

A detailed map of Central Europe, specifically the Czech Republic, is shown on the left side of the image. A silver pushpin is stuck into the map, its point resting near the town of Znojmo. The map displays various towns, roads, and geographical features. Notable labels include 'Třebíč', 'Moravské Budějovice', 'Znojmo', 'Vranov', and 'Riegersburg'. A red line, possibly a road or railway, runs through the region. The right side of the image is a solid black background with white text.

Forecasting ICU Admissions for COVID-19 Patients in Brazil: A Data-Driven Approach



Introduction

This project uses machine learning to predict ICU admissions for COVID-19 patients, improving resource allocation and healthcare services in Brazil.



Data Sources

the data used in this project was obtained from the Sírío-Libanês Hospital's Kaggle dataset.

[click here to access the dataset](#)

Models

1. Logistic regression
2. Random Forest Classifier
3. Decision Tree Classifier





Results and Insights

Logistic Regression

Accuracy before optimization: 80%

Accuracy after optimization: 81%

Class 0 (non-ICU patients)

precision: 82%

Recall: 93%

class 1 (ICU patients)

precision: 71%

recall: 47%



Results and Insights Cont...

Random Forest

Accuracy: 81%

Class 0 (non-ICU patients)

precision: 89%

Recall: 85%

class 1 (ICU patients)

precision: 65%

recall: 72%

Results and Insights Cont...

Decision Tree

Accuracy before optimization: 75%

Accuracy after optimization: 80%

Class 0 (non-ICU patients)

precision: 82%

Recall: 85%

class 1 (ICU patients)

precision: 56%

recall: 50%

A hand holding a pen is writing on a white sheet of paper attached to a wooden clipboard. A large, bold, red stamp with the word "RESULTS" is diagonally across the paper. The stamp has a distressed, ink-like texture. The background is a dark, textured surface, possibly wood.

Conclusion

we now have working models to help the healthcare system use its resources better. Random Forrest proves to work the best with 81% accuracy.

Recommendations for future work

1. class balancing techniques such as SMOTE
2. Feature Engineering
3. Ensemble Techniques
4. Adding time stamps to the window column to better integrate it into the models

Thanks!

Author: Ousman Njie