

## 基于导电橡胶的一种新型类皮肤触觉传感器阵列的研究

作者: 丁俊香, 葛运建, 徐菲, 郝传光, 黄英

单位: 中国科学院合肥分院智能机械研究所机器人传感器实验室

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摘要:

本文提出一种基于导电橡胶的类皮肤柔性触觉传感器阵列。传感器采用交叉排列的两层节点的框架结构, 用注射成型(LIMS)的方法进行样品的整体浇注。文中介绍了该3D柔性触觉传感器阵列的结构设计、电路设计、解耦算法。实验仿真结果表明, 该传感器突破了当前的基于盔甲的柔性触觉传感器的设计思路, 可在柔性的传感器表面实现连续的三维力的检测, 具有优良力学特性、柔韧性好、抗干扰能力强、分辨率高的特性

关键词: 导电橡胶, 类皮肤触觉传感器, 阵列, 有限元分析

## Study of a New Type Skin Liked Arrayed Tactile Sensor Based on Conductive Rubber

**Author's Name:**

**Institution:**

**Abstract:**

In this paper, we propose a new type skin liked arrayed tactile sensor based on conductive rubber. The sensor has the framework of two layers of staggered nodes, the widely used method of liquid rubber injection molding (LIMS) method is used for "the overall injection molding" sample preparation. The structure details, circuit design, and the decoupling algorithm of the 3D-flexible tactile sensor are described in this paper. The simulation result shows that the design breaks through most of current flexible tactile sensor array based on the armor-type structure, and the sensor realizes three-dimensional force detection on the continuous surface of the sensor with favorable mechanical ability, good flexibility, and strong anti-jamming and high resolution.

**Keywords:** conductive rubber, skin liked tactile sensor, array, ANSYS

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