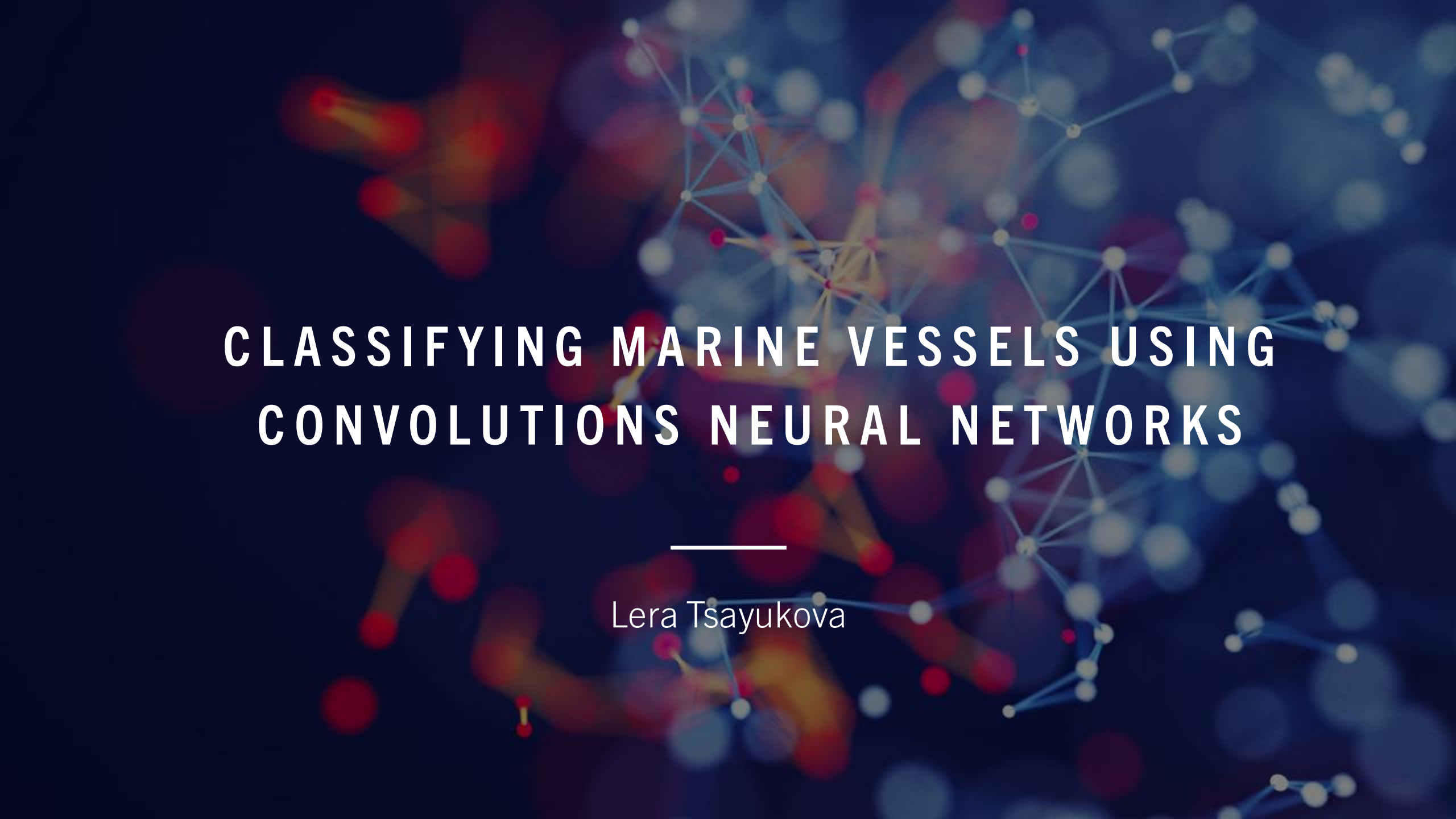


CLASSIFYING MARINE VESSELS USING CONVOLUTIONS NEURAL NETWORKS

Lera Tsayukova

TABLE OF CONTENTS:

OVERVIEW- THE PROBLEM:

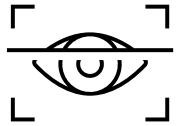
$ $ $ $

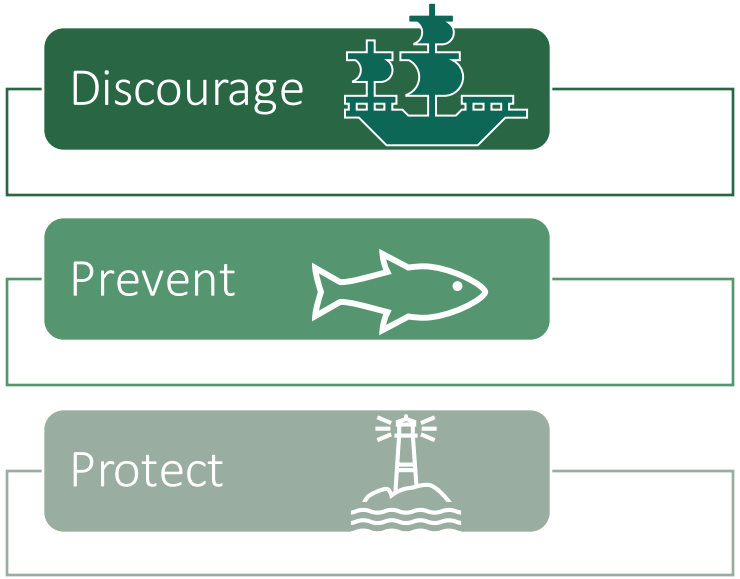
Billions of dollars are lost at sea every year due to :

