Model Optimization and Tuning Phase Report

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| Date | 25 JUNE 2025 |
| Team ID | SWTID1749974387 |
| Project Title | **Neural Networks Ahoy: Cutting-Edge Ship Classification For Maritime Mastery** |
| Maximum Marks | 10 Marks |

**Model Optimization and Tuning Phase**

The Model Optimization and Tuning Phase involves refining machine learning models for peak performance. It includes optimized model code, fine-tuning hyperparameters, comparing

performance metrics, and justifying the final model selection for enhanced predictive accuracy and efficiency.

**Hyperparameter Tuning Documentation (6 Marks):**

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| **Model** | **Tuned Hyperparameters** | **Optimal Values** |
| VGG16 CNN |  |  |

**Performance Metrics Comparison Report (2 Marks):**

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| **Model** | **Optimized Metric** |
| VGG16 CNN |  |

**Final Model Selection Justification (2 Marks):**

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| --- | --- |
| **Final Model** | **Reasoning** |
| VGG16 CNN | The VGG16-based Convolutional Neural Network was selected for its proven effectiveness in image classification tasks. It achieved high validation accuracy during training and generalizes well due to its deep architecture and transfer learning capabilities. Its ability to extract hierarchical features from ship images aligned perfectly with the project’s goal of classifying ships into distinct categories with high confidence. |