



# Midproject ML Learnings

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Ironhack Machine Learning Bootcamp  
Presentation Week 6

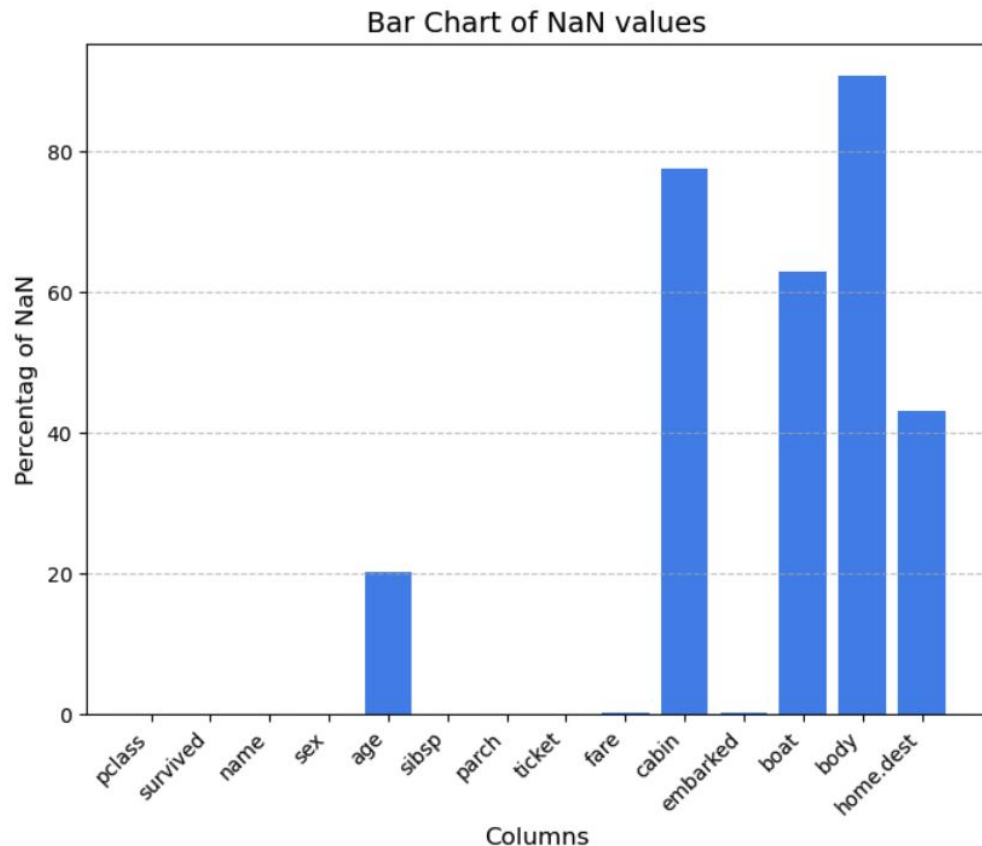
# Learning I

## 1. Deleted columns:

- High NaN
- Uniform Distribution (e.g. Name, Ticket)

