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AUTOMOBILE EMISSIONS MONITORING FOR POLLUTION CONTROL

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Abstract: The surge in automobile usage has emerged as a pivotal factor contributing to escalating levels of air pollution, with vehicles serving as the primary source of environmental contaminants. Emissions from vehicle exhaust, notably nitrogen oxides (NO_x), carbon monoxide (CO), and hydrocarbons (HC), constitute a substantial portion of atmospheric pollutants. Remarkably, approximately half of nitrogen oxide gases, along with carbon monoxide, and one-fourth of hydrocarbon gases present in our surroundings emanate from automobile exhaust systems, significantly exacerbating the global warming crisis. The exacerbation of pollution is further compounded by inadequate vehicle maintenance and ignition defects, which can elevate emission levels of these noxious gases. To mitigate this environmental menace and concurrently enhance vehicle longevity, implementing a proactive system is imperative. The proposed system operates through an ESP32 microcontroller and is designed to monitor and regulate emissions effectively. This innovative system incorporates a real-time monitoring mechanism. If emission rates surpass predefined threshold limits, the system promptly alerts the user through a Liquid Crystal Display (LCD). By providing timely warnings about excessive gas emissions, the system not only aids in curbing environmental pollution but also encourages responsible vehicle ownership and maintenance practices. This integrated approach aligns with the broader goal of sustainable transportation and environmental conservation.

Keywords: Automobile; Pollution; Emissions; Monitoring