Project Initialization and Planning Phase

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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 | 3 Marks |

**Project Proposal (Proposed Solution) report**

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| **Project Overview** | |
| Objective | To build a machine learning model that classifies ships into predefined categories (Cargo, Military, Carrier, Cruise, Tanker) using image data. |
| Scope | Data preprocessing and visualization  Image classification using deep learning  Five-class classification task  Evaluation through visualizations and metrics |
| **Problem Statement** | |
| Description | Given an image of a ship, predict its correct category from among five types: Cargo, Military, Carrier, Cruise, and Tanker. The task involves handling image data and training a computer vision model to perform accurate classification. |
| Impact | Such a model could aid in automated ship identification, potentially useful in maritime traffic monitoring, naval intelligence, and port management. |
| **Proposed Solution** | |
| Approach | Load and label image data from a CSV, Visualize class distribution, Use TensorFlow/Keras for image preprocessing and modeling. |
| Key Features | - Class-wise sample visualization |

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|  | * Use of class mapping * Data exploration using Seaborn and Matplotlib * CNN-based image classification |

**Resource Requirements**

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| **Resource Type** | **Description** | **Specification/Allocation** |
| **Hardware** | | |
| Computing Resources | CPU/GPU specifications, number of cores | T4 GPU |
| Memory | RAM specifications | 8 GB |
| Storage | Disk space for data, models, and logs | 1 TB SSD |
| **Software** | | |
| Frameworks | Tensorflow/Keras | Flask |
| Libraries | Additional libraries | pandas, numpy, matplotlib, seaborn, PIL |
| Development Environment | IDE | Jupyter Notebook, pycharm |
| **Data** | | |
| Data | Source, size, format | Google Drive File, 83.85Mb, csv |