

## **Paper-JT- 025: Tactile Sensing Sensor System Using Magnetic Cartridge**

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### **ABSTRACT**

To effectively grasping and manipulating various objects effectively also to perform skilled work, prosthetic hand users, operators of tele-operated robot arms and virtual reality users need to perceive surface texture and other properties by some means. Tactile or touch sensing can enable these tactile properties to be perceived. This paper introduces a tactile sensing system using magnetic cartridge as a sensor and analog signal processor that is based on detecting minute surface vibrations in an artificial finger, when contact with a surface is made. The frequency of the signal from the sensor system is proportional with the granularity of the surface, while the amplitude of the signal corresponds with the coarseness of the surface. This tactile sensor system has benefits over existing sensor system because simpler; do not need classification algorithm, less expensive, also can detect regular and irregular surfaces. Experimental results are provided and show the potential of our system in achieving sensing the textured surfaces.

**Keyword:** magnetic cartridge, vibration, tactile-sensing, surface, texture