

## ABSTRACT

Asian countries have the issue of higher heterogeneity, including Pakistan. Moreover, the traffic system in Pakistan also faces the issue of no-lane discipline and irregular driver behaviors. However, different mathematical traffic models can be designed via using several microsimulation models proposed by many of the traffic modelling researchers. But, for a heterogeneous traffic it is near to impossible to model a traffic system with such mathematical approaches. For that, we need to calibrate our data with the real-world scenario to simulate the traffic. Hence, a user-friendly software has been developed which can easily simulate the traffic streams based on real world conditions.

PTV-VISSIM is a software which deals with all the microscopic and mesoscopic traffic systems, and provides a convenient thesis version for students. In the following research study, the traffic stream at Jauhar Signalized Intersection has been calibrated and simulated using VISSIM. The data was collected by using the Unmanned Aerial Vehicle (UAV), then further extracted by some MATLAB based programs, like PYTHON. Thereafter, flows, delays, headway times, travel times and the lateral behaviors of the vehicles was observed and fundamental diagrams were plotted, in addition with, all the comparative graphical analysis was also performed, which showed that the simulated travel time for motorbikes is significantly lower than the field observed travel times. Therefore, the following research highlights the incorporate behavior of motorbike riders for the microsimulation models under the heterogeneous traffic and their observed undisciplined queue-jumping behavior, which can lead to the improvement in the simulation accuracy of traffic streams in all countries with a significant proportion of motorbikes and similar behavior.