

ELECTRONIC STEERING OF AUTOMOBILES

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ABSTRACT

In a conventional steering system, the steering action is achieved using a rack and pinion gear box arrangement causing more frictional losses and tends to increase the weight and space occupied at the frontal portion of the vehicle. The driver might also get hurt by the steering column in case of an accident. Also it is not possible to achieve a variable steering feel depending on the driver feedback.

The main objective of this project is to overcome these constraints and achieve a safe steering system. It is proposed to design and implement a Steer-By-Wire system. In this system steering action is achieved by the usage of electro-mechanical components.

In this project an accelerometer mounted on the steering wheel is used to monitor the angle of the steering through the output voltage produced. This voltage is fed into a microcontroller. The micro controller contains the necessary algorithms which convert the digital value into an appropriate signal which is given to the servo motor through the servo motor drive mounted on either side of the wheels. This produces a rotary motion on the wheels causing wheel tracking.

A mode selector configured along with the micro-controller helps the driver to select different modes depending on the feedback required, thereby achieving over-steer, neutral steer and under steer. The proposed method has been successfully tested on a prototype model

KEYWORDS: Automotive Sensors, Measuring, Adaptive Steering