**Drone Project: Part 1**

**What we got to work:**

* Installed Anaconda on Windows 10 Version 10.0.17763 Build 17763 laptop
* Created an Anaconda environment
* Pip installed all dependencies except av which was a conda install
* Modified code to allow user to program buttons for any controller.
* Modified code to allow custom set up of controllers
* Modified code to print customized flight data on console.
* Set up PS4 controller that was not preset.
* Controlled Tello Drone with new set up controller
* Controlled Tello Drone with PS4 controller via USB and Bluetooth.
* Controlled Tello Drone with Xbox controller via USB.

**What we tried hard but didn’t get to work:**

* Did not get keyboard controls working on Windows OS.

**Tutorial:**

**Install Anaconda:**

1. Install Anaconda: <https://www.continuum.io/downloads>
2. Create a conda environment
   1. conda create –newEnvironment opencv-env python=(version number)
3. Activate the conda environment
   1. activate newEnvironment
4. Install the necessary dependencies
   1. pip install dependency
5. If pip can’t install a dependency, use conda to install
   1. conda install -c conda-forge av

**Run TelloPy example scripts:**

At this point you should have everything you need to run the TelloPy example scripts found in the TelloPy installation directory. Make sure the environment is activated or else you will get errors. There is a one for simple takeoff; one for keyboard and video; and one for joystick and video. The scripts include keyboard and joystick mappings in the comments and code.

**Notes on Joystick Use:**

If your controller is not preset in the code, the program will prompt you to set it up. Follow the instructions. In order for your new controller to work it must have at least two buttons. If you ever want to restart the button mapping, press the takeoff button, and if you ever want to stop setting your buttons and move on, press the landing button. After it will set up your joysticks, if at any point you decide not to set up a joystick just press the takeoff button to stop. To set up the joysticks, repeatedly push the joystick either up or to the right and then back to the center and back out.

**Data output:**

By default, the joystick example script will print basic flight data. Additional flight data is available and the output can be customized by modifying the ‘handler’ function to print the desired data. Below is reference information to show what information is made available.

**Tello Drone and TelloPy Reference Information**

|  |  |  |
| --- | --- | --- |
| **INPUT EVENTS:** |  |  |
| **Event Number** | **Event Enum** | **Event Data** |
| 2 | KEYDOWN | key, mod, unicode, scancode |
| 3 | KEYUP | key, mod |
| 4 | MOUSEMOTION | pos, rel, buttons |
| 5 | MOUSEBUTTONDOWN | pos, button |
| 6 | MOUSEBUTTONUP | pos, button |
| 7 | JOYAXISMOTION | joy, axis, value |
| 8 | JOYBALLMOTION | joy, ball, rel |
| 9 | JOYHATMOTION | joy, hat, value |
| 10 | JOYBUTTONDOWN | joy, button |
| 11 | JOYBUTTONUP | joy, button |
| 12 | QUIT | none |

**FLIGHT DATA PROPERTIES:**

{

'battery\_low': 0, ‘battery\_lower': 0, 'battery\_percentage': 69,

'battery\_state': 0, 'camera\_state': 0, 'down\_visual\_state': 0,

'drone\_battery\_left': 0, 'drone\_fly\_time\_left': -61591, 'drone\_hover': 0,

'em\_open': 0, 'em\_sky': 0, 'em\_ground': 0,

'east\_speed': 0, 'electrical\_machinery\_state': 0, 'factory\_mode': 0,

'fly\_mode': 6, ' fly\_speed': 0, 'fly\_time': 106,

'front\_in': 0, 'front\_lsc': 0, 'front\_out': 0, 'gravity\_state': 0, 'ground\_speed': 0, 'height': 0, 'imu\_calibration\_state': 0, 'imu\_state': 0, 'light\_strength': 0, 'north\_speed': 0, 'outage\_recording': 0, 'power\_state': 0, 'pressure\_state': 0, 'smart\_video\_exit\_mode': 0, 'temperature\_height': 1, 'throw\_fly\_timer': 0, 'wifi\_disturb': 0, 'wifi\_strength': 0, 'wind\_state': 0

}