

Model Development Phase Template

Date	25 June 2025
Team ID	SWTID1749974387
Project Title	Neural Networks Ahoy: Cutting-edge Ship Classification for Maritime Mastery
Maximum Marks	4 Marks

Initial Model Training Code, Model Validation and Evaluation Report

The initial model training code will be showcased in the future through a screenshot. The model validation and evaluation report will include classification reports, accuracy, and confusion matrices for multiple models, presented through respective screenshots.

Initial Model Training Code:

```

model = build_vgg16_model()
model.summary()

Downloading data from https://storage.googleapis.com/tensorflow/keras-applications/vgg16/vgg16_weights_tf_dim_ordering_tf_kernels_notop.h5
58889256/58889256 4s 0us/step

Model: "functional"

✓ checkpoint = ModelCheckpoint('best_vgg16_model.h5',
                               monitor='val_loss',
                               save_best_only=True,
                               mode='min',
                               verbose=1)

from keras.callbacks import ReduceLROnPlateau
lr_scheduler = ReduceLROnPlateau(
    monitor='val_loss',
    patience=3,
    factor=0.2,
    verbose=1
)

```

```
history = model.fit(
    train_gen,
    validation_data=val_gen,
    epochs=25,
    callbacks=[checkpoint, lr_scheduler],
    verbose=1
)
```

Python

Model Validation and Evaluation Report:

Model	Classification Report	F1 Score
VGG-16	<pre> precision recall f1-score support 1 0.93 0.93 0.93 318 2 0.97 0.98 0.97 175 3 0.99 0.96 0.98 138 4 0.99 0.99 0.99 125 5 0.90 0.92 0.91 182 accuracy 0.95 938 macro avg 0.96 0.96 0.96 938 weighted avg 0.95 0.95 0.95 938 </pre>	95%