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(57) Abstract :

This innovative electric bicycle features an eco-friendly design with an advanced gear shifting system and power permutation mechanism. These components are integrated into a single compact casing, providing seamless speed and power transmission from the electric motor. The system includes various gear mechanisms to adjust the speed for driving, reversing, and sports modes. Equipped with IoT-based sensors, including proximity and pressure sensors, the bicycle can detect axial displacement and output voltage signals that indicate speed magnitude, load, and tire pressure. The system allows for both manual and automatic speed control, enabling the rider to directly manage the power supplied from the battery to the motor. This automatic control adjusts the motor's operation based on different rotational speeds. Designed to be user-friendly, this electric bicycle is especially suitable for physically handicapped and elderly individuals, making it accessible for all types of riders.

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