Task-based Assessment for ML Engineer : Linear Feature Extraction in Satellite Imagery

Problem Statement: Road Network Extraction from Satellite Imagery

Objective: Your task is to develop a machine learning model to automatically extract road networks from satellite images. This task is crucial for creating detailed maps and accessibility information in disaster zones, especially in developing countries, to aid crisis response.

Dataset Description: For the same you can use the dataset provided below..

Link to Download:
https://drive.google.com/file/d/1aaUxJiNW2xa8_BQ5mOBan4DeZEugHqDc/view?usp=sharing

The dataset includes:

- **Training Data:** 6226 RGB satellite images, each of size 1024x1024 pixels.
    - Resolution: 50cm per pixel, collected by DigitalGlobe's satellite.
- **Validation Data:** 1243 images.
- **Test Data:** 1101 images (without masks).

Labels: Each satellite image is paired with a mask image that labels road pixels. The mask is a grayscale image where:

- White (255) represents road pixels.
- Black (0) represents the background.

Please note:

- The mask values might not be exactly 0 and 255. Binarize the mask images at a threshold of 128.
- Labels are not perfect and may be less accurate in rural areas. Small roads within farmlands are intentionally unannotated.

Important Note: All submissions will be checked for plagiarism. Any copied code will be rejected. Ensure that your solution is original and your own work.

Please submit your solution (github repo link) along with a brief report (README file in your github Repo) explaining your approach, the model architecture you used, and the results you achieved. Good luck!

Link to Submit: https://forms.gle/F8333own5NFENZTZ8