Vehicular Networks to Intelligent Transportation Systems

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Chapter
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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.