

A futuristic AI robot head is shown in profile, facing left. It has a metallic, greyish-blue finish with a large, circular, glowing blue eye. The robot is positioned in front of a complex digital dashboard. The dashboard features various financial charts, including bar graphs, line graphs, and circular gauges. A world map is visible in the background, and the overall color scheme is a cool blue and white. The text 'MGMT 675' is prominently displayed at the top in a bold, dark blue font.

MGMT 675

AI-ASSISTED FINANCIAL ANALYSIS



RICE | BUSINESS
Jones Graduate School of Business

CLASSIFICATION

A futuristic robot with a white and blue metallic body stands in the center of the frame, facing right. It has a humanoid form with visible joints and a head with a glowing blue eye. The background is a complex digital interface with various data visualizations. On the left, there's a large screen showing a world map and a line graph. Below it, another screen displays a circular gauge with an 'X' and a dollar sign. On the right, a large screen shows a globe and several bar charts. The overall color scheme is blue and white, giving it a high-tech, digital feel.

CATEGORICAL TARGET VARIABLES

- Binary (off/on, yes/no, ...)
- Multiclass
- Same sets of models: linear, trees, neural nets, ...

BINARY EXAMPLES

- Random forest
- Gradient boosting
- Linear (logistic regression)

BINARY DATA

- Upload irrelevant_features.xlsx to Julius
- Ask Julius to read it
- Tell Julius that y2 is the target variable and x1 through x50 are the features
- y2 is a “high-low” version of $y1 = x1 + \text{noise}$.

RANDOM FOREST

- Ask Julius to do a train-test split and train a random forest on the training data.
- Ask Julius to produce a confusion matrix for the training data and a confusion matrix for the test data.
- Ask Julius to produce a ROC curve for the test data and to explain it.

LINEAR MODEL (LOGISTIC REGRESSION)

- For binary variables but can be extended
- Transform binary variable to 0 and 1 dummy variable
- Choose parameters α, β_i to maximize fit of

$$\frac{1}{1 + e^{-\alpha - \beta_1 x_1 - \dots - \beta_n x_n}}$$

to the dummy variable.

- Can do shrinkage

TO BE CONTINUED