could still be needed later on →  
Master Dataframe

2. Always make a copy() for the  
visualisation.



## Learning II

### Dataframe Bi-Variate Analysis

- One Hot Encoding: NO
- Mapping: NO

Makes frequency charts or side by side boxplots unreadable

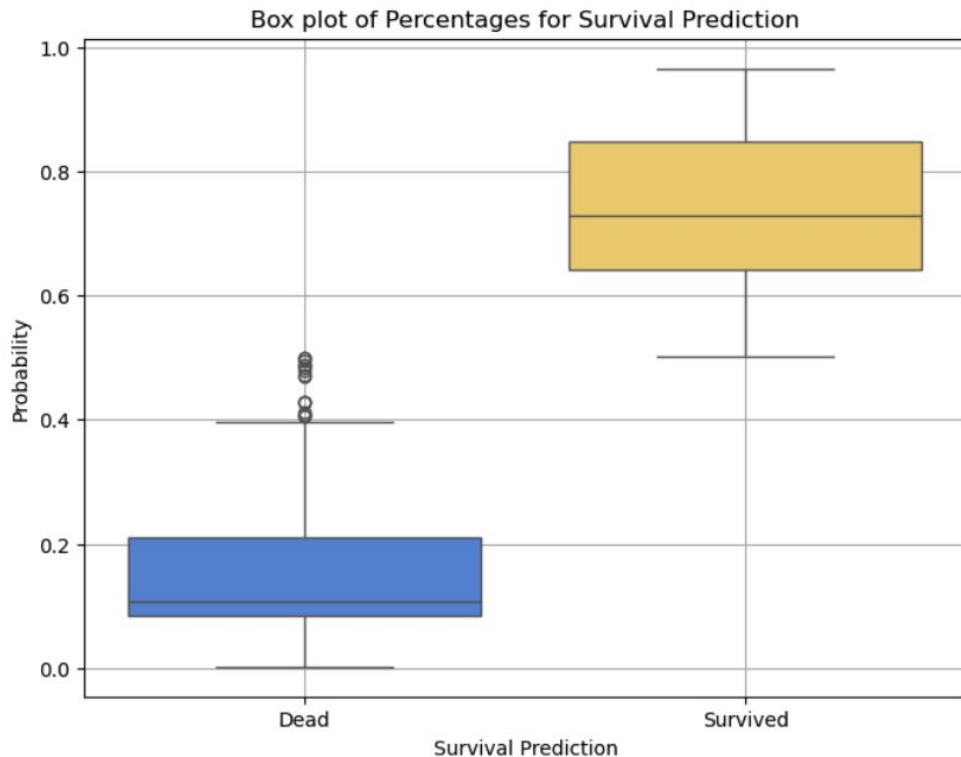


### Dataframe for Machine Learning

- One Hot Encoding: YES
- Mapping: YES

## Learning III

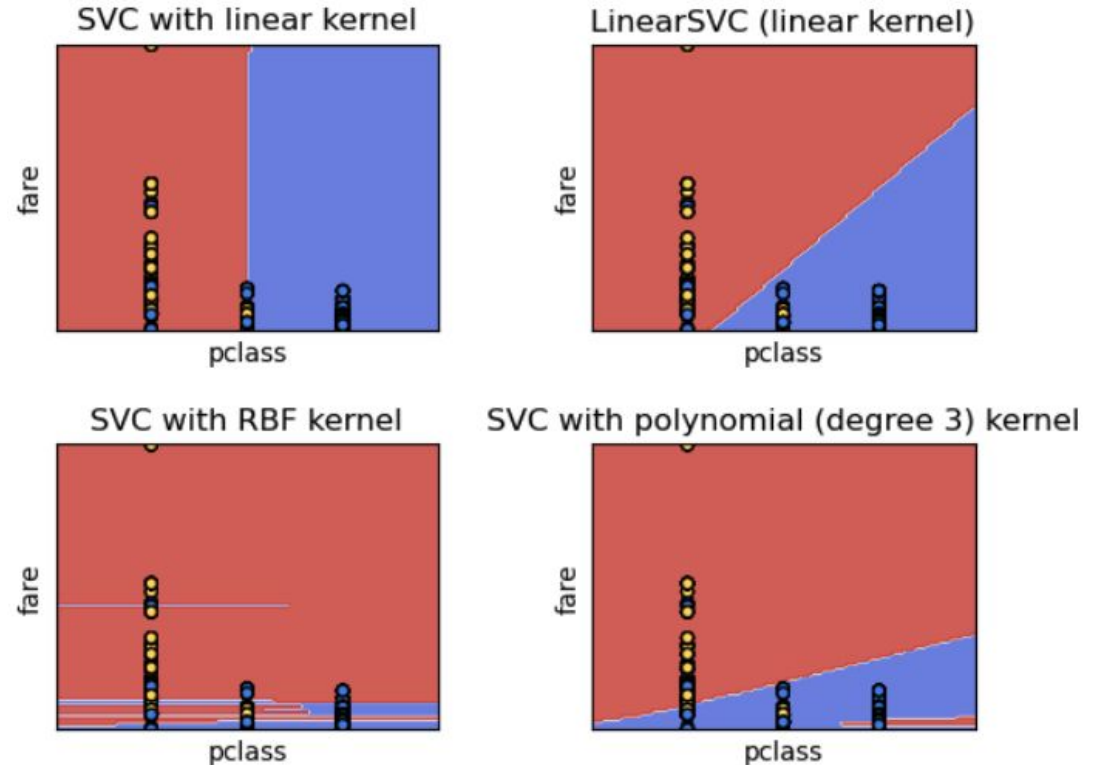
Classification Models can predict the binary target (0,1) as well as give you the probabilities for each prediction



```
from sklearn.inspection import DecisionBoundaryDisplay
```

