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Modified E-Bike System with IoT-Based Diagnostics and Control

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Abstract: *This Paper aims to promote sustainable urban mobility by designing and developing an affordable, low-maintenance electric two-wheeler. This prototype emphasizes accessibility, affordability, and simplicity in response to the limits of current electric vehicle (EV) solutions—such as their high cost, complicated technology, and limited local manufacturability—and the growing need for environmentally friendly transportation. The electric bike was built with a rechargeable lithium-ion battery pack, brushless DC (BLDC) motor, and a specially made metal chassis. To reduce costs and promote repairability, locally sourced materials and components were used. In order to improve user experience without adding to system complexity, the architecture also permits the incorporation of fundamental IoT features like battery monitoring and anti-theft tracking. The prototype proved to be a feasible choice for everyday urban travel, particularly in underdeveloped nations, as initial testing revealed satisfactory performance in terms of speed, battery efficiency, and ease of use. Through practical innovation and economical engineering, our research advances the larger objective of democratizing electric mobility.*

Keywords: Electric Bike, Design of Bike, motor, Battery, Controller, IOT Module

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