

# Data Visualization using Matplotlib

## **1: Introduction to NumPy**

**NumPy and Creating Ndarrays**

**Indexing in Ndarrays**

Indexing in Multi-dimensional Ndarrays

**Ndarray Properties**

**NumPy Constants**

**Slicing Ndarrays**

## **2: NumPy and Matplotlib**

**Creating Ndarrays in many ways**

**Matplotlib**

**Visualization with Matplotlib**

## **3: Matplotlib Visualizations**

**Single-Line & Multiline Plots**

**Grid, Axes, and Labels**

**Colors, Styles, and Markers**

**Object-Oriented Plotting**

**Subplots**

## **4: Styles and Layouts**

**Styles**

**Layouts**

## **5: Lines, Bars, Scatter, Histograms, Contours, and Stream Plots**

**Lines and Logs**

**Error Bars**

**Bar Graphs**

**Scatter Plot**

**Histograms**

**Contours**

**Visualizing Vectors with Stream Plots**

## **6: Image and Audio Visualization**

**Visualizing Images**

Masking

**Interpolation Methods**

**Audio Visualization**

**Audio Processing**

## **7: Pie and Polar Charts**

**Pie & Polar Charts**

## **8: Coloring**

**Using `pcolor()`, `pcolormesh()`, and `colorbar()` functions**

## **9: 3D Visualizations**

**Plotting 3D Lines**

**3D Scatter Plots**

**3D Contours**

**Wireframes, Surfaces, and Sample Data**

**Bar Graphs**

**Quiver and Stem Plots**

**3D Volumes**

## **10: Animations**

**Animation Essentials**

**Celluloid: Library**

## **11: Additional Visualizations**

**Visualizing a Function as an Image**

**Visualizing a Function as a Contour**

**3D Vignettes**

**Decorated Scatter Plots**

**Time Plots and Signals**

**Filled Plots**

**Step Plots**

**Hexbins**

**XKCD Style**

## **12: Pandas Essentials for Visualization**

**Introduction**

**Series**

**Basic Operations on Series**

**Dataframe**

## **13: Data Acquisition**

**Writing Files with NumPy**

**Reading Files with NumPy**

**Reading the Data from a CSV File with NumPy**

**Matplotlib CBook**

**Reading Data from a CSV**

**Reading Data from an Excel File**

**Reading Data from JSON**

**Reading Data from a Pickle File**

**Reading Data from the Web**

Interacting with the Web API

**Reading Data from a Relational Database Table**

**Reading Data from the Clipboard**

## **14: Visualizing with Pandas and Matplotlib**

**Simple Plots**

**Bar Graphs**

**Histograms**

**Box Plots**

**Area Plots**

**Scatter Plots**

**Hexagonal Bin Plots**

**Pie Charts**

## **15: Introduction to Seaborn**


**Introduction to Seaborn**

**Plotting Statistical Relationships**

**Plotting Lines**

**Visualizing the Distribution of Data**



 3<sup>rd</sup> Floor, Surviba Towers, Plot No.247/3RT,  
Near Umesh Chandra Statue, Sanjeeva Reddy Nagar,  
Hyderabad, Telangana. 500038

 +91 99666 33097

 [info@invictusengineers.com](mailto:info@invictusengineers.com)

