Description

This is the repo for 2022 SP WUSTL CSE514 Programming Assignments

HOW TO RUN?

1. Install Python 3.9.10
2. Open Terminal (Or Windows PowerShell)
3. Initialize venv by typing `python3 -m venv venv` (See Official Document)
4. Activate the python venv (See Official Document)
5. Install dependencies by run `pip install -r requirements.txt`
6. Run the python file you want.

Assignment 1

- It is inside folder `Regression`, so you want to `cd Regression` first.
- Run `regression.py` by `python regression.py` to see the result (You need activate the env first, if it is activated, `(venv)` would show up on the very left of your console prompts).
- Examples of function calls are shown under `if __name__ == '__main__: '`, you should get all result (some of the diagrams) used in the report by running the given code.
- Example of results:

```
######## uni-variate linear regression ########
######## Col: 0 ########
#### STD: True ####
[TRAINING]
Params: [34.41549554 21.55869624]
Loss: 228.33110436125853
Final L2Derivatives: 9.789024272106074e-07
Steps: 1500
Training Time: 0s
R Square on Training Set: 0.22825858392552245

[TESTING]
LOSS: 81.13880521108854
R Square: 0.4354355804392598

#### STD: False ####
[TRAINING]
Params: [ 0.08195801 12.43353753]
Loss: 228.47257770672118
Final L2Derivatives: 0.12738664244089923
Steps: 1000000
```

```
Training Time: 22s
R Square on Training Set: 0.2277804149950582

[TESTING]
LOSS: 81.2192004197624
R Square: 0.434876189970022
```

- Params are vectors of parameters for your trained model, i.e., [m1, m2, m3, ... , b].
- Loss is the MSE
- Steps are the number of iterations in training
- STD: True meaning the model is trained by standardized dataset; vise versa.