On-Body Sensing for Always-Available Interaction

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Computers are smaller than they used to be.
Computers Are Getting Smaller (You Heard It Here First)

‘60s and ‘70s

Early ‘80s
Computers Are Getting Smaller (You Heard It Here First)

Early ’80s

Early ’90s
Computers Are Getting Smaller (You Heard It Here First)

‘90s, ‘00s

Last 5 years
What's Next?

(Baudisch, 2009)
What are the right input paradigms for always-available computers?
Solving the micro-input problem...

...by making better use of the space we have

- **NanoTouch** (Baudisch and Chu, CHI 2009)
- **RidgePad** (Holz and Baudisch, CHI 2010)
Solving the micro-input problem...

...by appropriating the environment.

- **Scratch Input**  (Harrison and Hudson, UIST 2008)
- **Sidesight**    (Butler, Izadi, Hodges, UIST 2008)
Solving the micro-input problem...

...by using our voices instead of our hands
Solving the micro-input problem...

...by turning our bodies into the interface.
About 200 years of history analyzing electrical muscle signals...
Muscle-Computer Interface
Wireless Air Guitar Hero
Borrowing from medicine (again)…
The Body as an Input Surface
"Skinput": Acoustic Sensing for Input
Can we tell locations apart?

Taps on forearm

Taps on wrist
Results

Fingers
5 Locations
87.7%

Whole Arm
5 Locations
95.5%

Forearm
10 Locations
81.5%
Bioacoustic Sensing for Input
What about output?
Future Work

Integrated, robust, wireless, totally awesome sensing armband
What new computing paradigms emerge when computing is always instantly available?