**Seattle Aquarium Research Technician – Climate Resilience technical interview**

*Create a Python script to extract still images from video based on ROV movement*

**Objective**

* Write a Python script that extracts x1 still JPEG image from a .mp4 video every 1 meter that the ROV moves, using ROV distance information from a CSV file.
* You have X hours to complete the task once you begin.

**Provided materials**

* **Video File**: a 1-min .mp4 video: *2024\_03\_21\_14-12-23.mp4* (yyyy\_mm\_dd\_HH-MM-SS)
  + 14:12:23 is the start time of the video.
* **ROV survey telemetry File**: CSV file (*2024\_03\_21.csv*) containing the following columns:
  + survey\_type: Control site – a comparison site for our HSIL project.
  + time: HH:MM:SS format.
  + date: mm/dd/yyyy format.
  + flight\_time: Time elapsed from ROV being armed to start a survey.
  + depth: Depth (m) from sea surface.
  + heading: Compass heading the ROV is going.
  + temp: Temperature (F) of the water measured by the ROV.
  + groundSpeed: Speed (m/s) the ROV is traveling.
  + lat: Latitude for the ROV position based on the GPS system.
  + lon: Longitude for the ROV position based on the GPS system.
  + DVLx: X position of the ROV relative to starting position.
  + DVLy: Y position of the ROV relative to starting position.
  + altitude: ROV's height (m) above the seafloor.
  + DVLlat: Latitude for the ROV position based on movement measured by the DVL.
  + DVLlon: Longitude for the ROV position based on DVL measurements.
  + distance: Distance traveled (m) from one row to the next based on DVLlat and DVLlon.

**Your objectives**

* Write a Python script that:
  + Reads the telemetry CSV file.
  + Calculates the cumulative distance traveled by the ROV.
  + Extracts and saves a JPEG image from the video for every 1 meter traveled, based on the cumulative distance.
* Additional details for the Python script and submitting the technical interview:
  + Please use relative file paths in your Python script so that it can easily be run.
  + The extracted JPEG images should be saved with filenames indicating the time (HH-MM-SS.jpg) which they were captured.
  + You should have ~5 still images extracted.
  + Ensure your script is well-documented (provide # commented text) and includes any necessary instructions for running it.
  + Email your Python script and extracted still as attachments for evaluation.
  + Good luck!