

Hello from a dark corner of the lab. It has been a very busy time here: with finishing off one project and completing a few “TO DO” list items before starting our latest project

DRONE Return To Home (RTH) command

As I mentioned in the last report, our drone does NOT have a GPS. However, I wanted a quick “bring me home” command. The python program is written and it works wonderfully. I can give the drone a series of commands to go to different places (file a flight plan) and then just enter HOME and voila, it flies back home.

WEB SITE – systemkeepers.com

The number of people interested in my hobby and related ramblings has increased to the point of “who did I send what to?” level. This has been solved by me creating a crude website. Of course, this meant learning another programming language, HyperText Markup Language (HTML). Crude means there are NO cascading style sheets nor flashing lights. There is a link to all the previous reports and videos. The site is systemkeepers.com

VIRTUAL MACHINE (VM)

All of the previous robot projects were programmed in C++ on a computer running the Windows 10 operating system (OS) and then transferred, via a USB cable, to the Arduino board, on the robot.

The drone has a proprietary operating system (OS). I write the code, in python, on the samsung tab S3, running Android OS, and then send the commands via wifi to the drone.

Life would be easier, theme of this month, if I could use the same machine for more tasks.

A Virtual Machine (VM) is an emulation of a real machine. Sort of like a supervisor. You install the Virtual Machine Operating System (VM OS) on the computer and it is called a host. From the VM OS, you then install any other OS that you want: windows, MacOS, UNIX, etc. and they are called guests. A host can have multiple guests. As with a house, the number of guests is only restricted to the amount of space you have.

So we now have a computer with Vmware as the host and Windows 10 and Raspian as the guests.

RASPBERRY PI

So what is Raspian and why is this section called raspberry PI?

The more I become familiar with the python language, the more I like it, However the robot’s Arduino board does not speak python, just English, Italian and C++.

However, there are boards that love to speak python. One of them is Raspberry PI, which costs \$46 CAD. The Raspberry Pi was originally developed by a UK-based charity. The idea was that the simple little computer could be used to teach basic computer science: students can load simple operating systems on the Pi, plug in peripherals (like a mouse, a keyboard, or additional storage), and design and run programs on it. It is also a great development system for industrial and commercial products.

<https://thepi.io/what-is-a-raspberry-pi/>

The raspberry pi foundation has now sold over 23 million boards. You can also add other hardware to the board. I have added a Hardware Attached on Top (HAT) which will allow my python program to send commands to the arduino controlled robot thru a cable. Below is the PI with the HAT.



Raspian is the OS on the Raspberry board. It is a version of the UNIX OS that I have used over the past 45 years. The android OS and the apple OS are also variants of unix. Unix was originally developed in the 60s by MIT, AT&T and GE as a testing platform for engineers. A good comparison would be the many variations of English: Canadian, American, British, etc.

LIBREOFFICE THUNDERBIRD FIREFOX DUCKDUCKGO

Microsoft has Office, Apple has iWork and there are other proprietary office suites of applications. All use different commands to do the same thing. Now that I am using windows and raspian OSes, I want to use ONE suite, Therefore we have switched over to LibreOffice. It is a free and open-source office suite, from The Document Foundation, that runs on windows, MacOS and unix platforms.

We have also switched our e-mail client to Thunderbird and browser to firefox, both from Mozilla Foundation and they also run on windows, MacOS and unix platforms.

We do a lot of research for our projects which means constant web searches. It is a “pain in the butt” to receive all those ads when you use google, bing, etc Therefore we switched our web search engine to duckduckgo which does NO tracking.

Now we can start our new project, unless the Facilities Manager determines that “there is tooo much clutter and the lab has to be re-designed.