IEEE1451智能传感器多传感信息自校正方法研究

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摘　要：

针对多传感信息耦合问题，基于IEEE1451标准，提出了一种通用的多传感信息自校正模型。模型根据传感元件输出信号额定特征，从信号幅度、变化趋势等方面，实现对传感器的故障判断和自免疫处理；然后基于多传感信息插值解耦数学原理，建立了基于特定TEDS格式的校正引擎，通过将标定点数据以矩阵表格形式输入TEDS中来实现解耦校正。试验研究表明：通过TEDS解耦校正引擎，可实现对多传感耦合信息的良好校正补偿，提高检测准确度，在解耦校正的前端引入传感元件的自评估技术，可有效提高智能传感器自校正的可靠性。

关键词：智能传感器；解耦；IEEE1451；自校正；自评估

Self-correction Method Research of Multi-sensors Information Based on IEEE1451 Smart Sensor

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Abstract:

Aiming to the coupling problem of multi-sensors information, the paper proposes a general self-correction model of multi-sensors information based on IEEE1451 standard. Firstly, the model realizes the judgment of sensors fault and self-immunity treatment by considering the amplitude, variation trend of sensors output based on the inherent signal characteristics of sensors. Then it establishes a correction engine of special TEDS based on interpolation decoupling mathematics principle of multi-sensors information, the correction engine realizes decoupling correction by inputting matrix calibration data in tabular form into TEDS. The experiment result shows it realizes decoupling correction of multi-sensors information and improves measurement accuracy by decoupling correction engine of TEDS, and it can improve reliability of self-correction by using sensors self-evaluation technology before decoupling correction.

Keywords: Smart sensor; Decoupling; IEEE1451; self-correction; self-evaluation

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