Real-Time Hands-on Tool for Teaching Three-Phase Motor Control

Guide for Running Visualization Tool

Running the Visualization

1) Configure a virtual environment. This is necessary to access the Python libraries needed to run the program. This step only needs to be done when running the visualization for the first time.
2) `source [your env. name]/bin/activate`: enter a virtual environment to access the Python libraries needed to run the program. Replace `[your env. name]` with your environment name.
3) `cd [path to script]`: the path to the script should be the folder where `Visualization_1080p.py` is located.
4) `python Visualization_1080p.py`: runs the visualization.

Exporting Data

To export data, simply press the Export button in the bottom right corner. This will save a .csv file of all of the waveforms which are currently displayed in the visualization. It is recommended to pause before exporting to ensure you are saving the correct data. Each row in the .csv will be a different signal. The signals can then be accessed using the following code:

```
rawData = readmatrix('DataOut.csv');

f = rawData(1,1);

t_analog = rawData(2,:);

uvVolts = rawData(3,:);
vwVolts = rawData(4,:);
wuVolts = rawData(5,:);
dVolts = rawData(6,:);
qVolts = rawData(7,:);
zVolts = rawData(8,:);
uVolts = rawData(9,:);
vVolts = rawData(10,:);
wVolts = rawData(11,:);

uvAmps = rawData(12,:);
vwAmps = rawData(13,:);
wuAmps = rawData(14,:);
dAmps = rawData(15,:);
qAmps = rawData(16,:);
zAmps = rawData(17,:);

speed = rawData(18,:);
refSpeed = rawData(19,:);

dVoltsAvg = rawData(20,:);
qVoltsAvg = rawData(21,:);
```

```
zVoltsAvg = rawData(22,:);
dAmpsAvg = rawData(23,:);
qAmpsAvg = rawData(24,:);
zAmpsAvg = rawData(25,:);

t_hall = rawData(26,:);
hallA = rawData(27,:);
hallB = rawData(28,:);
hallC = rawData(29,:);

t_encoder = rawData(30,:);
encoderA = rawData(31,:);
encoderB = rawData(32,:);
encoderZ = rawData(33,:);
```