under dense network. As the RBVT-R use geographical forwarding method, the PDR is slightly lower than FAST. The PDRs of GyTAR protocol is less than 15% to 20% from FAST. Similarly, the PDR’s of GPCR and GPSR are lesser than other protocols under added congestion. There are two reasons for less accuracy of these protocols. First, greedy forwarding fails used in these protocols due to many dead-end roads in Suffolk city map. Second, there are some cases where the data packets reach a local maxima and forwarding mode of each packet set to perimeter forwarding that causes the packet get trapped into routing loops. Figure 14(b) shows the average delay of all routing protocols. As the packet rate/second increases in the networks, the average delay of all protocols increase. FAST shows the better performance of average delay than other protocols with maximum 1.5 seconds. Average delay of other protocols increase that clearly shows high contention in the networks.

4 Conclusion

In this article, we proposed a fuzzy assisted social-based routing protocol called FAST to make better routing decisions in urban vehicular environments. Instead of simply forwarding the messages to the next available node towards destination, FAST makes dynamic routes based on friendship mechanism and fuzzy inference system for significance performance of VANET routing protocol. The simulation results in urban environment for with and without obstacles scenario show that the FAST has high packet delivery ratio, low average delay, fewer hops counts as compared to some existing VANET routing protocols.

Our future work includes to design a comprehensive and fully operational misuse and anomaly intrusion