

System and Method for Adjusting Footrest to Optimize Comfort and Safety for Pillion Riders

1. Technology:

The proposed invention introduces an automated height-adjustable and self-opening footrest system for motorcycle pillion riders. Unlike conventional footrests, this system is designed to address the unique needs of child and elderly pillion riders. It incorporates a height-sensing mechanism that dynamically adjusts the footrest's height to suit the pillion rider's leg length, ensuring better stability and comfort. For elderly riders, who may struggle with manually deploying the footrests, the system uses a rider-detection sensor that automatically opens and closes the footrests without physical intervention. The technology employs advanced servo motors and sensors to achieve smooth operation, ensuring enhanced safety and convenience. The system also features a robust locking mechanism to maintain stability under varying riding conditions, including braking, cornering, and high-speed travel. By leveraging modern materials and a compact design, the footrest system can be retrofitted to existing motorcycles or integrated into new models. This invention fills a significant gap in current footrest designs by catering to diverse age groups and ensuring safety and comfort for pillion riders of all sizes.

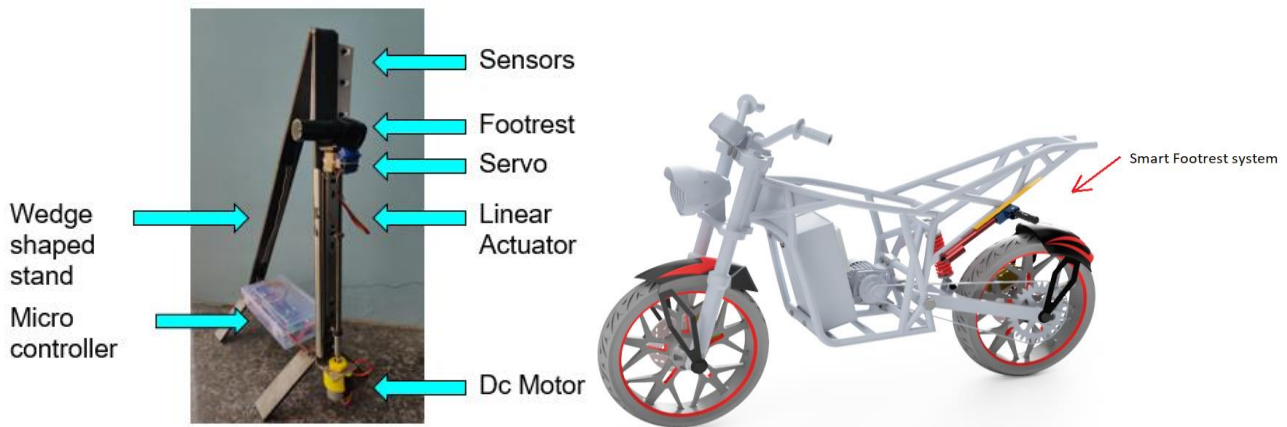


Fig. 1 Illustration of the automated adjustable footrest system showcasing its components and CAD model of Bike with smart footrest.

2. Problem Addressed:

Conventional motorcycle footrests are static and fail to cater to the needs of child and elderly pillion riders. Children often cannot reach the footrests, causing instability during cornering or braking, while elderly riders experience discomfort in manually deploying the footrests. These limitations compromise safety, particularly in dynamic riding conditions. The proposed system addresses these issues by introducing automated height adjustment and self-opening footrests, ensuring both safety and convenience.

3. Industrial Applications:

The automated height-adjustable and self-opening footrest system has key applications for motorcycle brands like Honda, Hero MotoCorp, TVS, and Ather Energy. It enhances safety and comfort for pillion riders, especially children and the elderly, on family motorcycles and commuter bikes. This innovation also supports adaptability for public transport motorcycles and can be adopted by premium brands to improve rider experience and align with smart vehicle technology trends. It offers manufacturers a competitive edge by reducing injuries and enhancing rider safety.

4. Patent Application Number: 202441052290