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多维力传感器藕合分析及解藕方法的研究

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摘　要：

藕合现象普遍存在于多维力传感器中，多维力传感器输出如不经过解藕，数据直接应用到机器人操作中，会导致机器人的误操作。针对存在的藕合现象，本文首先分析了多维力存在的藕合原因，根据产生原因将藕合分为两种形式：结构藕合和误差藕合，然后提出了一种新的解藕方法-基于线性神经网络解藕方法，与传统解藕方法相比，该方法大大提高了解藕合精度。最后通过实验验证了该方法的有效性和优越性。

关键词：多维力传感器；结构藕合；误差藕合；解藕；神经网络；

Coupling Analysis of Multi-axis Force Sensor and Research of Decoupling Method

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Abstract:

Coupling is a common phenomenon in the multi-axis force sensor. If we measure the data without decoupling, it will cause incorrect operation of the robots. Aiming at coupling phenomenon, this paper analyzes the reasons why coupling exists in the multi-axis force sensor. Dividing from the causes there are two types of multi-axis force sensors, structure coupling and error coupling. We put forward a linear decoupling method based on neural network. Comparing to the traditional decoupling method, this method improves the precision of decoupling greatly. In the end of this paper, experiments and traditional decoupling method are used to compare and prove the effectiveness of this method.

Keywords: Multi-axis Force Sensor; Structure Coupling; Error Coupling; Decoupling; Neural Network;

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