Code and its Output:

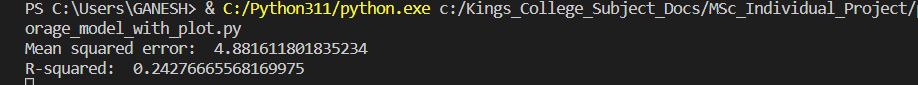
1. Battery Storage Model:

This code first creates the artificial data and then plots the scatter plot for the input features and target variable. It then splits the data into training and test sets, trains a random forest regression model, and evaluates its performance using mean squared error and R-squared metrics. Finally, it plots the predicted SOC values versus the true SOC values.

A screen shot of a computer code

Description automatically generated with low confidence

Output:



A picture containing text, screenshot, diagram, plot

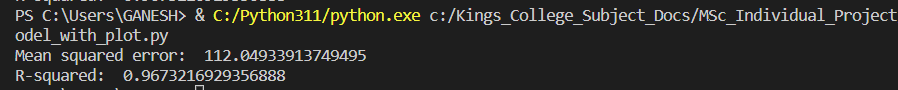
Description automatically generated

1. Cold Storage Model

This code first creates the artificial dataset and then plots the scatter plot for the input features and target variable. It then splits the data into training and test sets, trains a linear regression model, and evaluates its performance using mean squared error and R-squared metrics.

A screen shot of a computer program

Description automatically generated with low confidence



A picture containing line, diagram, pattern

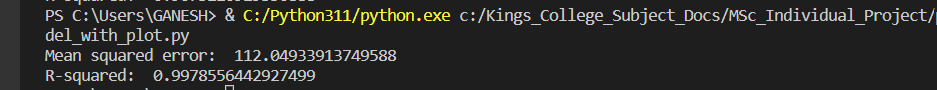
Description automatically generated

1. Heat Demand Model

In this code I am using linear regression model:

A screen shot of a computer program

Description automatically generated with low confidence



A picture containing text, screenshot, plot

Description automatically generated

1. Cost Model

This code calculates the total costs of the battery storage and cold storage systems using the **total\_cost()** function and then plots a bar chart to compare the two costs. The **plt.bar()** function is used to create the bar chart, and the **plt.title()** and **plt.ylabel()** functions are used to set the title and y-axis label of the chart.

A picture containing text, screenshot, font

Description automatically generated

A picture containing text, screenshot, font

Description automatically generated

A picture containing text, screenshot, rectangle, diagram

Description automatically generated

NOTE:

I am currently using linear relationship between my variables, equation is in the form of

y=Ax+Bx …..+b. Each step may require additional preprocessing, feature engineering, validation, and optimization techniques to achieve accurate and reliable results. I need to spend time in understanding data and requirements, implementing the appropriate models, and fine-tuning their performance.

I will go through the cold hub’s report and modify my code accordingly. I would love to know the expectation of plots if possible. Also if you want me to plot other graphs, please let me know.