Requirements Documentation

I. Introduction
   A. Purpose of this System
      i. Provide real-time assistance to emergency services
      ii. Be an extensible framework for emergent UAV technologies
   B. Intended Audience for this Document
      i. Representatives of aerospace firms
      ii. Faculty of CSULA’s engineering departments
      iii. Engineering students at CSULA
      iv. Drone technology enthusiasts
   C. Project Scope
      i. System capable of command/control of a remote UAV
      ii. Provides real-time data visualization
      iii. Capable of object recognition

II. Description
   A. Overview
      i. This is a system designed to allow representatives of emergency services departments to
         achieve a number of tasks: reconnaissance, package delivery and other special
         computations described in this document
   B. Functions
      i. Send target coordinates to UAV
      ii. View vehicle health and sensor data in dashboard
   C. Users
      i. Search and Rescue
      ii. Police
   D. Dependencies and Constraints
      i. User-facing application(s) and server application must execute on different machines,
         and communicate over local network.
      ii. Robot node must be able to operate without connection to server
      iii. 

III. Interface Requirements
   A. User Interfaces
      i. Application
         ○ Command page
            ▪ Provide a map of local area to send location coordinates to server
         ○ Device health page
            ▪ Display all vehicle health data
         ○ Sensor device screens
            ▪ Critical widgets (visible on all sensor device screens)
            ▪ Screens
               1. Camera
               2. Thermal
               3. Charts
               4. list of officers → health report

CS-4961 PRD for UAV-GS by Jacky Lu, Tyler Thome, Maria Perez, Claudia Seidel, and Juan Hernandez. December 2016
B. Network Interfaces
   i. Interface between Server and UAV
      a. Server can make requests to the UAV
         ◦ Move to location
         ◦ Special device/gimbal operations
   ii. HTTP Interface between Client and Server
        a. Validate command requests
        b. Stream sensor data received from UAV
IV. System Features
A. Command and Control
   i. Flight control
      a. By clicking any location on the aerial map, commands the drone to move to that location
      b. Raise and lower the altitude with a slider
   ii. Payload control
      a. Access device-specific functions for attached payloads

B. Sensor Data Visualization
   i. Gauges and other widgets for data which can be best represented visually
   ii. Graphs for data where appropriate
   iii. Camera view with object recognition

V. Other Requirements
A. Sensor Devices
   i. Build system such that new data rates and formats from future sensor specifications should easily integrate.
B. Client and Server
   i. Develop server interface such that new client applications can use the same API