Using Python with National Instruments Interfaces

Software Requirements

- Windows is required. This does not work natively on Mac, but works with either Bootcamp or emulation. I use Parallels Desktop which works fine.
- Python basic needs:
  - Python 3.4 or higher
  - scipy, numpy, and matplotlib packages
  - PyQt5 package
  - The easiest approach is to just install the latest version of Anaconda. This will provide everything you need.
- Install the National Instruments NI-DAQmx driver
- Install nidaqmx.py by opening a Python console and typing *pip install nidaqmx*.

Running things

- Attach the provided interface to an open USB port on your computer.
- Figure out what NI-DAQmx calls the interface you've attached to your computer. (It is *almost* always "Dev1", but it's worth checking.) The NI-MAX program was installed on your computer when you installed NI-DAQmx. Run it. On the sidebar will be a 'My System' fold-down, with 'Devices and Interfaces' below that. Look for something like 'NI USB–6341 (BNC) "Dev1"'.
- Open the Python program you've been provided with your favorite text editor. There's a marked area near the top of the program where you can change the channel(s) to fit what you just learned from NI-MAX. Change all the channels as needed. For example if it says channel1 is "Dev1/ai0" but NI-MAX says your interface is myDAQ1 and you're using analog input 1 instead, then change channel1 to "myDAQ1/ai1". (You probably won't need to change anything though!)
- While you're there, check how the code works. I made a serious effort to make the code easy to understand, with both comments and design. You can learn a lot by just looking at Python code sometimes, and you may think of improvements. Please share those!
- Save the edited code.
- Physically connect the experiment to the appropriate channels. If there's more than one channel, make sure the right ones are connected to the right channels, otherwise you will get weird results…
- Run the code in the manner of your choosing. I open an Anacona Prompt window and type "python (program-name)", but Spyder or Jupyter also work. The program will create a nice little window with controls and a graph, which should be self-explanatory.
- When it doesn't work, contact me: eayars@csuchico.edu. I'll try to help.