**GUIDE TO USING BUCKEYE CURRENT’S SIMULATION**

**Getting started:**

Download the executable file from the following link: <https://docs.google.com/file/d/0B67g86jkGQbKcUN0cXVldmVETWs/edit?usp=sharing>

Download the folder **test\_in** from the following link: <https://docs.google.com/file/d/0B67g86jkGQbKeGxwVVUwVFU0cHc/edit?usp=sharing>

Once both files have been downloaded, place both Buckeye Current Simulation.exe and test\_in.zip into the same directory. The desktop would be a good choice for those unsure of where to place them exactly. Next, unzip test\_in.zip by right clicking test\_in and clicking **Extract All.**

**Correctly Setting Up the Folder:**

There should now be a folder named test\_in in the same location as Buckeye Current Simulation.exe.

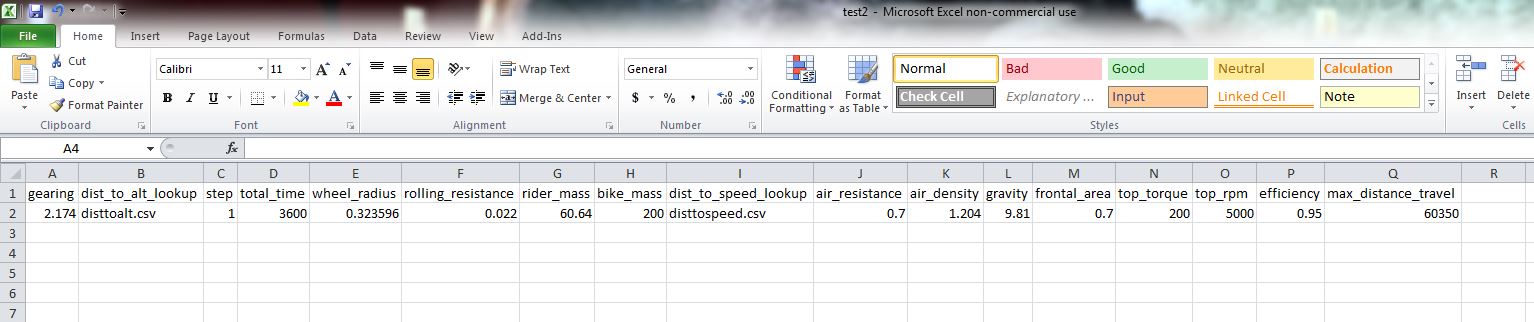
Next, open test\_in. This is the directory that all tests will be placed that need to be ran through the simulation. Make sure all tests are either **.txt** or **.csv** files. Having both .txt and .csv files in the folder is permitted.

**.txt** – Text file **.csv** – Comma Separated Value file

All test files must have the following parameters in the first row and its associated value in the following row:

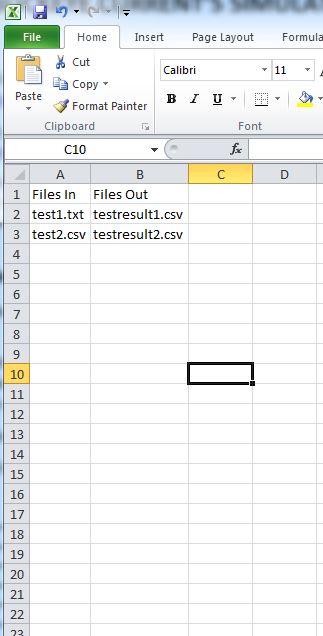
|  |  |
| --- | --- |
| **Dist\_to\_alt\_lookup -------------------------------** | **File name of the lookup file** |
| **Dist\_to\_speed\_lookup --------------------------** | **File name of the lookup file** |
| **Gearing (ratio) -------------------------------------** | **Decimal value** |
| **Step (seconds) -------------------------------------** | **Whole value** |
| **Total\_time (seconds) ----------------------------** | **Whole value** |
| **Wheel\_radius (meters) -------------------------** | **Decimal value** |
| **Rolling\_resistance --------------------------------** | **Decimal value** |
| **Rider\_mass (kg) -----------------------------------** | **Decimal value** |
| **Bike\_mass (kg) ------------------------------------** | **Decimal value** |
| **Air\_resistance -------------------------------------** | **Decimal value** |
| **Air\_density (kg/m2) ------------------------------** | **Decimal value** |
| **Gravity (m/s2) -------------------------------------** | **Decimal value** |
| **Frontal\_area (m2) --------------------------------** | **Decimal value** |
| **Top\_torque (Nm) ---------------------------------** | **Whole value** |
| **Top\_rpm (rpm) ------------------------------------** | **Whole value** |
| **Efficiency --------------------------------------------** | **Decimal value percentage** |
| **Max\_distance\_travel (meters) ----------------** | **Whole value** |

