

# **Design of an Automatic Gear Change System of Bike**

Yi Liu, Zhemin Fu, Emre Selvi and Richard Taylor

Muskingum University, New Concord, OH,43762

E-mail: [yliu@muskingum.edu](mailto:yliu@muskingum.edu)

The bike is one of the most common transportations of the last two centuries; people in our day still use bikes for transport or exercise. The gear shifting system is a critical part of a bike. It could help a cyclist to maintain an optimum pedaling speed while covering varied terrain. An Automatic Gear Change System was designed, a prototype is being constructed, and will be tested by a team of two engineering students at Muskingum University. One student is working on the development of the software and the other is building the prototype. The system will use a microcontroller to analyze the data from a force sensor on the pedal and a speed sensor on the back wheel as inputs. Depending on the input values, the proper gear will be determined and a mechanism, actuated by a step motor, will be used to change the gear. The whole system can set up on any kind of original gear shift bike.