

## ABSTRACT

*Vehicular Ad hoc Network (VANET) is a subset of the concept of the Mobile Ad Hoc Network (MANET) where vehicles act as nodes on the network. The baseline characteristics of high node mobility VANET is causing rapid changes in the network topology. Because the VANET network topology changes frequently, find and maintain routes are the most important thing in VANET. Of the ad hoc protocol, position-based routing protocol is considered as a more efficient routing protocol for VANET.*

*In this research, analyzing the position-based routing protocols which have different data delivery mechanisms, namely the Greedy Perimeter Stateless Routing (GPSR), Greedy Traffic Aware Routing (GyTAR), and Border-Node Based Routing Most Forward within Radius (B-MFR) on Inter Vehicle Communication (IVC). Simulation using Network Simulator NS-2:34 and mobility generator is the Simulation of Urban Mobility (SUMO). As an integrated simulator to incorporate NS-2.34 and SUMO used MOVE. Simulations based on the scenario of number of nodes and node speed changes with the network topology in an urban environment, namely the Bundaran Hotel Indonesia street in Jakarta. The performance metric used is the end-to-end delay, normalize Routing Overhead (NRO), packet loss and throughput.*

*The simulation result shows that the routing protocol B-MFR outperform to both test scenarios. In the scenario of the number of nodes, B-MFR has average end-to-end delay, NRO, packet loss and throughput in a sequence that is 0.147 ms, 0.395, 12.97% and 80.7 kbps. While the increase in the speed node scenario, B-MFR has average end-to-end delay, NRO, packet loss and throughput in a sequence that is 0.24 ms, 0.447, 13.33% and 80.21 kbps.*

**Keywords:** VANET, GPSR, GyTAR, B-MFR, SUMO, MOVE