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Abstract
This paper provides an efficient and feasible solution to enhance the sensitivity of traditional piezoelectric tactile sensor based on introducing structural electrode upon the sensing material. The concept of structural electrode is to mimic the convex and concave surface in the human skin.
In the paper, first, the optimization design parameters, including structural electrodes material and shape, array gap, support material and thickness, determined form both finite element analysis (FEA) and dynamic measurement system, respectively. According to the simulation results and experimental data.
Simulation results demonstrate, increased with raising stress nearby the microstructures underneath due to the contact surface is decreased. In addition to the enhancement of output voltage, a fully polymer-based tactile sensor is another goal in this project to achieve flexible requirement for a curve or irregular surface in practical application.
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