

# **An Explainable Machine Learning Approach of PET Imaging for Individualized Predictions of Seizure Outcomes after Temporal Lobe Epilepsy Surgery**

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## Introduction

## The Data

## The Model

## The Explanation

## Conclusion

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The Model  
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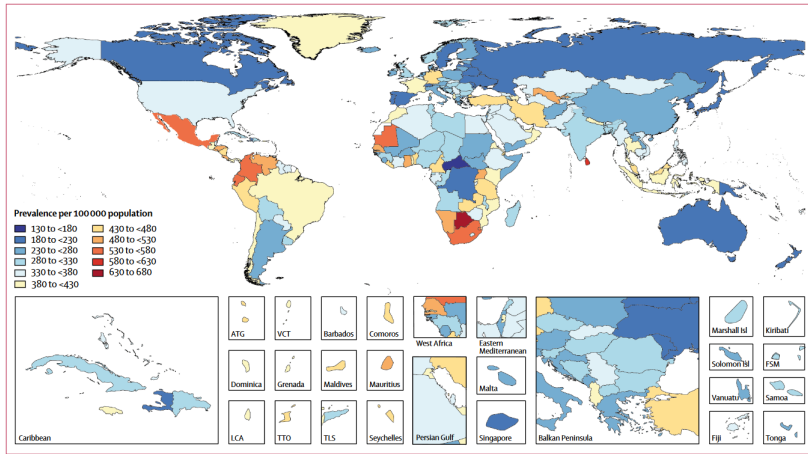
Conclusion  
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References

# Introduction

# Background

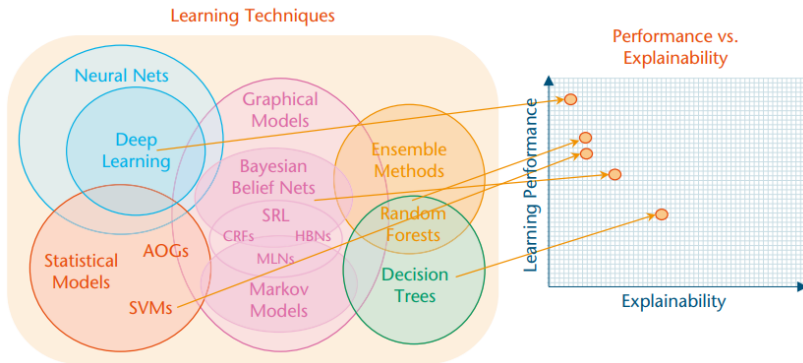
## Epilepsy epidemiology



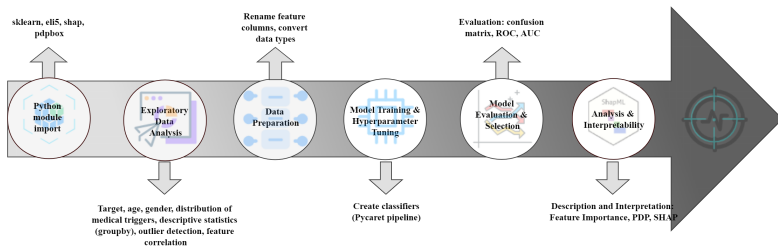
Prevalence per 100000 of idiopathic epilepsy, 2016(Beghi et al., 2019)

# Aims

- Focuses on examining the interpretability of machine learning models rather than just building a short-term recurrence prediction model (aka XAI).



# Scheme



# The Data



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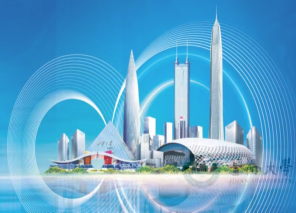
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References

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# SHAP

- Shapley

# The Model

# Benchmark

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benchmark

/

- 
- KNN
- “ ” 5
- AUC
- AUC

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References

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PipeOp

PipeOps

%&gt;&gt;%

Graph

- PipeOp, %>>% gunion() ppl()
- Graph\$plot()
- as\_learner(Graph)

•

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# 1.

- PipeOp
- %>>%
- PipeOp affect\_columns Selector

# The Explanation



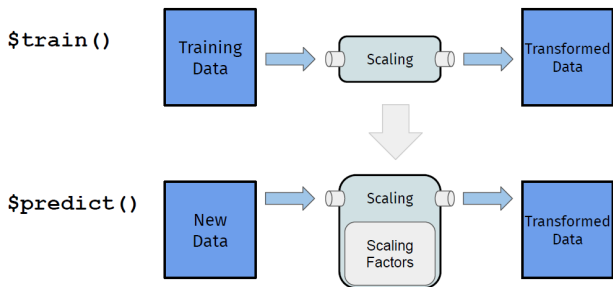


Figure 1:

- 3 KNN SVM Ranger

- method:

"grid\_search"

"random\_search"

gensa

"nloptr"

■

1.

(1)

`mlr3filters`

# Conclusion

# con

(2)

” ”

ranger

”impurity”

```
task$select()
```

## 2.

mlr3fselect

- `fselect()`
- `auto_fselector()`,
- `fselect_nested()`

■

R    mlr3verse    (?)



For more theoretical approaches to machine learning model explanation, see [Interpretable Machine Learning: A Guide for Making Black Box Models Explainable](#), [What Causes Heart Disease? Explaining the Model](#), refer to [\(Rajpurkar, 2021\)](#), [\(Marc Becker, 2022\)](#), [\(Molnar, 2022\)](#)

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THANKS !



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