GeoSpy AI - Computer Vision Engineer Technical Evaluation

Objective:

Your task is to design and implement a **prototype AI system** that predicts the **geographical region of an image** using **computer vision and deep learning techniques**. This exercise will evaluate your ability to work with **image feature extraction, geolocation AI, and model optimization**.

📌 **Phase 1: System Design & Model Selection**

- Design a **computer vision pipeline** that processes images and extracts location-based features.
- Compare two potential models:
  - **CLIP (Contrastive Learning for Image & Text Matching)**
  - **Vision Transformers (ViT-based Feature Extractors)**
- Justify your choice based on **accuracy, efficiency, and scalability**.

✅ **Deliverable:** A **one-page document** explaining your approach and model choice.

🛠️ **Phase 2: Implementation - Core Model**

- Implement a **prototype** that can:
  1. **Extract image features** using a deep learning model (e.g., ViT, CLIP, or ResNet).
  2. **Predict the most likely geographical region** from an image.
  3. **Evaluate the model** using test images.

✅ **Deliverable:** A **Python script** or Jupyter Notebook that takes an input image and outputs the predicted region.

📊 **Phase 3: Evaluation & Error Analysis**

- Test your model with **at least 5 unseen images**.
- Analyze mispredictions and **identify key failure cases** (e.g., occlusions, urban vs. rural settings).
- Propose **one improvement** that could enhance the model's accuracy.

✅ **Deliverable:** A **brief report** summarizing:

- Model performance.
- Error analysis.
- Potential improvements.

Evaluation Criteria:

Metric	Weight (%)
Model Design & Justification	30%
Implementation Completeness	50%
Error Analysis & Improvements	20%

📌 **Submission Format:**

- A ZIP file containing:
  - **Design document (PDF)**
  - **Code (Python script or Jupyter Notebook)**
  - **Evaluation report (PDF)**

Deadline: Sunday 9th February, 2025 EoD

🚀 **Good luck! We look forward to reviewing your solution.**