# Problem Identification

**Failure detection of Gas Turbine Component in Naval Vessels**

**1. Introduction:** This research focuses on a naval frigate equipped with a Gas Turbine (GT) propulsion system. The simulator integrates various components—including the propeller, hull, gearbox, and controller—developed based on data from real propulsion plants. This version of the simulator also accounts for the degradation of GT components over time, allowing for a comprehensive analysis of propulsion performance under varying conditions.

**2. Research Problem:** How can failures in gas turbine components (compressor and turbine) be detected using the dataset features, and what is the impact of this degradation on the propulsion system's performance?

**3. Objectives:**

* To develop a predictive model for identifying potential failures in the gas turbine components during operation.
* To analyze the relationship between feature variations and the performance degradation of the gas turbine system.
* To detect failures in gas turbine components (compressor and turbine)

**4. Methodology:** This research will utilize a mixed-methods approach, combining surveys for quantitative data and interviews for qualitative insights.

**5. Expected Outcomes:** The study is expected to provide valuable insights of component failure . Early detection of component failures can prevent catastrophic accidents, ensuring the safety of crew and vessel. Identifying issues promptly helps maintain optimal performance, reducing downtime and operational costs.

**6. References:**

* [github.com/kokikwbt/predictive-maintenance/tree/main/datasets/cbm](https://github.com/kokikwbt/predictive-maintenance/tree/main/datasets/cbm)