GP-Cam User Manual

**System Overview**

The GP-Cam system includes a few separate components that work together in order to achieve the end goal of capturing the video of a dynamic GPS target. The Matlab software will run a server that receives GPS coordinates and move the Sony EVI-D70 PTZ camera appropriately in order to focus on the given target. This Matlab software can operate with any device that will communicate with it via TCP/IP. The GP-Cam system includes an Android app that acquires a smartphone’s GPS coordinates and sends them to the Matlab server. These two devices are connected with an ad-hoc wifi connection.

**System Requirements**

* Ubuntu 12.04
* Android 4.0.0 or greater
* Matlab R2013a
* VLC Media Player

**Hardware Requirements**

* Computer with wireless hardware capable of creating a wifi access point
* Sony EVI-D70 Pan / Tilt / Zoom Camera
* Hauppauge USB-LIVE 2 Analog Video Digitizer

**Installation Instructions**

1. Extract GPCam.zip
2. Set up the camera controller
   1. Navigate to the GPCam/EVILib directory
   2. change some permissions
      1. “ls -la /dev | grep ttyUSB”
   3. “make all”
   4. In matlab, execute a “mex eviCam.cpp./EVILib/EVILib.a -I./EVILib”
3. Create Ad-Hoc network
   1. open a terminal, and install Hostapd
      1. “sudo apt-get install hostapd”
   2. create a text file with the following:
      1. interface=wlan0  
         driver=nl80211  
         ssid=**MyAP**  
         hw\_mode=g  
         channel=11  
         wpa=1  
         wpa\_passphrase=**MyPasswordHere**  
         wpa\_key\_mgmt=WPA-PSK  
         wpa\_pairwise=TKIP CCMP  
         wpa\_ptk\_rekey=600
      2. Make sure to replace the bolded text with the desired ssid and password
      3. save this file as hostapd.conf and save it to your home directory
   3. open wireless manager in Ubuntu and “Create a New Wireless Network”
      1. create this network with the same username/password as used in the configuration file
   4. Now click “connect to a hidden network” under the network manager
      1. select your newly created network
   5. open a terminal and type “sudo hostapd hostapd.conf”
4. Install supplied android apk on your phone

**Normal Usage**

1. Connect all hardware components
   1. laptop to camera control input
   2. laptop to hauppage video digitizer
   3. hauppauge video digitizer to composite video on camera
   4. camera to AC outlet
2. open wireless manager in Ubuntu and click “connect to a hidden network”
   1. select appropriate network
   2. open a terminal and type “sudo hostapd hostapd.conf”
3. connect to the ad-hoc network on smartphone
4. open VLC media player
   1. click “Devices”
   2. click “video capture”
   3. click “Hauppauge”
   4. click “USB Live 2”
   5. the video should now display in VLC media player
5. Open Matlab
   1. run camServer.m
   2. enter port: 6000
6. open GP-Cam app on smartphone
   1. Click “Broadcast GPS data” button
   2. place phone on camera location and press calibrate
      1. NOTE: camera must be facing North to start
7. the camera should now be operable