Title:	Vehicle Detection, Tracking and Speed Estimation from Aerial Videos using Quadcopter in disordered Traffic
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Subject(s):	Computer Vision

Abstract:

Traffic vehicle detection, tracking and speed estimation from aerial videos using Quadcopter is becoming extremely popular in traffic monitoring. Formerly, the devices are generally placed at designated locations to accomplish reliable coverage range, but, unmanned aerial vehicles (UAVs) have been very popular with scholars in the field of traffic surveillance because of their moderate price, high versatility, and broad visual degree. The development of improved traffic control and management measures depends on accurate driving behaviour models of traffic flow that explain the vertical and transverse vehicle movements in the traffic flow. Our Indian traffic, also known as "disordered traffic," is categorized by large variations in vehicle static and dynamic features, driver activity instability, poor lane control, dynamic path width usable for driving, inadequate access control, and constant vehicle entrance, departure, turns, and path parking. Trajectory data is a vital resource for knowing the longitudinal and transverse dynamics of vehicles. Therefore, the ultimate purpose of the thesis is to gather higher quality vehicle trajectory data covering a longer segment to model specific activity dynamics using UAV. This thesis includes the following four tasks to support our objectives: Traffic data collection using UAVs, Vehicle detection algorithm, Vehicle tracking algorithm and traffic parameters estimations.
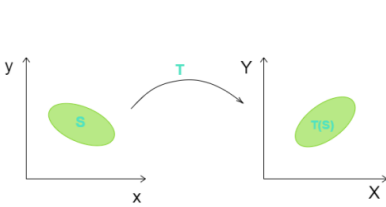
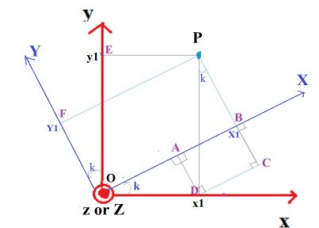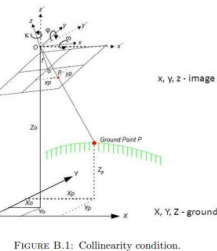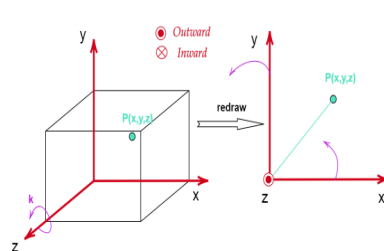FIGURE A.1: Coordinate transform from xy-plane to XY-Plane
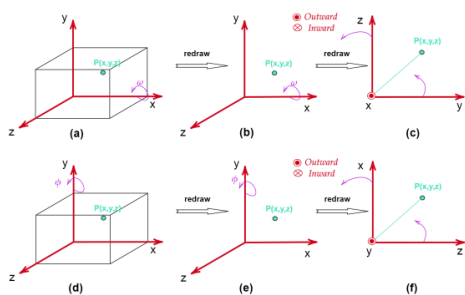
FIGURE B.1: Collinearity condition.

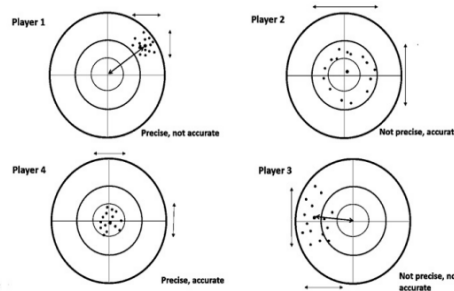FIGURE A.4: Rotation of xyz-coordinate axes about x-axis (fig(c)) and y-axis (fig(f))

FIGURE C.1: Diagram showing difference between Precission and Accuracy

FIGURE 4.10: Trajectory of two vehicles going to the right