Vehicular Networks to Intelligent Transportation Systems

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Abstract

Urban mobility is a current problem of modern society and large cities, which leads to economic and time losses, high fuel consumption, and high CO_2 emission. Some studies point out Intelligent Transportation Systems (ITS) as a solution to this problem. Hence, Vehicular Ad hoc Networks (VANETs) emerge as a component of ITS that provides cooperative communication among vehicles and the necessary infrastructure to improve the flow of vehicles in large cities. The primary goal of this chapter is to discuss ITS, present an overview of the area, its challenges, and opportunities. This chapter will introduce the main concepts involved in the ITS architecture, the role of vehicular networks to promote communication, and its integration with other computer networks. We will also show applications that leverage the existence of ITS, as well as challenges and opportunities related to VANETs such as data collection and fusion, characterization, prediction, security, and privacy.

2019th%20International%20Conference%20on%20Intelligent%20Transportation%20Systems%20%28ITSC%202016%29%2C%202016.)

43. E. Rescorla and B. Korver, “Guidelines for writing RFC text on security considerations,” 2003.
Google Scholar (https://scholar.google.com/scholar?q=E.%20Rescorla%20and%20B.%20Korver%2C%20%E2%80%9CGuidelines%20for%20writing%20RFC%20text%20on%20security%20considerations%2C%E2%80%9D%202003.)

44. K. Biesecker, E. Foreman, K. Jones, and B. Staples, “Intelligent Transportation Systems (ITS) Information Security Analysis,” 1997.
Google Scholar (https://scholar.google.com/scholar?q=K.%20Biesecker%2C%20E.%20Foreman%2C%20K.%20Jones%2C%20and%20B.%20Staples%2C%20%E2%80%9CIntelligent%20Transportation%20Systems%20%28ITS%29%20Information%20Security%20Analysis%2C%E2%80%9D%201997.)

45. C. Levy-Bencheton and E. Darra, “Cyber security and resilience of intelligent public transport: good practices and recommendations,” 2015.
Google Scholar (https://scholar.google.com/scholar?q=C.%20Levy-Bencheton%20and%20E.%20Darra%2C%20%E2%80%9CCyber%20security%20and%20resilience%20of%20intelligent%20public%20transport%3A%20good%20practices%20and%20recommendations%2C%E2%80%9D%202015.)

46. J. R. Vacca, “Front Matter,” in *Computer and Information Security Handbook (Third Edition)*, Third Edit., Boston: Morgan Kaufmann, 2017, p. iii.
Google Scholar (https://scholar.google.com/scholar?q=J.%20R.%20Vacca%2C%20%E2%80%9CFront%20Matter%2C%E2%80%9D%20in%20Computer%20and%20Information%20Security%20Handbook%20%28Third%20Edition%29%2C%20Third%20Edit.%2C%20Boston%3A%20Morgan%20Kaufmann%2C%202017%2C%20p.%20iii.)

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