



**Ahmedabad
University**

Weekly Report 3

Group : 4

Course: Computer Vision

Instructor: Prof. Mehul Raval

Project: Road markings detection and road measurement in
aerial imagery

Group Members

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Objective:

This week focused on finding a suitable dataset and determining an appropriate approach for the project of detecting road markings and measuring them in aerial imagery.

Dataset Exploration:

Several publicly available datasets were identified as potential candidates for this project. Here's an overview:

- **VisDrone:** Specifically designed for aerial image object detection and tracking, including lane markings. Potentially ideal for this project.
- **ROADS dataset:** Contains high-resolution aerial images of highways with pixel-level annotations for various road elements, including markings. Tailored for this task and readily usable.

Evaluation Criteria:

The following criteria will be used to evaluate different datasets:

- **Relevance:** How well does the dataset represent the desired task of road marking detection and measurement?
- **Image quality:** Resolution, clarity, and diversity of images
- **Annotation quality:** Accuracy and detail of the provided annotations for road markings

Approach Exploration:

Two potential approaches were identified for solving the project:

1. **Object Detection:** Employ deep learning models like YOLO, SSD, or Faster R-CNN to directly detect road markings as bounding boxes in the aerial images.
2. **Semantic Segmentation:** Utilize models like DeepLabV3+ or U-Net to segment the entire image, classifying each pixel as belonging to either road marking, road surface, or background.

Next Steps:

- Further evaluation of the shortlisted datasets using the established criteria to select the most suitable one.
- Deep dive into the chosen approach, researching existing implementations and exploring potential model architectures.
- Initiate the development and training process for the chosen model.

Challenges Anticipated:

- **Data complexity:** Aerial images can have variations in lighting, resolution, and weather conditions, potentially affecting model performance.

- **Scale and rotation:** Road markings in images can appear at different scales and orientations, requiring the model to be robust to these variations.
- **Pixel-to-cm mapping:** Establishing an accurate mapping between image pixels and real-world measurements can be challenging.