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Artificial Tactile Sensing in Biomedical Engineering 1st ...

Taking human hand as a suitable tactile model, the necessary engineering features of an artificial tactile sensor, such as, spatial and temporal resolutions, force sensitivity, and linearity, are being reviewed. In this work, we also report on the current and possible future applications of tactile sensors in various surgical procedures.

Human tactile perception as a standard for artificial ...

A Review of Tactile Sensing Technologies with Applications in Biomedical Engineering. ... by physical contact or touch, can be termed a tactile sensor. The importance of tactile sensor technology ...

(PDF) A Review of Tactile Sensing Technologies with ...

This paper reviews artificial research in the field of tactile sensor design. Tactile sensors are a category of sensors that acquire tactile information through physical touch. The measured characteristics can be properties such as temperature, vibration, softness, texture, shape, composition and shear and normal forces.

A review of tactile sensing technologies with applications ...

In this landscape, artificial soft materials, as well as inherently soft bio-derived structures, play a crucial role for the development of new tactile sensing systems for potential future deployment in domains such as hand prosthetics: indeed, soft materials can increase the size of the contact area, thanks to their higher conformability, increase the contact friction coefficient (and thus the grasp stability), protect distributed embedded sensors which also provide better contact ...

Synthetic and Bio-Artificial Tactile Sensing: A Review

Tactile sensing systems have thus sufficiently matured for integration into several fields related to biomedical engineering. Furthermore, artificial intelligence has the potential for being applied in human-machine interfacing, for instance, in medical robotic manipulation, especially during minimally invasive robotic surgery, where tactile sensing is usually a problem.

A Survey of Tactile-Sensing Systems and Their Applications ...

Inspired by the computational efficiency of biological tactile system, we present a neuromorphic approach to artificial tactile sensing that mimics the spike-based spatiotemporal tactile response of Fast Adapting type I (FA-I) mechanoreceptors.

Neuromorphic approach to tactile edge orientation ...

The development of artificial tactile sensing is a very challenging goal which involves numerous research areas. Application domains include humanoid and industrial robotics, prosthetics, biomedical instrumentation, healthcare, cyber physical systems, virtual reality, arts, to name a few.

Tactile Sensors – IEEE Italy Sensors Chapter

Artificial tactile sensing approach in aortic-repair-laparoscopy: aorta cross clamping during surgery. Pahlavan P(1), Najarian S, Moini M, Afshari E. Author information: (1)Biomechanics Department, Laboratory of Artificial Tactile Sensing and Robotic Surgery, Faculty of Biomedical Engineering, Amirkabir University of Technology (Tehran ...

Artificial tactile sensing approach in aortic-repair ...

A tactile sensor with MEMS structure has been presented for robotic application by Mei et al. (2000). This sensor has soft contact surface and it can measure 50N in perpendicular direction and 10N in X and Y directions [10]. A capacitive tactile sensor has been designed by Chappell and Elliott (2003) used in artificial hand. This

DESIGN AND CONSTRUCTION OF A NEW CAPACITIVE TACTILE SENSOR ...

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Siamak Najarian Biomedical Engineering with emphasis on: Biotransport Phenomena, Robotic Surgery, Biosensors, Control Engineering, Artificial Tactile Sensing, Biomechanics, Design of Artificial Organs, and Biomedical Imaging Modalities. Siamak Najarian received his Ph.D. in Biomedical

Engineering from Oxford University in the UK.