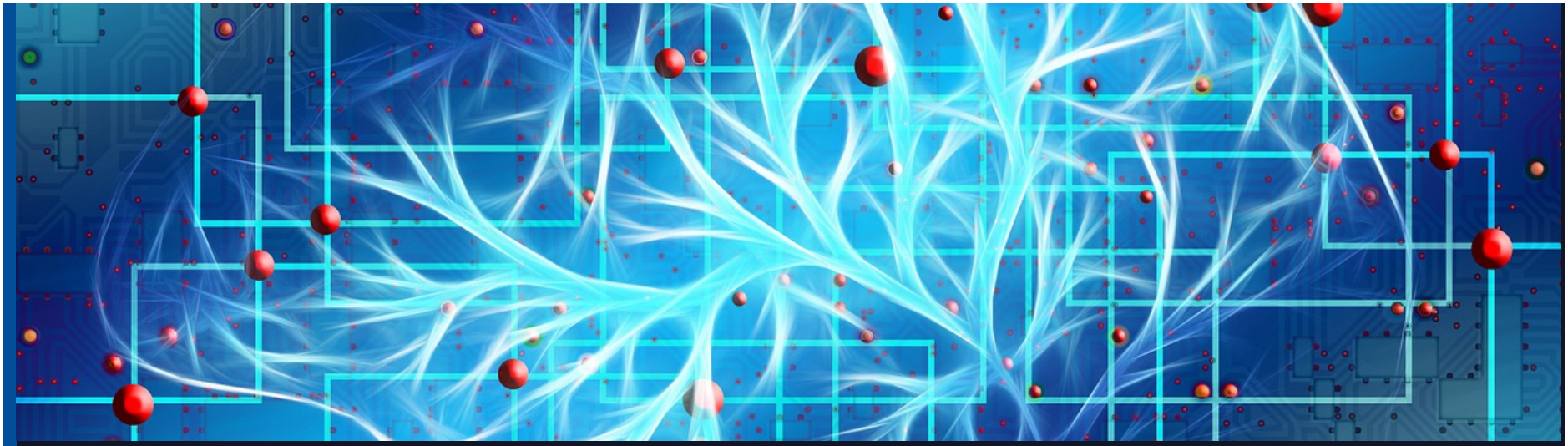
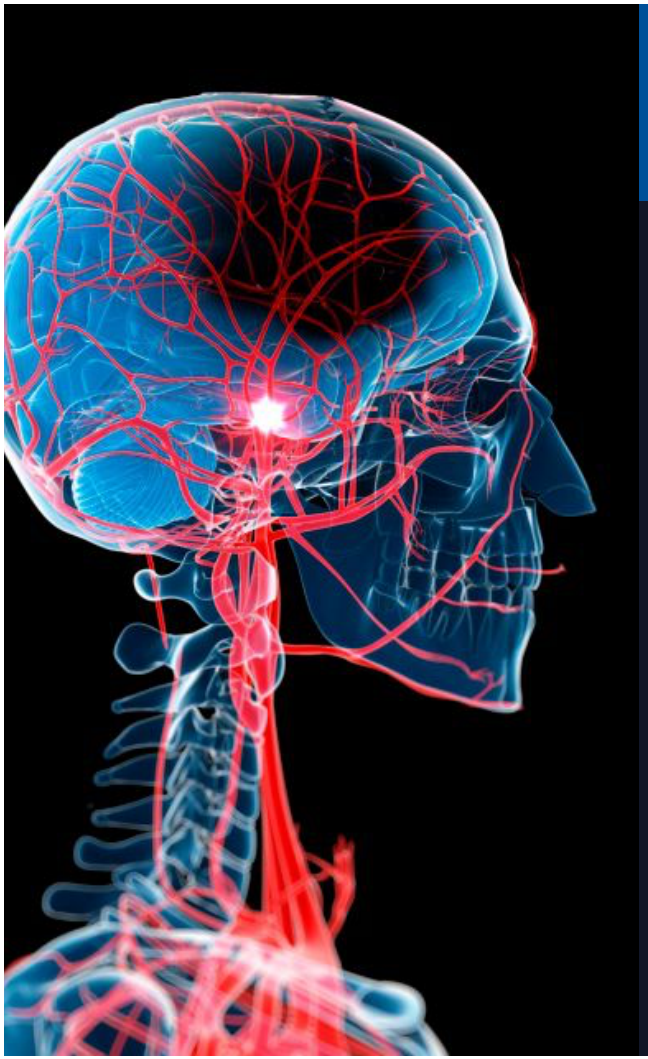


Stroke Classification

Jordana Tepper, Troy Hendrickson, Viktoria Szontagh



Agenda

1 | BUSINESS UNDERSTANDING

2 | DATA

3 | BEST MODEL AND RESULTS

4 | RECOMMENDATIONS

5 | LIMITATIONS AND NEXT STEPS

Business Understanding

- **STAKEHOLDERS**

  The Mount Sinai Hospital in New York

- **THE PROBLEM**

  According to the World Health Organization (WHO) stroke is the 2nd leading cause of death globally, responsible for approximately 11% of total deaths. Additionally, in the US, someone has a stroke every 40 seconds.

