

Assignment - 1

1. Explain the significance of data visualization in Python, highlighting its role in aiding data exploration and communication. Provide examples of scenarios where data visualization proves to be beneficial.
2. Compare and contrast the characteristics of statistical plots, images, networks/graphs, geographical, and 3D interactive plots in Python. Discuss the specific data types and contexts where each type of plot is most appropriate.
3. Utilizing Matplotlib and Seaborn, demonstrate the process of creating a statistical plot (e.g., histogram, box plot) using a sample dataset. Describe the steps involved in preparing the data and customizing the plot to effectively communicate the distribution of the data.
4. Design a Python script to visualize a network/graph dataset using NetworkX and Matplotlib. Explain the key components of network visualization, such as nodes, edges, and their attributes. Provide insights into how network visualization aids in understanding complex relationships within data.
5. Develop an interactive geographical plot using Plotly and GeoPandas to display spatial data. Discuss the importance of geographical visualization in analyzing spatial patterns and trends. Describe the features and functionalities of interactive geographical plots that enhance user engagement and exploration of spatial datasets.