

## Touch Sensor

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The minimum force required for human touch perception is of interest for measurement of neurological degradation, such as arises in diabetes. The major disadvantage of current devices, such as the WEST device, is that the applied force is fixed for each micro-filament, limiting measurement resolution. Micro-machining gives us the opportunity to create cantilevers on the length scales that would be convenient for the application of these small forces ( $< 1000 \text{ uN}$ ). With the integration of a piezo-resistive transducer coupled with a feedback drive control, it is possible to apply a continuous range of forces with a single device. Our design involves gold strain gauges deposited on multiple SU-8 cantilever beams to span the measurement range of 100 to 2000  $\text{uN}$ , with a 25  $\text{uN}$  resolution. When mounted to an actuator, these beams will descend to apply a steadily increasing force until halted by the subject's response.

