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How Clever is That Thermostat?

Using the Kinect to Detect Outward Signs of Thermal Discomfort

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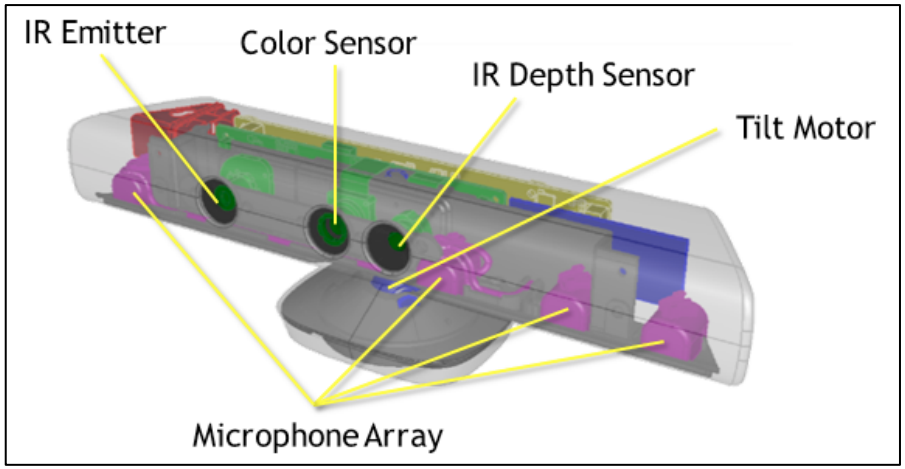
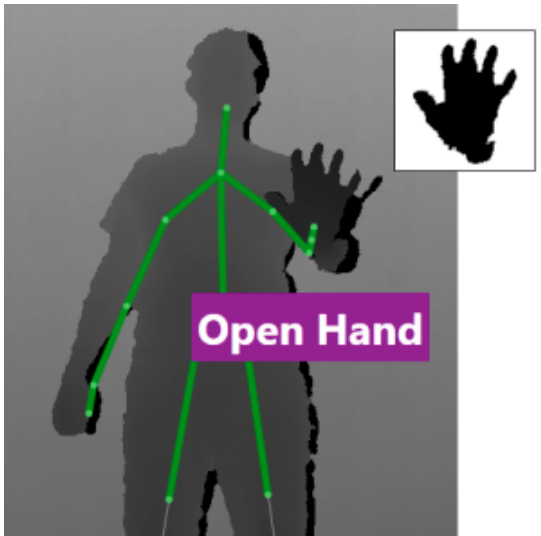
Evaluating Thermal (dis)Comfort

- Traditionally, we evaluate thermal comfort by <u>asking people</u>. It's subjective.
- New technologies allow alternative approach: observe how people <u>behave</u>
- Looking for "Outward Signs of Thermal Discomfort"

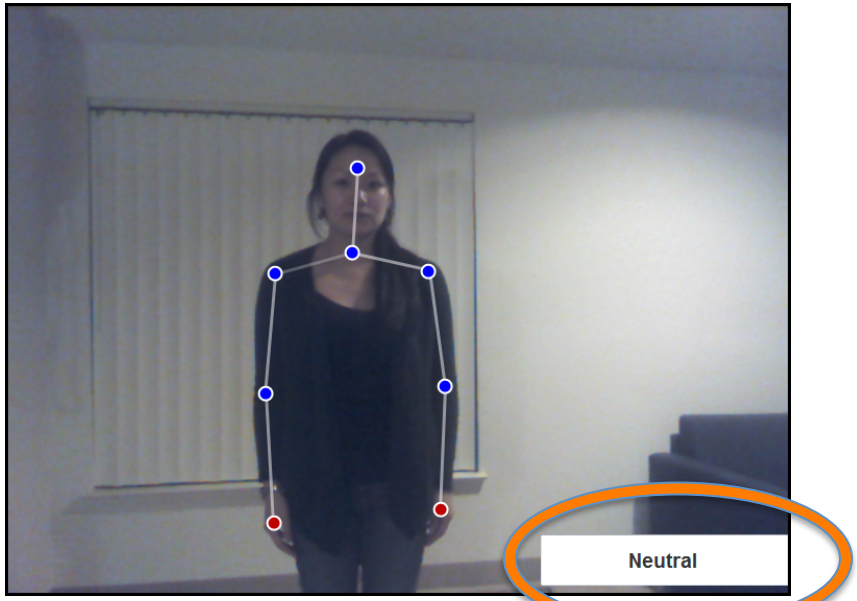
The Microsoft Kinect and its key features



