

Minimum-Delay Routing in Single Lane Express Way CR-VANET

Abstract—CR-VANET (Cognitive radio-vehicular Ad-Hoc Network) can mitigate channel resource shortage and congestion in VANET. For CR-VANET, with the consideration of fast topology changes and PUS activities, the existing routing protocols or schemes in VANET or cognitive radio networks (CRAHNS) can not be directly applied into CR-VANET. Therefore, we propose a jointly routing algorithm of CRVANET in urban single-lane expressway for minimizing end-to-end delay (MDCR-VANET). With the consideration of characters of single-lane urban expressway and delay in CRAHNS and VANET, we formulate the objective function as non-linear integer programming, which is NP-hard. Our algorithm uses the geography based greedy forwarding method to ensure the minimum transmission delay and store-forward delay. For the channel selection, we propose a heuristic method to select appropriate channel. Through extensive simulations and comparisons of state-of-the-art protocols, we prove that our algorithm can achieve less end-to-end delay.

CONCLUSION

In this paper, we propose a minimize end to end delay routing algorithm for cognitive vehicular networks. We analysis possible factors that will cause end to end delay, then set up system model and formulate the minimization end to end delay problem. We use the geography based greedy method to select the relay. In this method, it can obtain less transmission delay and store-forward delay. For the switching delay, we formulate the problem as 0-1 Knapsack problem, and we propose a heuristic method for channel selection. Simulation shows that our method outperforms SABE and kalman based Cog-VANET in minimizing end to end delay. Future work will develop our method for more complicated road traffic situations, for instance two or more that two lanes rode segment, and we will focus on how to minimize delay while transmitting the packets at the intersection.

SYSTEM REQUIREMENTS:

HARDWARE REQUIREMENTS:

- System : Pentium IV 2.4 GHz.
- Hard Disk : 40 GB.
- Floppy Drive : 1.44 Mb.
- Monitor : 15 VGA Colour.
- Mouse : Logitech.
- Ram : 512 Mb.

SOFTWARE REQUIREMENTS:

- Operating System : Windows
- Tool : Cygwin
- Front end : OTCL

REFERENCES

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