One-Handed Interaction Techniques for Multiple Pressure-Sensitive Strips

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Goals

• Small form factor manual input device & GUI
• Wearable friendly
• Single-handed operation
• Minimize interaction time

In WIMP interfaces:
1. Move hand to device
2. Move cursor to widget
3. Change parameter with widget

• Eliminate on-screen cursor navigation
Results

• One handed
• Mobile
• Off the shelf technology
• Control up to 14 widgets
• Minimize/eliminate widget screen space
Basic Approach

Subdivide touch-sensitive surface into four 1D linear strips

Changes a traditionally 2D device into a 4 x 1D device

Virtual Widgets:
- Buttons of variable sizes
- Slider
- Spinner wheel
- Spring loaded wheel

→ Fast reconfigurability in software
Enhancement 1: Pressure

“Pressure” with capacitance sensing

Finger presses harder

Contact area increases

Capacitance increases

Can I sense pressure?
Pressure sensitivity virtually doubles number of strips

4 x 1D 8 x 1D
Enhancement 2: Dual-finger Strips

Can I sense multiple fingers?

- Position of centroid of two contact areas
- Larger capacitance
A bit faster…
Conclusions

• One hand
• Four linear strips
  + pressure
  + multiple finger
→ Direct control of 14 widgets
Possibilities…

with P5 VR glove

with Tablet PC