SafeLean: A Lean Angle and Collision Warning System

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Abstract: *SafeLean is a cutting-edge safety technology that combines collision detection and lean angle warning features to improve rider safety on electric two-wheelers. This technology warns riders of possible risks and obstructions in real time, including unsafe lean angles. It includes premium parts such an ESP32 microprocessor for data processing and wireless connection, an HB100 Doppler radar motion sensor for collision detection, and an Inertial Measurement Unit (IMU) for lean angle measurement. SafeLean reduces the risk of accidents and improves rider awareness by utilizing sophisticated sensor technologies and clever algorithms. Thorough testing and validation show how well the system works to increase rider safety and confidence, establish a new benchmark for electric two-wheeler safety systems, and open the door to safer, more pleasurable urban environments.*

Keywords: Multi-Camera System, Collision, Ad-hoc Network, Inertia Measurement Sensor.