OVERFISHING PIRACY DEFENSE EEZ BREACHES

OVERVIEW: USE CASE

Automatic Detection





THE DATA

Cargo

6252 Images

- 'Cargo': 0
- 'Military': 1
- 'Carrier': 2
- 'Cruise': 3
- 'Tanker': 4

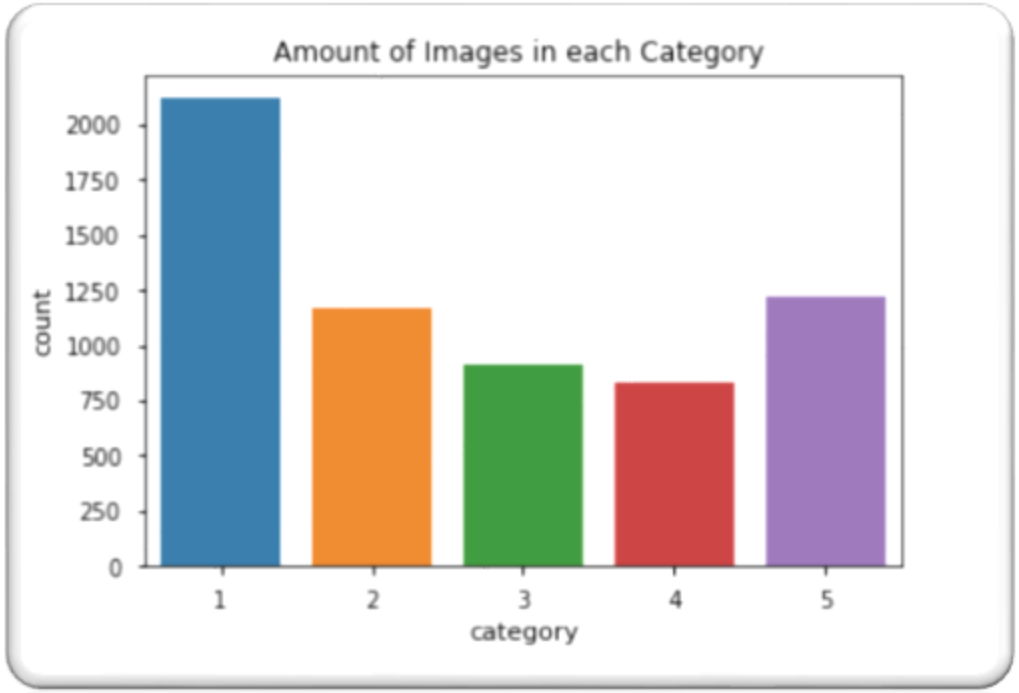
Tanker

Military

Carrier

Cruise

DATA: UNDERSTANDING



Class Imbalance

- Cargo Ships> All Other Categories

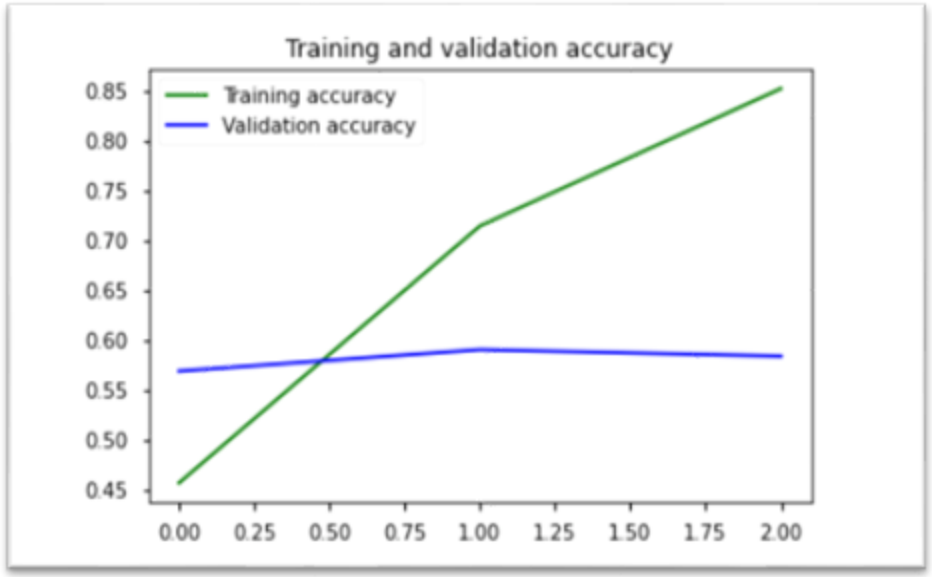
Potential Problem?

- Overtraining on Dominant Class
- Sensitive to Errors on Minority Class

METHODS

- Data Collection/Hosting
- Preprocessing
- Visualization
- Modeling

MODEL EVALUATION



First Simple Model:
Clear Overfitting

Best Model:

Testing Accuracy: 88%
Validation Accuracy: 81%

Pretrained VGG16 Model:
Less Overfitting

NEXT STEPS

Address Class Imbalances

Experiment with Other Pretrained Models

App Deployment

COMMENTS OR QUESTIONS?

Lera Tsayukova

Github: https://github.com/tsayula

Email: ltsayukova@gmail.com