Table 4: A comparison of the message OverHead of several mobility models

S. No	Model	Rx Ratio	10 Nodes	20 Nodes	40 Nodes	60 Nodes	80 Nodes
1	Random Way Point Model	Rx30	230.0	204.0	163.6	228.8	233.0
		Rx60	210.0	186.0	149.1	163.5	153.0
		Rx100	149.1	132.1	106.4	123.8	119.6
2	Stop Sign Model	Rx30	235.0	208.0	167.3	230.6	234.3
		Rx60	205.1	182.1	145.6	158.2	157.0
		Rx100	155.0	138.1	110.0	125.3	121.3
3	Probabilistic Traffic Sign Model	Rx30	245.2	216.1	174.6	221.6	235.2
		Rx60	215.1	190.1	152.7	163.2	150.3
		Rx100	160.2	142.1	113.6	131.3	117.0
4	Traffic Light Model	Rx30	235.1	208.2	167.3	231.7	234.3
		Rx60	205.1	182.1	145.5	158.2	157.0
		Rx100	155.1	138.1	110.0	125.3	121.3
5	Proposed Model	Rx30	245.0	216.0	174.5	222.4	235.2
		Rx60	215.1	190.1	152.7	164.1	150.2
		Rx100	160.0	142.0	113.6	130.0	116.1

Table 5: Mobility Models' Average Message OverHead

No. of Nodes	RWPM	SSM	PTSM	TLM	Proposed
10	220.5	225.5	232	219.4	195.7
20	201.3	218.9	214	205.2	189.7
40	151.9	166.5	161.3	158.8	151.1
60	167.4	170.1	172.8	172	160.3
80	177.2	169.8	175.2	169.9	149.5

Table 6: A comparison of the EED of several mobility models

S.No	Model	Rx Ratio	10 Nodes	20 Nodes	40 Nodes	60 Nodes	80 Nodes
1	Random Way Point Model	Rx 30	1021.0	4153.5	6098.4	9138.8	10278.4
		Rx 60	935.5	3599.4	5752.8	9135.0	10276.6
		Rx 100	824.8	3459.2	5541.4	9101.9	10245.6
2	Stop Sign Model	Rx 30	1029.6	4325.2	6191.6	9177.0	10322.1
		Rx 60	981.0	3948.3	5788.8	9162.5	10311.2
		Rx 100	804.1	3735.2	5672.7	9146.4	10290.9
3	Probablistic Traffic Sign Model	Rx 30	1250.6	4460.4	6272.7	9201.2	10331.5
		Rx 60	1225.0	4364.8	6259.2	9190.8	10311.2
		Rx 100	993.6	4276.8	6251.9	9185.1	10302.4
4	Traffic Light Model	Rx 30	1200.6	4160.4	5972.7	9385.5	10331.5
		Rx 60	1103.0	3964.8	5759.2	9157.1	10311.2
		Rx 100	813.6	3676.8	476.1	8834.7	10302.4
5	Proposed Model	Rx 30	947.6	3578.6	5491.4	8885.5	9831.5
		Rx 60	861.0	3268.0	4829.2	8557.1	9811.2
		Rx 100	689.6	2983.2	4291.9	8134.7	9302.4

Table 7: Mobility Models' Average EED

No. of Nodes	RWPM	SSM	PTSM	TLM	Proposed
10	1123	1120	1195	1034	930
20	3959.8	3878.7	3692.2	3599.9	3360.8
40	5905.3	5898.9	5699.3	5596.8	5303.3
60	9144.6	9097.3	8926.9	8925.9	8421.3
80	10285.6	10149.0	10096.0	9819.9	9674.1

Table 8: A comparison of the Consumption of Power of several mobility models

S. No	Model	Rx Ratio	10 Nodes	20 Nodes	40 Nodes	60 Nodes	80 Nodes
1	Random Way Point Model	Rx30	1.23	1.58	2.32	3.26	3.61
		Rx60	1.22	1.59	1.60	2.41	2.81
		Rx100	1.26	1.60	1.54	2.27	2.70
2	Stop Sign Model	Rx 30	1.13	1.43	1.18	1.26	2.63
		Rx 60	1.19	1.42	1.22	2.1	2.35
		Rx 100	1.21	1.34	1.41	1.99	2.32
3	Probablistic Traffic Sign Model	Rx 30	1.22	1.51	2.25	3.24	3.2
		Rx 60	1.24	1.47	1.54	2.38	2.6
		Rx 100	1.22	1.29	1.51	2.22	2.49
4	Traffic Light Model	Rx 30	1.24	1.43	1.18	1.26	2.63
		Rx 60	1.23	1.42	1.22	2.1	2.35
		Rx 100	1.19	1.34	1.41	1.99	2.32
5	Proposed Model	Rx 30	1.07	1.14	1.41	2.18	2.54
		Rx 60	1.09	1.24	1.59	2.42	2.56
		Rx100	1.11	1.23	1.84	2.84	2.95

Table 9: Mobility Models' Average Power Consumption

No. of Nodes	RWPM	SSM	PTSM	TLM	Proposed
10	1.4	1.3	1.2	1.2	1.1
20	1.5	1.6	1.5	1.6	1.3
40	1.6	1.6	1.6	1.6	1.5
60	2.4	2.4	2.4	2.4	2.3
80	2.6	2.7	2.6	2.7	2.5

