Senior Design Project Plan

Group May 13-17

Group Members:

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First Draft

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1. Project Brief

1.1 Introduction
Patrolling parking lots at universities like Iowa State is a time and resource intensive task. By partially automating the process, resources can be conserved while catching more parking violations.

1.2 Purpose Statement
The purpose of the project is to create an outdoor license plate scanner, database, and interface suitable for monitoring traffic into and out of parking lots.

1.3 Client
Josh Mandich/Venture Lights

2. Project Contact Details

2.1 Group Members

Member	Email	Phone #
Eric Cheatham	ejcheat@iastate.edu	(757) 243-4772
Michael Flagg	mflagg@iastate.edu	(515) 984-0122
Intae Kim	intae@iastate.edu	
James Sampica	jtsampica@gmail.com	
David Turner	djturner@iastate.edu	(515) 201-0790

2.2 Client

Name	Email	Phone #
Josh Mandich	jmandich@iastate.edu	(612) 875-1395

2.3 Advisor

Name	Email	Phone #
Arun Somani	arun@iastate.edu	(515) 294-0442

3. Work Plan

Name	Roles
Eric Cheatham	- Team Manager - Networking - User Interface
Michael Flagg	- Camera - Hardware Integration - Device Containment
Intae Kim	- Hardware Integration - Image Processing
James Sampica	- Website Management - Database - User Interface
David Turner	- Image Processing - Networking - User Interface

4. Block Diagram
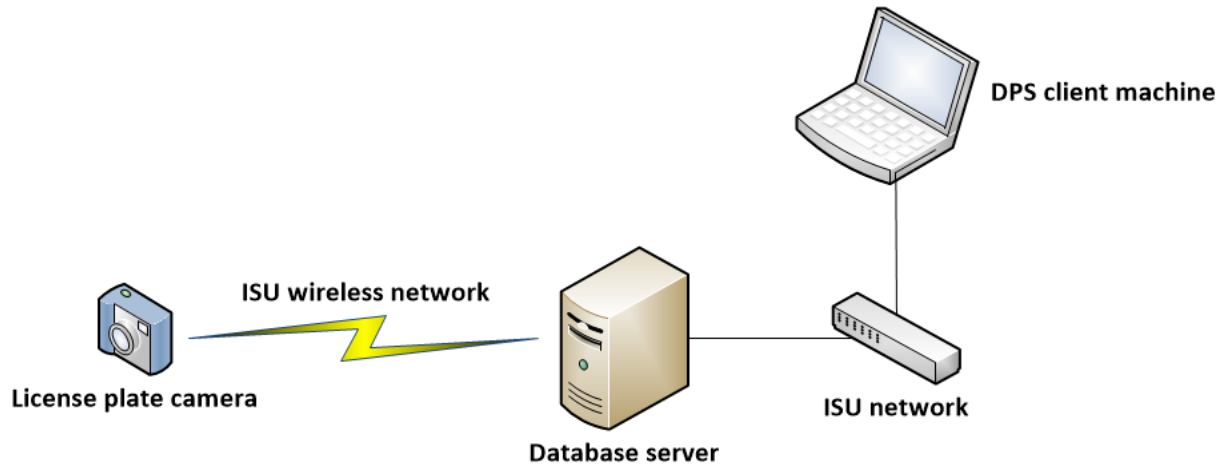
5. Assumptions

5.1 User Assumptions
● The most common user will be a university's parking management or Department of Public Safety.

5.2 Project Assumptions
● The client will cover development costs up to $800 during the project period.

6. Requirements

6.1 Functional Requirements
- Take reliable pictures of passing cars
- Image processing must be completed in a reasonable time
- Operate on the school network
- Work 24/7 (day/night)
- Operate in inclement weather
- Only issue tickets within specified times
- Be able to deal with multi-entry lots

6.2 Non-functional Requirements
- Scalability
- Low-cost
- Maintainable

7. Specifications
- Temperature
  - -40°C - 85°C
- Dimensions
  - Reasonably small- fits in a project box
  - < 0.5 cubic feet
- Weight
  - < 3lbs
- Voltage source
  - 5V/700mA
  - Must be consistent
- Waterproof/Weatherproof
  - Snow/rain/sleet/hail

8. Risks and Mitigation
As with all large projects, there are certain risks involved that could affect its outcome. Many of these risks may be mitigated through detailed planning and in-depth testing. Some possible risks are outlined below.

- Reliability of the Optical Character Recognition (OCR) engine
- ISU network reliability
- Image processing algorithm
- Raspberry Pi
  - No realtime clock
  - Track record for power issues (at least on earlier revisions)
- Hardware
- Server reliability

9. Project Schedule

Week	Task	Artifact Due
Week 1 8/19/12	Select project	
Week 2 8/26/12	Meet with client, advisor	
Weeks 3-4 9/2/12	Initial research, market research	
Weeks 5-6 9/18612	More focused research, platform selection, project plan	Project Plan - First Draft
Week 7 9/30/12	Finalize requirements with the client	
Weeks 8-10 10/7/12	Work on design document, begin testing and prototyping	Design Doc - First Draft
Weeks 11-12 10/28/12	Work on second draft of the project plan, start work on group presentation	Project Plan - Second Draft
Weeks 13-15 11/11/12	Finish design document, project plan and work on group presentation	Design Doc and Project Plan - Final Draft
Week 16 12/2/12	Finish group presentation	Group Presentation