Analysis of the Internal Delays of Various Wireless Technologies for Autonomous Vehicle Applications

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Autonomous vehicles use VANETs (vehicular ad-hoc networks) to communicate with the world around them. Despite the simple premise, VANETs rely on a variety of wireless technologies depending on range, internal delay, urgency of information, and other factors. Therefore, VANET algorithms will need to weigh these elements accordingly. Through this research, I hope to contribute reliable measurements of internal delay to reduce the algorithms' complexity. To calculate internal delay, I connected two Arduinos to a STM32 Nucleo Board. One Arduino is the transmitter, and the other is the receiver. Different wireless modules like Bluetooth and Zigbee were connected to the Arduinos. Then, the Nucleo Board runs a program to calculate the delay between transmission and reception.

Keywords: VANET, autonomous vehicles, wireless, wireless delay, STM32, Arduino