

The background is a collage of financial and technological imagery. It includes a world map in shades of blue, several financial candlestick and line charts with green and red bars, and a small robot with a blue and silver body and a camera-like eye. A large, glowing blue dollar sign is also visible on the right side of the map.

# MGMT 675

# AI-ASSISTED FINANCIAL ANALYSIS



**RICE | BUSINESS**  
Jones Graduate School of Business



# VISUALIZATION

A futuristic robot with a white and blue metallic body stands in profile, interacting with a large, glowing digital display. The display is filled with various data visualizations, including a world map, line graphs, bar charts, and circular gauges. The robot's right hand is positioned near a glowing blue sphere on the screen. The background is a blurred server room with rows of server racks.

# TYPES OF PLOTS

- Distributions
  - Histograms, density plots, box plots, pie charts
- Bivariate
  - Bar plots, line plots, scatter plots (with regression lines and with transparency), hexbin plots
- 3D
  - 3D plots, contour plots

# EXTRAS

- Control linestyle, linewidth, point style, point size, titles, axis labels, axis ticks, font sizes
- Annotations
- Subplots
- Interactive plots and animations saved as html

# DISTRIBUTION OF MARKET CAPS

- Upload the metrics and tickers datasets and ask Julius to merge them on ticker.
- Ask Julius to create a histogram, a density plot, a filled density plot, and a boxplot of marketcap.
- Ask Julius to use seaborn to create boxplots of marketcap by sector.
- Ask Julius to save the plots as jpegs and provide links.

# PIE CHARTS AND BAR CHARTS

- Ask Julius to create a pie chart of the number of firms by sector.
- Ask Julius to create a bar chart of total marketcap by sector.

# HOVER DATA

- Ask Julius to use plotly to create a boxplot of marketcap by sector in the merged dataset and to include the ticker in the hover data.
- Ask Julius to save as html.

# FILLED DENSITY PLOT

- Ask Julius to download crude oil prices from FRED, compute percent changes, and create a filled density plot of the percent changes.



# SCATTER AND HEXBIN PLOTS

- Ask Julius to download the daily Fama-French factors from Ken French's data library.
- Ask Julius to use seaborn to create a regplot with Mkt-RF on the x axis and SMB on the y axis.
- Ask Julius to set the transparency parameter alpha to 0.1.
- Ask Julius to create a hexbin plot of SMB and Mkt-RF.

# ANIMATIONS

- Ask Julius to get the histories of the 3-month, 1-year, 5-year, and 10-year Treasury yields from FRED.
- Ask Julius to use plotly to create an animation showing all of the yields as functions of maturity using the date as the animation frame.

# 3D

- Ask Julius to create a filled contour plot of the function  $z = (4x + y)^2$  for  $x$  and  $y$  between  $-2$  and  $2$ .
- Ask Julius to create a 3D plot of the same function on the same range.