CS2310: Kinect Emotional Gesture Identification

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Overview

- Goal
- Method
- Detail(detection)
- Demo
Goal

- Detects and visualize gestures/actions which could be sign of patients’ health condition
  - Helps saving human power
  - Find potential problem which would otherwise be ignored
Method

- Primesense OpenNI + NITE + OpenGL
  - PrimeSense + NITE: skeleton detection and abstract the human body with various vectors of numeric value
  - OpenGL: visualization/animation
Detection -- abstraction

- Abstraction of human body
  - 3D coordinates of the key points – joints
  - Those coordinates can be derived directly using API calls
Detection -- calculation

- By involving vector calculation, we can ask questions like?
  - How is the arm positioned?
  - which part of the body is the arm put on?
Detection - Identification

• Using a bunch of rules to identify a gesture
  ▫ Tradeoff between precision and recall
  ▫ More rules leads to fewer false positive but could allow more false negative.

  ▫ Example, detecting touch chest with hand:
    • Is one of the hand in front?
    • Is that hand close enough body?
    • Is the angle between the forearm and upper arm smaller than a given threshold?
Demo

- Three gestures
  - Put either hand on forehead
  - Put either hand on chest
  - Cancel the effect
  - Youtube link(\texttt{http://goo.gl/hf3hl})
Increased sign of pain when touching the head
Increased sign of pain when touching the chest
Cancel the effect