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V2V Communication by Lora

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Abstract: *For the purpose of to allow direct data exchange between vehicles without depending on external infrastructure Such as cellular networks, this project proposes a Vehicle-to-Vehicle (V2V) communication system that uses LoRa (Long Range) technology. The system aims to enhance road safety, traffic efficiency, and emergency response by facilitating the real-time sharing of crucial information such as location, speed, and movement direction. NodeMCU (ESP8266) microcontrollers, PS modules, microphones, servo motors, and LoRa transceivers are all components of the hardware set up. Together, these parts gather, process, and wirelessly send data via a structured communication protocol that guarantees dependable delivery and incorporates flow control and safety alerts. The system works well over long distances and in mobile, high-traffic situations, according to preliminary testing. Real-time traffic updates, emergency notifications, collision avoidance, and autonomous vehicle coordination are a few examples of applications. For upcoming intelligent transportation systems, the project demonstrates LoRa as a workable, scalable, and energy-efficient option.*

Keywords: Vehicle-to-Vehicle (V2V) Communication, LoRa, NodeMCU (ESP8266), Wireless Communication, Low- Power Networks, Autonomous Vehicles, Traffic Management, Emergency Communication

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