ADAPTIVE POWER DELIVERY SYSTEM FOR ELECTRIC BICYCLE WITH PEDAL ASSIST

ABSTRACT

E-bikes, or electric bikes, have gained increasing popularity in recent years due to their ability to provide a convenient and environmentally-friendly mode of transportation. E-bikes are equipped with a small electric motor that provides assistance to the rider when pedaling, allowing for a faster and easier commute. E-bikes also have the potential to improve public health by providing a convenient and enjoyable form of exercise. Many people may be hesitant to bike long distances or uphill due to the physical effort required, but e-bikes can make these routes more accessible and enjoyable.Adaptive pedal assist can also improve the overall efficiency of the e-bike, as the electric motor is only providing the necessary amount of assistance based on the rider's needs. This can help to extend the range of the e-bike on a single charge, as the electric motor is not being used unnecessarily.Our proposed system will be able to deliver a highly optimized pedal assist system by analysing more parameters than the present systems cost effectively. Moreover, the proposed system is equipped with regenerative braking capabilities for maximum optimization and interactive HMI interface for easier user operation.

Phase 1: Literature review completed. Identified the gap between existing systems and real world problems. Hardware block diagram designed. Defined software flow chart

Phase 2: Identified various sensors to be implemented in the system. Simulated BLDC motor controller circuit. Simulink model of various sensor fusion implemented.

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