable for detecting text from images.

2.4.1 Review of OCR Software

2.4.2 Collection of Test Data

2.4.3 Effect of Different License Plates on OCR Software

2.5 Web Application

Taylor

2.6 Deployment

Blah

3 Summary

A summary [2] Talk about the motivation behind this project. Why it is important.

References

[1] R. Stillwell, A. Wilson “Magnetometer Parking Sensor” *EGGN 383 Final Project*,
Colorado School of Mines. December 12, 2013.

[2] X. Johnson