

# Visualization with Matplotlib

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## Basic Functions of Matplotlib

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Matplotlib is a popular Python library for creating static, animated, and interactive visualizations.

## Simple Line Plot

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A line plot represents data points connected by lines, often used for time-series data visualization.

## Scatter Plot

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A scatter plot visualizes relationships between two variables by plotting data points on a Cartesian plane.

## Density and Contour Plots

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Density plots visualize data distribution, while contour plots represent 3D data in a 2D format using contour lines.

## Histograms

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Histograms represent frequency distributions by grouping data into bins and plotting their counts.

## Binnings and Density

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Binning refers to dividing data into intervals, while density plots smooth out distributions for better insight.

## Customizing Plot Legends

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Matplotlib allows customization of plot legends, including location, font size, and transparency settings.

## Colour Bars

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Color bars provide a visual representation of numerical values in color-coded plots.

## Three-Dimensional Plotting in Matplotlib

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Matplotlib's `mplot3d` toolkit enables 3D plotting, including wireframe, surface, and scatter plots.

