

ShearSense

Title: ShearSense: A soft flexible sensing array for capturing shear and normal stress in affective touch

Presenter: Jian Gao, email: gaojian1@student.ubc.ca

Authors: ¹Xiulun Yin, ¹Jian Gao, ¹Rubia Guerra, ¹Chrys Morton, ¹Devyani McLaren, ¹Preeti Vyas, ¹(Xi) Laura Cang, ²Ryusuke Ishizaki, ¹John Madden, ¹Karon MacLean (¹University of British Columbia | ²Honda R&D Co., Ltd)

Abstract:

Soft polymer tactile sensing arrays offer a customizable approach to capturing expressive gestural touch parameters over surfaces of differing shape and stiffness, e.g., in affective human-robot interaction. We present a flexible multi-taxel capacitive array that simultaneously measures 3-axis stress (normal and shear), a machine-learning modeling pipeline that characterizes a wide range of affective gestures, and data on feature importance. The current prototype features fast wireless communication and a 10 mm bending radius. We will demonstrate three variants tailored for manufacturing, healthcare, and robotics applications, and display the complexities and power of sensing shear in an array format.

Demo Description Image:

