Potential of Flexible and Deformable Devices – Input Interaction Perspective

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Applied research lab with core focus in two major areas

• Designing for Millions - aimed at societal innovations through ICTD interventions

• Exploring novel input interactions for flexible and deformable devices
Let’s Get Started!!
Commonly Used Computing Platforms
Input Interactions For Common Computing Platforms
Despite some of them demonstrate “naturalness” or Natural User Interfaces (in HCI terms), we still do not completely exploit natural human capabilities – especially our ability to deform objects.
Flexible and Deformable Devices
“A flat panel display, constructed of thin (flexible) substrates that can be flexed, conformed, bent, or rolled to a radius of curvature of a few centimetres without losing functionality.”
Common Types of Flexible and/or Deformable Device

The form of the device has deep curves but the device in itself is rigid and **cannot flex** in the hand.

The device **flexes a bit** but doesn’t necessarily folds into half. Sort of like our credit/debit cards.

**Magicwand (2016). Human Media Lab**

**WOVE. Polyera Technology**
Common Types of Flexible and/or Deformable Device

The third category can roll, unroll, bend, unbend, fold, unfold etc. Input interactions adopted from properties of paper, plastic, clay and a cloth.
Potential of Flexible and Deformable Device
1. Size and Portability

WOVE by Polyera

Paperfold (2014), Human Media Lab

Foldable smartphone prototype, Samsung
1. Size and Portability
2. Novel Shapes

Facilitate novel forms and shapes of future computing devices

*Mobius band (2015)*, EILab (IIT Guwahati)
2. Novel Shapes

… Leading to novel input interactions

Converting Mobius band into parallel screen (to perform various common interactions)

Pinching the band to select desired contents (e.g. text, images etc.)

Rolling the Mobius band to play games on collaborative devices
2. Novel Shapes

… Leading to novel input interactions

Infinite scrolling (upwards & downwards)

Converting Mobius shaped device to a stylus
2. Novel Shapes

Converting Mobius band to triangular shape devices
3. New Input Interactions with Traditionally Shaped Devices

FlexZoom (2016), EILab, IIT Guwahati
3. New Input Interactions with Traditionally Shaped Devices

FoldMe (2012), TU Darmstadt
4. Augmenting Traditional Input Interactions

BendSwipe (2017), EILab, IIT Guwahati
5. Auxiliary Affordances

PneUI (2014), MIT Media Lab

Morephone (2013), Human Media Lab
To Summarize…

- Size and portability
- Novel forms and shapes… emerging novel input interactions
- Novel input interactions for traditionally shaped computing devices
- Augmenting traditional input interactions
- Auxiliary affordances
Thank You

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