

The following ChatGPT prompts were used for creating parts of the python-code:

#### PCA

- Please provide the python code for a PCA on given input data. Create a dataframe with the explained variance as well as the cumulative variance for each principal component.
- Please create a dataframe for the loadings with the Principal Components (PC1, PC2,...) as column header and the original input columns headers as rows

#### Linear Regression:

- I am doing a linear regression with the same input for two different outputs. I am doing the regression 9 times for each of the two outputs. Can you please provide the code to store the r-squared, mse and the coefficients for each regression in a dictionary?
- Could you provide the code for printing the mse and r2 values for both real and imaginary for each frequency level?