

# Smart Traffic Management System Using Internet of Things

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**Abstract**—Traffic management system is a cornerstone of a Smart city. In the current problems of the world, urban mobility is one of the major problems, especially in metropolitan cities. Previous traffic management systems are not capable enough to tackle this growth of traffic on the road networks. The purpose of this paper is to propose a smart traffic management system using the Internet of Things and a decentralized approach to optimize traffic on the roads and intelligent algorithms to manage all traffic situations more accurately. This proposed system is overcoming the flaws of previous traffic management systems. The system takes traffic density as input from cameras which is abstracted from Digital Image Processing technique and sensors data, resultantly giving output as signals management. An algorithm is used to predicts the traffic density for future to minimize the traffic congestion. Besides this, RFIDs are also used to prioritize the emergency vehicles like ambulance, fire brigade etc. by implementing RFID tags in such vehicles. In the case of emergency situations, such as fire explosion or burning of something, fire and smoke sensors are also deployed on the road to detect such situations. Moreover, a mobile application is connected to a centralized server which intimates to nearby rescue department about fire explosion with the location to take further action. In addition, the native user can ask about future traffic condition at a particular node. The proposed system is validated by constructing a prototype and deploying it in a city of Pakistan. A web application is also there to provide useful information in graphical formats to the higher authorities of the smart city which is fruitful in future road planning.

**Keywords**—Emergency Vehicle Management, Internet of Things (IoT), Smart Traffic Management System, Traffic Prediction, Traffic Signal Management.

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