reLive System

*Final Report*

**reImagine Technologies**

David Moreno

Mario Raushel

Terrence Sin

Caleb Wells

Department of Computer Science

Texas A&M University

March 3, 2008

Table of Contents

[2 Table of Figures ii](#_Toc196727118)

[1 Executive Summary 1](#_Toc196727119)

[2 Project Background 1](#_Toc196727120)

[2.1 Need Statement 1](#_Toc196727121)

[2.2 Goal and Objectives 1](#_Toc196727122)

[2.3 Literature and Technical Survey 1](#_Toc196727123)

[2.4 Evaluation of Alternative Solutions 1](#_Toc196727124)

[3 Final Design 1](#_Toc196727125)

[3.1 Hardware 1](#_Toc196727126)

[3.1.1 System Description 1](#_Toc196727127)

[3.1.2 Complete Module-Wise Specification 1](#_Toc196727128)

[3.1.3 Aproach for Design Validation 2](#_Toc196727129)

[3.2 Software 2](#_Toc196727130)

[3.2.1 System Description 2](#_Toc196727131)

[3.2.2 Complete Module-Wise Specification 2](#_Toc196727132)

[3.2.3 Aproach for Design Validation 2](#_Toc196727133)

[4 Implementation Notes 2](#_Toc196727134)

[5 Experimental Results 2](#_Toc196727135)

[6 User’s Manual 2](#_Toc196727136)

[7 Course Debriefing 2](#_Toc196727137)

[8 Budget 2](#_Toc196727138)

[9 Appendices 3](#_Toc196727139)

# Table of Figures

[Figure 1: Car 1](#_Toc196726941)

# Executive Summary

(text here) - Caleb

# Project Background

## Need Statement

(text here) - Terrence

## Goal and Objectives

(text here) - Terrence

## Literature and Technical Survey

(text here) - Terrence

## Evaluation of Alternative Solutions

(text here) - Terrence

# Final Design

## Hardware

### System Description

(text here) - David



Figure : Car

#### Component 1

(text here) - David

#### Component2

(text here) - David

### Complete Module-Wise Specification

(text here) - David

### Approach for Design Validation

(text here) - David

## Software

### System Description

(text here) - Mario

#### Component 1

(text here) - Mario

#### Component2

(text here) - Mario

### Complete Module-Wise Specification

(text here) - Mario

### Approach for Design Validation

(text here) - Mario

# Implementation Notes

(text here) – David & Mario

# Experimental Results

(text here) – Caleb & Terrence

# User’s Manual

This manual has been created with the expectation that the user of the system has a basic knowledge of computers. The user is expected to know how to use the input devices of a computer (such as the mouse and keyboard) as well as the understanding of how to properly insert and remove a SD media card from their computer. Since the software will format any removable device when requested, the user should also be able to distinguish between the removable devices connected to their computer. The user is also expected to be using Windows XP or Windows Vista as the product has not been tested on other versions of Windows. The user will also need an active internet connection to be able to upload their pictures to their Picasa web account. The user should be able to maintain an active internet connection and create an account with the Picasa service.

## Software

* Software Installation
* Complete Operation Instructions

## Hardware

### Packaging

The hardware is installed in the reLive system has been enclosed in half of a Radio Shack project enclosure. This enclosure contains the CMUcam3 as well as the connections for the battery pack and the GPS.

<Insert Picture of Enclosure>

### Hardware Operation

The operation of the reLive system should require no tweaking from the user after the user programs the SD media card with the software solution. All programming will be done using the SD media card. The user will be required to have the media card in the reLive system during operation. The software solution will program the SD media card to correctly control the reLive hardware.

The reLive system must be able to acquire GPS signal before it will operate properly. The first signal will be obtained in approximately 45 seconds in while in an area clear of obstructions such as tall buildings, trees, or power lines. After the first GPS signal has been acquired, the system will begin taking pictures as the triggers indicate. If the GPS signal is lost, the previous GPS position will be assumed when taking the next pictures so the reLive system will work in urban areas and inside buildings.

### Setting Triggers

The triggers that are programmed by the software to the media card control the operation of the reLive hardware. These triggers will control when a picture is taken and how the system will act when no GPS signal is present.

The **time trigger** is the basic trigger that will always be enabled. The minimum time trigger is 90 seconds. This trigger will be controlled off of the clock located on the CMUcam3 so it does not depend on a GPS signal.

The **distance trigger** can be disabled by setting the minimum distance to 0 meters. This trigger can be set to any value from 0 meters to 10,000 kilometers. If this trigger is not disabled, a GPS signal will be required to activate this trigger. If a GPS signal is not acquired, the distance cannot be calculated.

The **halo trigger** will allow the user to specify a distance from a specific GPS location as the only area that pictures will be taken. If the GPS is last acquired inside of the halo, pictures will continue to be taken until GPS has been acquired outside of the halo. This trigger can be disabled with a checkbox in the software solution.

The **scheduler trigger** will use the real time clock from the GPS to determine if a picture should be taken. This trigger will only take pictures between the hours specified in the software solution. Like the halo trigger, this option can be disabled through the software solution.

### Changing GPS Modules

While the GPS and CMUcam3 come packaged together in the reLive system, the GPS can be replaced by any GPS that meets the following requirements:

* Powered with 5 V
* Serial output
* Outputs NMEA “GPGGA” string
* No other pins required for normal operation

A new GPS needs to be connected to the pins shown below

<Insert Picture of CMUcam3 Connections>

# Course Debriefing

(text here) - All

# Budget

(text here) - Caleb

# Appendices