Welcome to Applied Plotting, Charting & Data Representation in Python!

Week by week

**Module 1: Principles of Information Visualization**

In this module, you will get an introduction to principles of information visualization. We will be introduced to tools for thinking about design and graphical heuristics for thinking about creating effective visualizations. All of the course information on grading, prerequisites, and expectations are on the course syllabus, which is included in this module.

**Key Concepts**

* Choose a graphic that displays misleading information
* Interpret the features of the graphic in order to identify the mechanism(s) that is/are used by the "encoder" to mislead the "decoder"
* Analyze the graphic and use principles from Alberto Cairo's work to explain how the graphic is misleading
* Create a radar plot in order to reflect on the complexity of the misleading graphic

**Module 2: Basic Charting**

In this module, you will delve into basic charting. For this week’s assignment, you will work with real world CSV weather data. You will manipulate the data to display the minimum and maximum temperature for a range of dates and demonstrate that you know how to create a line graph using matplotlib. Additionally, you will demonstrate the procedure of composite charts, by overlaying a scatter plot of record breaking data for a given year.

**Key Concepts**

* Work with real world CSV data
* Know how to create a line graph using matplotlib
* Manipulate data to get the minimum and maximum temperature
* Demonstrate procedure of composite charts

**Module 3: Charting Fundamentals**

In this module you will explore charting fundamentals. For this week’s assignment you will work to implement a new visualization technique based on academic research. This assignment is flexible and you can address it using a variety of difficulties - from an easy static image to an interactive chart where users can set ranges of values to be used.

**Key Concepts**

* Build more complex features using base features (i.e., artists)
* Create new ways of visualizing the data by expanding the matplotlib codebase
* Use subplots to combine plots into a single figure
* Create insightful plots such as histograms, box plots, and histograms
* Create animated and interactive visualizations

**Module 4: Applied Visualizations**

In this module, then everything starts to come together. Your final assignment is entitled “Becoming a Data Scientist.” This assignment requires that you identify at least two publicly accessible datasets from the same region that are consistent across a meaningful dimension. You will state a research question that can be answered using these data sets and then create a visual using matplotlib that addresses your stated research question. You will then be asked to justify how your visual addresses your research question.

**Key Concepts**

* Identify two publicly accessible datasets from the same region that are consistent across a meaningful dimension
* State a research question that can be answered using two publicly accessible datasets
* Create a visual using matplotlib that addresses your stated research question
* Justify how the visual addresses your research question

Summary

* Describe what makes a good or bad visualization
* Understand best practices for creating basic charts
* Identify the functions that are best for particular problems
* Create a visualization using matplotlb
* Create insightful plots such as histograms, box plots, and histograms
* Create animated and interactive visualizations