Systematic Design and Control Experiment of Riderless Bicycle

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ABSTRACT

This study was focused on designing the balance-controlling system of riderless bicycle and realizing the technique. The control system of riderless bicycle was based on the steering control system of industrial personal computer(IPC), and the theory of fuzzy control was used to be the core of the controller. The data measuring system of riding condition of the bicycle was then developed, including the measuring of roll angle of bicycle, steering angle of front fork, and bike speed. These data were provided to the controller to implement the calculation. At last, the steering control system driven by a servomotor system was designed to simulate the riding control of the rider. The data retrieving program and the controlling rule program used in the study were written by the software LabVIEW. The data obtained from the experiment in this study could validate the precision of system and controller designed in this study.

Keywords : Riderless Bicycle, Fuzzy Control, IPC

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