

基于CAN总线的农业车辆自动驾驶控制系统 Automatic Guidance System of Agricultural Vehicles Based on CAN Bus

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摘要: 以ISO 11783协议作为系统数据通信的标准, 开发了基于CAN总线的农业车辆自动驾驶控制系统, 该系统包括控制终端、GPS节点、电子罗盘节点、角度传感器节点及转向控制节点, 其中控制节点采用比例参数可调节的自适应PID控制算法实现车辆的转向控制。通信测试结果表明, 该系统能够实时可靠地采集多个传感器信息和传输控制指令。车辆导航实验结果表明, 转向控制方法能够以较快的速度跟踪目标值, 具有良好的控制效果。 A navigation control system for agricultural machinery was developed based on CAN bus with the communication protocol of ISO 11783, which was the standardization for the exchange of information between different devices in the system. The system includes a control terminal, an acquisition unit of GPS signal, an acquisition unit of digital compass signal, an acquisition unit of angle sensor signal, and a steering control unit. A self-adaptive PID algorithm was adopted to perform steering control. The communication experiment proved the effectiveness of the system in collecting data and transmitting commands. Experimental results showed that the algorithm could quickly track target datum, and made the system have better dynamic response characteristics.

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