We present a simple and inexpensive fabrication method for creating Stretchis, highly stretchable user interfaces that combine sensing capabilities and visual output. We use Polydimethylsiloxan (PDMS) as the base material for a Stretchi and show how to embed stretchable touch and proximity sensors and stretchable electroluminescent displays.

**Motivation**

How can makers embed sensors and displays on objects that are

- doubly curved
- shape-changing
- stretchable

**Multi-Layer**

- Aesthetics Layer
- Sensing Layer
- Display Layer
- Base Layer (PDMS)

**Printing Stretchable Electronics**

Water-based conductive ink cannot be printed on hydrophobic PDMS. We developed a inexpensive, simple and permanent method to print conductive ink on PDMS while remaining fully stretchable. AQUAPLAST DIY binder acts as a binding layer between conductive ink and PDMS.

- without binding layer
- with binding layer

**Fabrication**

Layers of functional inks are printed on top of each other using screen printing as an accessible and inexpensive fabrication method.

- transparent electrode
- binding layer
- isolation layer
- PDMS filled with phosphor particles
- transparent electrode
- binding layer
- PDMS substrate

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