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(57) Abstract :

A self-balancing robotic vehicle equipped with advanced control systems and sensor technologies designed to autonomously maintain equilibrium. The invention features a dual-wheel configuration that employs an array of gyroscopes and accelerometers to continuously monitor and adjust the vehicle's orientation. Central to the vehicle's operation is a microcontroller that processes sensor data and executes a Proportional-Integral-Derivative (PID) control algorithm to ensure stability. The system includes motor drivers that regulate the speed and direction of the motors based on real-time feedback from the sensors. This autonomous balancing capability is pivotal for applications in urban mobility, automated delivery systems, and personal transport devices. The invention further incorporates safety mechanisms, remote control capabilities, and optional obstacle detection systems to enhance functionality and reliability. This innovation addresses critical challenges in sensor precision and control efficiency, presenting a robust solution for maintaining balance in dynamic environments.

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