  On top of that, strokes are a known complication of surgery.

- **THE PROJECT**

  Develop a model that acts as a preliminary assessment to determine whether a person is likely to have a stroke or not during surgery using available data. The results will determine if further screening is needed.

- **THE GOAL**

  Introduce the model that arbitrates the best results to identify patients in need of extra screening before surgery

The Data

- **FEATURES**

  BMI, Smoking Status, Glucose level, Age, Gender, Ever Married, Residence Type, Workin Status

- **MISSING DATA**

  BMI (Body Mass Index)

- **IMBALANCE**

  95% - No stroke

  5% - Stroke

- **KAGGLE 'STROKE PREDICTION DATA SET'**

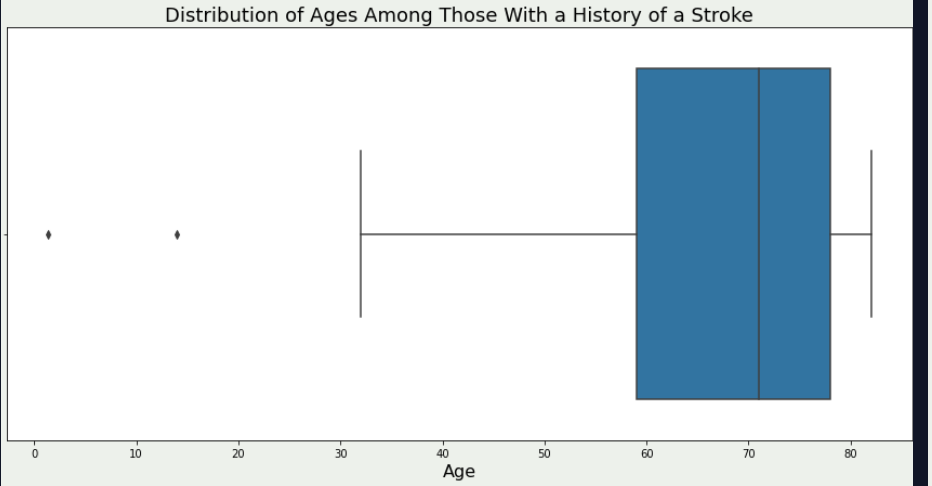
5k+

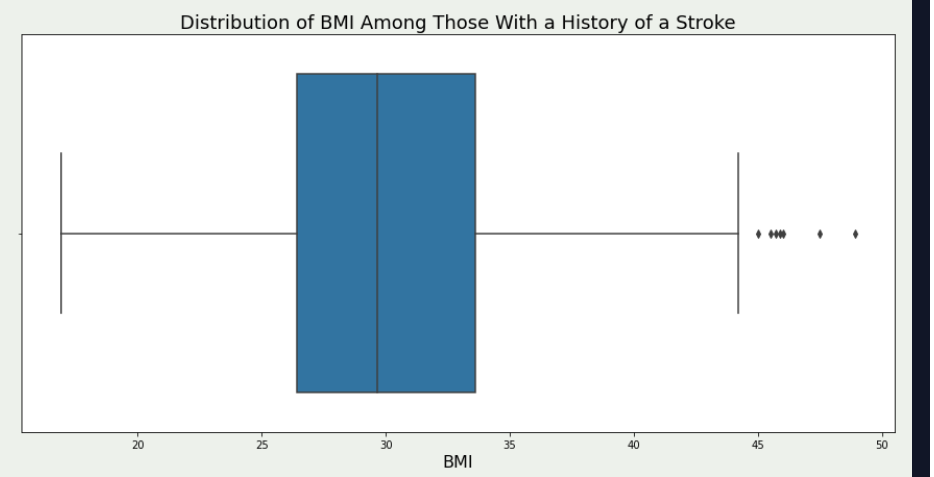
ROWS

11

COLUMNS

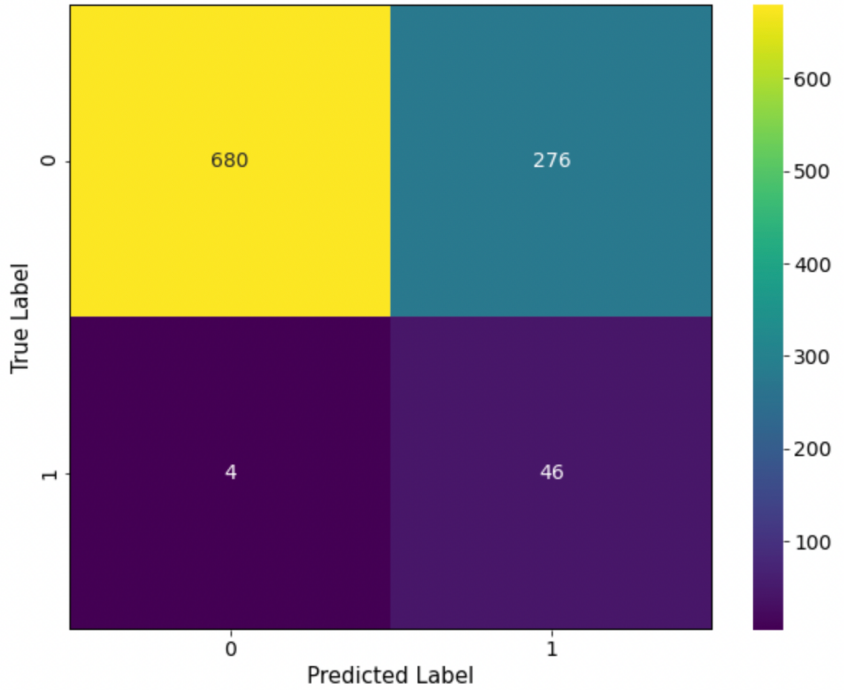
Data Processing

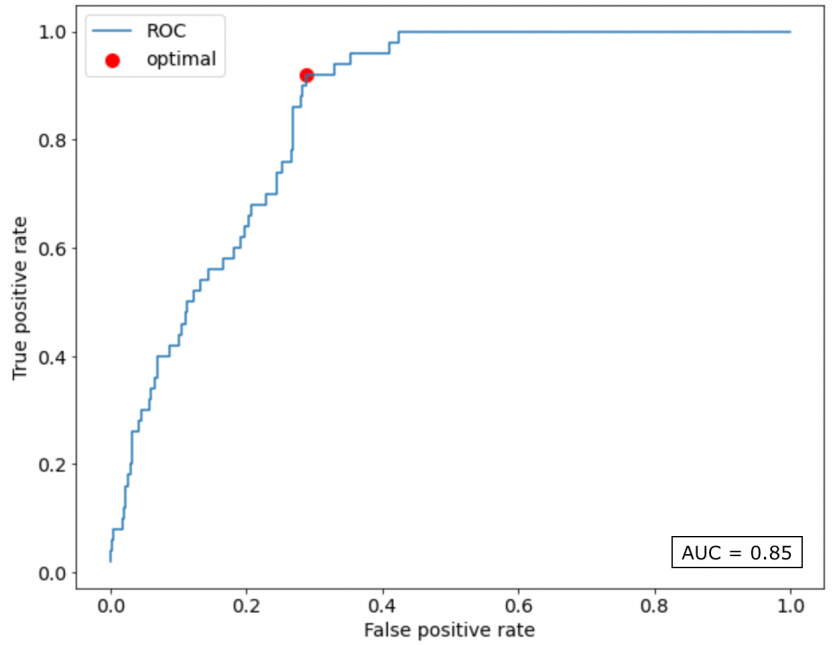


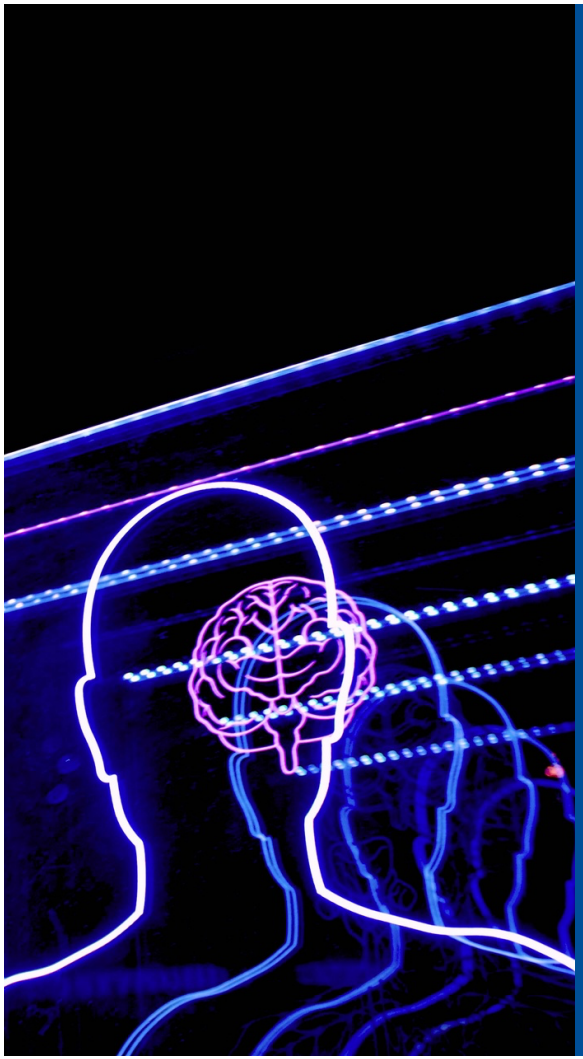


Best Model

Logistic Regression - Optimal Threshold (0.446)







CLASSIFICATION MODEL: LOGISTIC REGRESSION

Included optimal threshold for best results

RECALL SCORE: 92%

The main metric used to determine the accuracy of our model

A false negative is more costly than a false positive.

BETTER THAN BAYES?

Had best recall was our Gaussian Naive Bayes model with a recall score of 94% but a false positive rate of 0.60.

Recommendations

MODEL TYPE