The following image can be used as a reference when building a correctly formatted CSV file:



Note: parameters do not have to be in a specific order

After all test files have been generated make sure they are placed in **test\_in** and not in a sub-folder such as Lookup Files. Next make sure the file names specified under the parameters **dist\_to\_alt\_lookup** and **dist\_to\_speed\_lookup** match the file names of the files in **Lookup Files**. If they don’t, rename the files in Lookup Files so they match.

Lastly, open up the file **OPTIONS.csv** in **test\_in**. The file should have two columns: **Files In** and **Files Out.** Under **Files In** place all the file names of the files you want to be ran through the simulation. Under **Files Out** enter the file name for the results of the adjacent file.

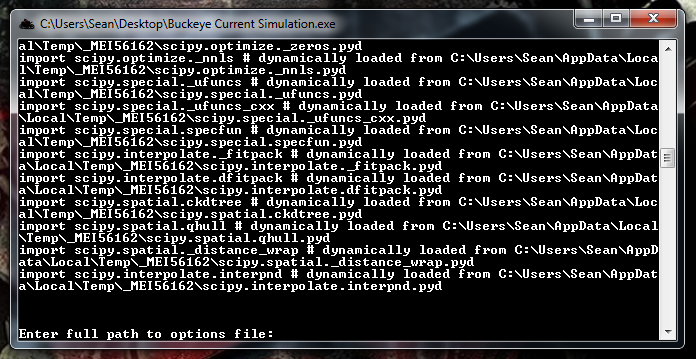
The image on the right shows as an example the correct format of OPTIONS.csv. The purpose of this file is to allow users to place all tests into test\_in but only run the files they specify. That way, if a user has already ran a test in test\_in, they can exclude it from OPTIONS.csv and still keep it in test\_in for storing it.

The folder is now correctly set up!

**Running the Simulation:**

To run the simulation, simply double click **Buckeye Current Simulation.exe**. **CURRENTLY ONLY WINDOWS IS SUPPORTED. Contact Sean for details about running this simulation on a Mac or Linux machine.**

A console should pop up. After about 30 seconds or less, the console will print **“Enter full path to options file:”** as shown below.



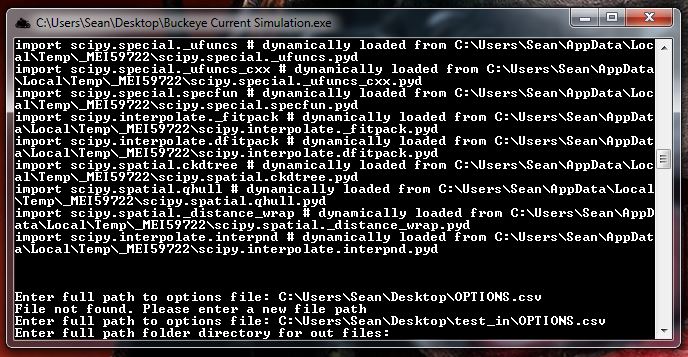
Type in the full path to OPTIONS.csv and hit Enter/Return on the keyboard.

NOTE: If you do not know the path to OPTIONS.csv, you find it by following these steps:

1. Open up **test\_in** and find **OPTIONS.csv.**
2. Right-click OPTIONS.csv and select **Properties**.
3. Look for **Location** under the header tab **General**. Right-click the field after Location: and select **Select All**. The location will now be highlighted. Right-click it one more time and select **Copy**.
4. Return to the console (Buckeye Current Simulation.exe) and right-click the top bar (C:\Users\Sean\Desktop\... as seen above). Go down the menu to **Edit** and then click **Paste**.
5. Now enter in directly after with no spaces **OPTIONS.csv**
6. Hit enter or return on the keyboard

If done correctly, the simulation will begin. If the file path is not correct, the console will ask you to re-enter the path to OPTIONS.csv.

After a few seconds the console will print out **Enter full path folder directory for out files:**



Type in the directory you want the new files to be placed (results from the simulation)

**Example: C:\Users\Sean\Desktop\Results**

The console will now close and a folder with the results of the simulation will be created at the specified directory

If you run into any issues, look for the file “BCS\_log.txt” (located in the same directory as “Buckeye Current Simulation.exe”) and email it, along with a description of the issue, the time, and the day of occurrence to Nathan or Sean.