CS328: Assignment 1 Part 1

**Deadlines**:

Demo deadline (smoothing and filtering): Feb 24 in class (attendance and demo required.)

Demo deadline (step counting): Mar 3 in class (attendance and demo required.)

Code submission deadline (for both): Mar 6

Code submission deadline: 11:59 PM (this is when Github Classroom will stop accepting submissions. The extra time after the demo deadline is provided for you to incorporate any feedback you get during the in-class demo, clean up your code if required, and commit and push to Github. Your code will be inspected later to check your implementation).

No late submissions will be accepted.

**Part 1: Git, Github Classroom etc.**

Follow this link to join Github classroom and open the assignment starter repository:

<https://classroom.github.com/g/uBdUTkkR>

**Cloning the repository:** Please clone the starter repository to your computer by following the instructions below. DO NOT download the repo as a .zip folder - doing so will create an unattached copy of the repository to your computer and it will be harder for you to commit and push changes.

* Click the “Clone or download” button on the top-right corner. Copy the link under “Clone with HTTPS”.
* On your computer, open Terminal or GitBash for Windows (you would have downloaded GitBash while downloading Git for Windows). Navigate to the folder in which you want your assignment folder to be.
* Clone the repo by running

git clone <link you copied earlier>

This will create a new folder with the assignment files in it.

**Submitting your code:** You need to complete the code in the files named “smoothing\_filtering.ipynb” and “step\_counting.ipynb” and **commit and push** it back to Github for us to be able to grade it.

* Make changes to your files and save them. Then, using Terminal or GitBash, navigate to the assignment folder.
* To add any changes to a commit, you need to run either

git add <filename> (to add individual files) or git add . (to add all files in the current directory).

* Then, commit these changes by running:

git commit -m “<commit message>”

Use a concise commit message that describes the changes you have made since the last commit.

* Lastly, push these changes back to Github by running:

git push origin master

* Commit and push your changes periodically. A general good practice is to commit code after each substantial update with a message describing that update. Note that we will only grade your *last commit before the deadline*.

**Part 2: The Assignment**

The assignment contains two Jupyter notebooks. You are required to add your own code in these notebooks wherever mentioned. Make sure you read each notebook carefully so you don’t miss any part of the assignment.

Notebook 1: smoothing\_and\_filtering\_assignment

You will be introduced to time and frequency domain smoothing and filtering techniques, as well as plotting in Jupyter notebooks using matplotlib. You are required to apply some of these filters and plot graphs to complete the notebook.

Notebook 2: step\_counting\_assignment

Apply frequency filters from Notebook 1 and plot signals. Also, design and implement an algorithm to count steps from filtered accelerometer data.

More details are provided in the notebooks at the exact places where your code would go.

During the demo, you must be able to explain the algorithms you use for step counting and the reasoning behind the filter parameters you use.