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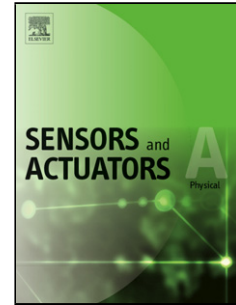
Title: Three-Axis Scanning Force Sensor with Liquid Metal Electrodes

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Title: Three-Axis Scanning Force Sensor with Liquid Metal Electrodes

Authors: Takuro Nakadegawa^{†1}, Hiroki Ishizuka^{†1,2} and Norihisa Miki¹

¹Department of Mechanical Engineering, Keio University

3-14-1 Hiyoshi, Kohoku-ku, Yokohama, Kanagawa 223-8522, Japan

²Department of Intelligent Mechanical Systems Engineering, Kagawa University

2217-20 Ichirin-cho, Takamatsu, Kagawa, 761-0396, Japan

Corresponding Author: Hiroki Ishizuka (hi1124@eng.kagawa-u.ac.jp)

† These authors contributed equally to the work.

Highlights • A three-axis ballpoint-pen-type tactile sensor that can measure shear and reactive forces is proposed.

- The sensor consists of five capacitors and is fabricated micro fabrication process.
- The capacitors are formed by filling the pockets of PDMS structure with liquid metal.
- The experimental results indicated that the sensor was able to scan stiffness distribution of the emulated tissue and detect the stiff tumor spot.

Abstract: Endoscopic palpation is a developing technology that shows promise in identifying early stage small tumors located beneath the surface of an organ. This technology requires sensors to detect the stiffness difference between stiff tumors and soft healthy tissue. This paper proposes a three-axis ballpoint-pen-type force sensor that can scan the surface to measure both shear and reactive forces, which can be used to calculate the distribution of stiffness. The sensor design includes five capacitors, four of which are

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