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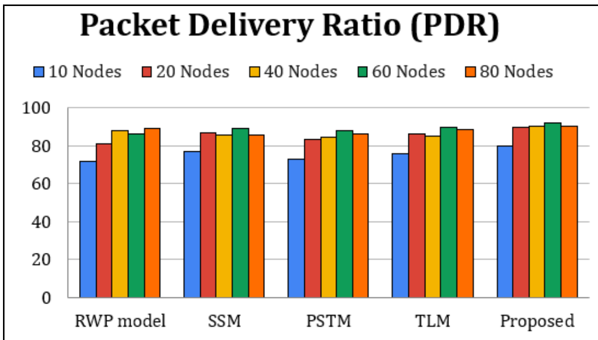

Figure 1: Average PDR for various Mobility Models

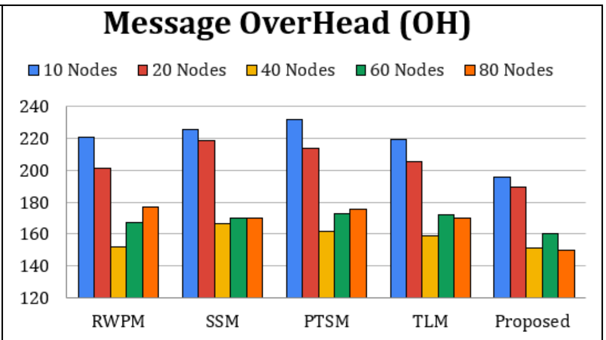

Figure 2: Average message OH for various Mobility Models

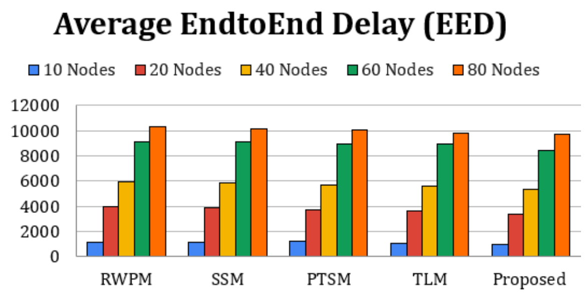

Figure 3: Average EED for various Mobility Models

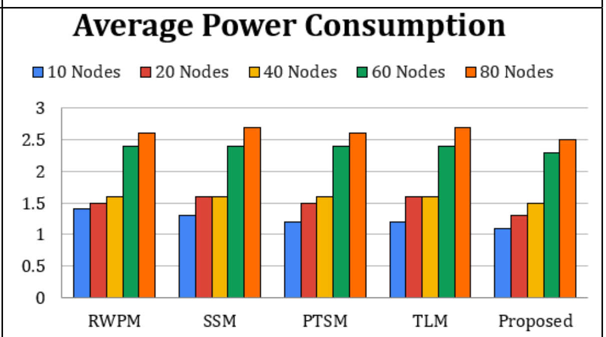

Figure 4: Average Consumption of Power for various Mobility Models

Figures 1, 2, 3, and 4 depict the outcomes of a network with 10, 20, 40, 60, and 80 nodes. Tables 2, 4, 6, and 8 provide a comparison of several mobility models according to random topology using the objective function called MRHOF. Above mentioned tables 3, 5, 7, and 9 show the findings in terms of EED between network nodes, our proposed mobility model (AUMM) shows significant improvement under 10 and 20 nodes of network environments; In the case of increasing nodes in network, it has shown slight improvement. Based on results, overhead messages are less in the case of the proposed algorithm and could get the conclusion with our proposed method improves performance of the whole network with less ratio of collisions. It leads to getting good control of communication system can be possible. The average packet delivery ratio is significantly enhanced by the proposed algorithm, which leads to low power consumption in a network and achieves efficient coordination among vehicles. ultimately results prove that the standard criteria for network are reliability and performance, and got achieved by using proposed algorithm, this suggests that it is best suited for Mobility-enabled low power and lossy networks.

8. Conclusion

In this paper, a different methodology to implement the mobility model for vehicular networks in urban VANET's is Routing Protocol (RPL) based on IEEE 802.15.4 was introduced. Further, a adapted algorithm is developed and developed in order to make it RPL interoperable. The simulation process with the proposed methodology in Cooja simulator allowed to study the performance in terms of useful parameters such as PDR, EED, OH and Consumption of Power. The performance evaluation and analysis show that our proposed methodology has better Packet Delivery Ratio, lower Average End-to-End delay, low OverHead and better Average Power Consumption as compared with existing systems. Our model AUMM achieved the far better performance in more complicated traffic scenarios. It accomplished reliable V2V transmission in an urban area.

9. Future Enhancement

As a future research study, the author intends to incorporate AI and ML into Vehicle - to - vehicle transmission and the RPL protocol. As an outcome, our future efforts will be focused on putting intelligence into Intelligent Transportation Systems (ITS) to enable them to take prompt responses. The strategy used in this article provided a chance to monitor and produce outcomes that are more fast and accurate than our suggested technique.

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