## Learning IV

**Decision Boundaries Visualization:** For understanding how a model distinguishes between different categories in a classification task.





## Learning V

Looking which columns matter for a model:

- **Logistic Regression:** Uses model coefficients
- **k-NN:** Not available, but permutation importance or SHapley Additive exPlanations (SHAP) values can be used
- **Gradient Boosting:** Uses the ``feature_importance_`` attribute of the model



# Results

	Dataframe	Accuracy
Logistic Regression	6 columns	0.80
KNN (11)	6 columns	0.72
GBC	6 columns	0.79

	Dataframe	Accuracy
Logistic Regression	Scaling + TomekLinks	0.78
KNN (11)	Scaling + TomekLinks	0.78
GBC	<b>Scaling + TomekLinks</b>	<b>0.81</b>

# Streamlit



The Titanic's tragic sinking on April 15, 1912, resulted in the loss of over 1,500 lives. The ship was equipped with only enough lifeboats for about half of its passengers, a reflection of the era's maritime safety standards. The disaster prompted significant changes in maritime laws and regulations, leading to improved safety measures and protocols to ensure the protection of passengers at sea.

[Survivability](#) [Titanic History](#) [Titanic Today](#)

## Survivability Prediction

In this web app you would be able to predict if you would or not survive the sinking of the Titanic

Please adjust the values of the features and the predicted survivability will be displayed.

Gender

Female

Class

First

Age in Years

30

Fare in USD

400

Number of Siblings/Spouses Aboard

1

Number of Parents/Children Aboard

1

Predict

Congrats!! You survived!





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Survivability [Titanic History](#) [Titanic Today](#)

## Titanic Aftermath

Despite the tragic incident of the Titanic, the ship's legacy lives on...



Harland and Wolff, the Belfast-based shipyard, did indeed continue its operations successfully after the loss of the RMS Titanic. Although the Titanic disaster was a significant tragedy, Harland and Wolff managed to overcome the challenges and maintain its position as a prominent shipbuilder. Here we see a team of workers celebrating the retirement of one of their colleagues in the 60s. The worker on the left is my grandfather.



The wreckage of the Titanic was discovered in 1985, lying about 12,500 feet below the surface of the North Atlantic Ocean. Since then, numerous expeditions have been launched to explore and document the site, revealing artifacts and remnants of the ship's grandeur. Today, the Titanic serves as a poignant reminder of the importance of maritime safety and the human stories intertwined with its history.



The Titanic Belfast museum, opened in 2012, is a state-of-the-art visitor attraction located in the heart of Belfast, Northern Ireland. It tells the story of the Titanic and its place in history, showcasing the ship's construction, its tragic sinking, and its legacy. The museum features interactive exhibits, artifacts, and immersive experiences that allow visitors to learn about the Titanic's story in a modern and engaging way.

The person encircled on the left is my grandfather.



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## Titanic Timeline

### HISTORY OF THE TITANIC AND HARLAND & WOLFF

Explore the pivotal events in the journey of the RMS Titanic and the Harland & Wolff shipyard.





**Thank you**