Based on our project, we propose that logistic regression has the best classification of stroke risk and most effectively minimizes both the false negatives and false positives.

OPTIMIZE SCREENING COSTS

By decreasing the false positives, it gives less room to the insurance company to reject claims - benefiting both the patients and the hospital.

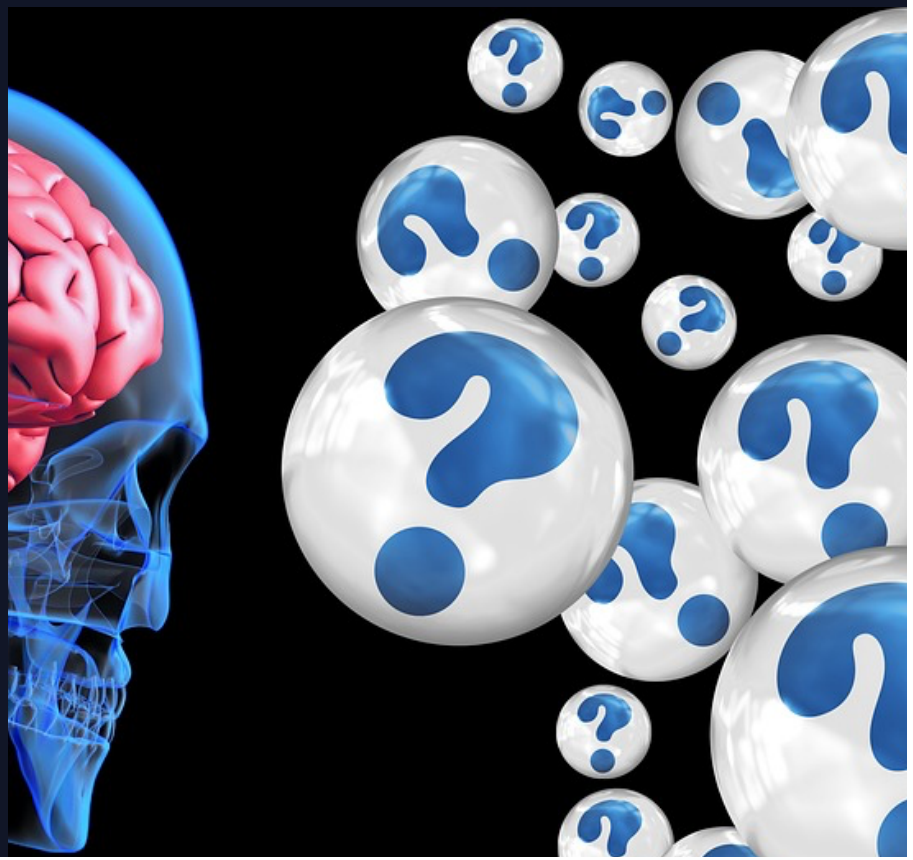
Limitations and Next Steps

Limitations

- Medication is not taken into account
- Missing Data
- Unknown origin of the dataset

Next Steps

- Cholesterol
- Family history of stroke
- Number of strokes
- Race (i.e., the likelihood of stroke among different races)



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