



# Stitched Stretch Sensor (20130122, Dr. Lucy Dunne)

Technology No. 20130122

**IP Status:** Issued US Patent; **Application #:** 14/193,892

## Stretch Sensor

This textile-based stretchable sensor has been developed that is wearable and comfortable yet still allows for accurate measurements. A major obstacle facing researchers using sensors on clothing is integrating the electronic components and sensors into fabric so that it can be worn comfortably. The stretch sensor has the benefit of not needing to be oriented or aligned with the warp/fill direction of the textile. It can be attached anywhere on the garment. This method of fabricating stretch sensors uses current industrial apparel machinery, eliminating costs of new equipment or changing existing machines.

## Comfortable, Wearable Sensor for Smart Clothing

Stretchable sensors have many potential applications: the creation of “smart” clothing, monitoring physical or physiological status indicators, human-device interfaces, all the way to stitchable structure that is subjected to heavy loads. This method of fabrication uses a serpentine stitch pattern with a conductive yarn as the top cover thread. Conductive yarns in the sensors allow for the sensing properties of the stitch which, when stretched increase its electrical response. The stitch structure used is common in everyday apparel, making the stretch sensor wearable and comfortable.

### FEATURES AND BENEFITS OF STITCHED STRETCH SENSOR:

- Ease of manufacturing reduces costs by using current machinery
- Wide range of potential applications
- Able to apply anywhere on garment
- No need for alignment of sensors

**Phase of Development** - Stretch sensor design has been characterized and validated.

### Researchers

Lucy Dunne, Ph.D.

[External Link](#) (dha.design.umn.edu)

<https://license.umn.edu/product/stitched-stretch-sensor>