Suspect Vehicle Detection using Vehicle Reputation with Association Analysis Concept

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Abstract. The suspect vehicle detection system normally compares the list of criminal license plates and vehicle license plates gathering from various sensors in order to identify the criminal/suspect vehicles. However, the traditional process of comparing those license plates utilizing the matching of alphabet character is not effective. In traditional methods, the system unable to detect the criminal/suspect vehicles if the characters of the licence plate do not totally match with the blacklisted license plates. This paper proposes the use of reputation algorithm to detect the criminal/suspect vehicles that crossing the checkpoint which license plates match with the blacklist in the checkpoint database. In addition, we also use association analysis concept to detect the vehicles crossing the checkpoint that might relate to the criminal activity records. Our method can detect the suspect vehicles with forged license plate by using color, brand and type of the vehicles instead of only the license plate number matching method. These two techniques use a blacklist of criminal vehicles and criminal activity recorded in a criminal report database of Defence Technology Institute (DTI), Thailand, to help facilitate the detection process. From our extensive experiments, the results show that the reputation algorithm and the association analysis concept can improve the detection capability of the suspect vehicle detection system.

Keywords: Reputation Algorithm, Association Analysis, Suspect Vehicle Detection

1 Introduction

Automobile License Plate Recognition (ALPR) becomes an important trend in Intelligent Transportation Systems (ITSs) [1]. Basically, the license plate is a unique ID for a vehicle that can be used for automatic vehicle recognition system by reading license plates from photos or video recorded. In addition, license plate recognition (LPR) has been widely applied in numerous applications. For example, the LPR system can be used in smart border