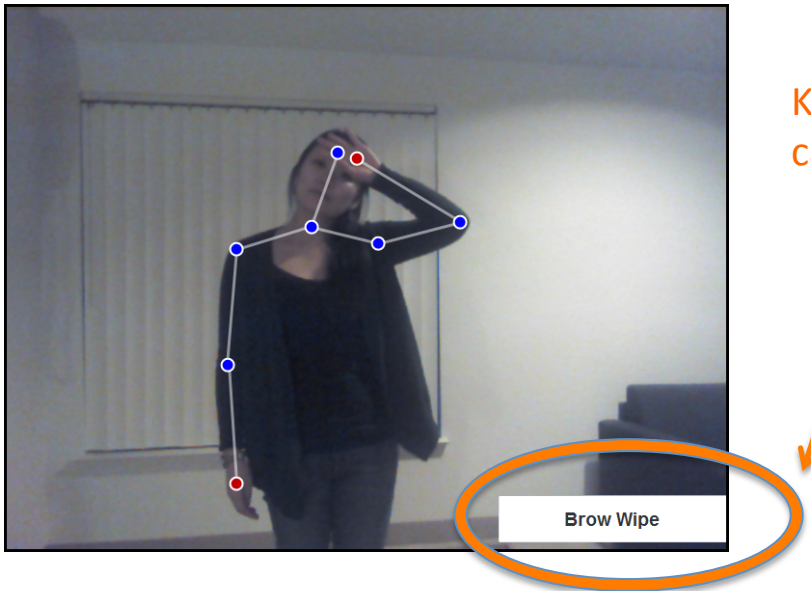
The Kinect tracks 26 points on the skeleton



Kinect Recognizes Discomfort Gestures

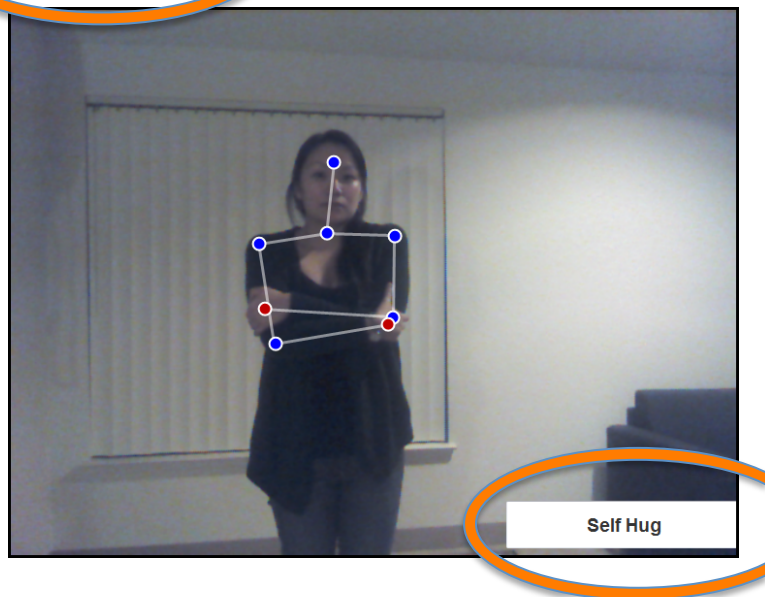


I'm hot!



Kinect calculated this

Brrr – I'm cold



Towards a Cleverer Thermostat

Learning to recognize a language of gestures related to environmental comfort

<u>Applications</u>

- Public areas
- Nursing homes
- Animals: Dairies, piggeries, etc.

<u>Future work</u>

- Recognize more gestures (shivering?)
- Decrease false positives
- Averaging comfort of groups