## **🛳 Stage-1 Maritime Awareness Project – Beginner’s Pipeline**

### **1. What you will be given (Inputs):**

* **Satellite images (10 of them)** → pictures of the sea taken from space (both optical and radar versions).
* **AIS data** → a log of where some ships were (their positions and times). AIS is like a ship’s “GPS diary”.
* **Instructions** → what format they want your answers in.

### **2. What you need to produce (Outputs):**

* A list of **where the ships are in the images** (bounding boxes around ships, like drawing a rectangle on the sea picture).
* A list that shows **which ship in the image matches with which AIS record** (connecting the diary to the photo).
* A table that shows the **ship’s path in the ocean** (a smooth curve connecting the points of its journey).

### **3. How the project should flow (The Pipeline):**

1. **Start with the images**
   * Look at each satellite image.
   * Identify where the ships are (like spotting boats in a photo).
   * Record their size, direction, and location.
2. **Bring in the AIS diary**
   * AIS data gives you “ship X was at this spot at this time”.
   * You need to match the ships you found in the images with the ships in the AIS diary.
   * Think of it as “connecting the face in the photo with the name in the diary”.
3. **Fill the missing journey (Interpolation)**
   * Ships don’t always broadcast their AIS, and you don’t always have images.
   * You need to **draw the path** of the ship even when you don’t have every point.
   * Imagine a “connect-the-dots” game: you have some dots, and you draw the most likely path between them.
4. **Create the final reports**
   * Detection results (where ships are in the images) → in a map-friendly format (GeoJSON/shapefile).
   * Correlation results (matching image detections with AIS diary) → in a table (CSV).
   * Interpolated ship paths (smooth journeys you drew) → in another table (CSV).

### **4. How they will check your work (Evaluation):**

* They will compare your ship detections against the **true ships** → score you on **accuracy**.
* They will check if you matched detections with the right AIS entries → score you on **correctness**.
* They will compare your interpolated ship paths with the real hidden paths → score you on **closeness**.

👉 So in simple words:

* **Input:** 10 sea images + ship diaries (AIS).
* **Your job:** Find ships in pictures → connect them with their diaries → draw smooth paths of their journeys.
* **Output:** 1 map + 2 tables.
* **Evaluation:** How well you spotted, matched, and drew.