



A PROJECT REPORT [06ME85]

ON INTELLIGENT THIRD WHEEL FOR PHYSICALLY HANDICAPPED VEHICLE

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Of

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ABSTRACT

Two-wheelers are one of the most widely used modes of transportation in the world. However, they are limited only to physically-able people. The present technology widely used to assist the physically challenged is by installing two additional wheels on either side, in the axis of the rear wheel. Although this serves the purpose of supporting the rider, it increases the space consumed by the vehicle on the road, increases the turning radius, and also hikes the fuel consumption. The sheer pleasure of riding a two-wheeler is lost.

The Smart Wheel is designed and fabricated keeping in mind the physically challenged; to offer them a more comforting ride, like the way the motor bikes are meant to be ridden. The support wheels are required only during the initial acceleration and the final deceleration period. However, when the vehicle attains higher speeds the support wheels requirement is negated. The Smart Wheel project consists of an actuating mechanism wherein the support wheels can be elevated or retained at the ground position, based on the comfort of the rider.

The Smart Wheel includes a simple and effective mechanism, which reduces the space consumed by the vehicle on the road, increases its fuel efficiency by decreasing the drag, and also decreases the turning radius. It can also be used as a training wheel for beginners to boost their confidence. The major benefit of our design is that it be installed on any given two-wheeler without much alteration to the original design of the vehicle. Also the mechanism used is maintenance free. Since there is a decrease in the fuel consumption of the vehicle, there also will be a decrease in the emission, making our product eco-friendly in nature.

The project involved designing and fabricating the support frame, selecting suitable materials for it, considering various parameters such as the stresses induced, availability, cost effectiveness and weight. Suitable wheels and shock absorbers have been installed keeping in mind the substandard roads. A maintenance free mechanism has been developed, wherein a battery powered viper motor coupled to a modified jack assists in the actuating of the support frame. The entire assembly has been installed on to the vehicle. A three way switch has been installed to control the mechanism.

A series of test drives were conducted on the vehicle, which have inferred positive results. The next stage of the project is to completely automate the actuating mechanism. A microcontroller will be programmed to elevate or land the support frame, based on the speed at which the vehicle is being ridden. The analog speedometer of the vehicle will be replaced with a digital speedometer and the signal will be tapped which will be used by the microcontroller to operate the entire mechanism.