CAN FUTURE PHYSICAL ACTIVITY ASSESSMENT PROCEED WITHOUT THE SUPPORT OF COMPUTER SCIENCE

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Sensor Data: Public Health vs. Computer Science...

- **Data collection** – no problem

- **Data storage** – seems to be fine

- **Data processing** – very weak
  - Problems in:
    - Combining data from 2+ devices
    - Little use of contextual information
    - Overreliance on thresholds … When will we see “The death of the count” (Simon Marshall)
In the big scheme of things OUR DATASETS ARE NOT BIG…

- Flickr – up to 12,000 images per second (2007!)
- YouTube – 20 hours of video uploaded per second (2010)
- Facebook – 500 million users…
Managing SenseCam/Image Data

SenseCam Images of a day (about 3,000)

Event Segmentation

EVENT SEGMENTATION
Using MOTION sensors – very quick & accurate

Sitting Accelerometer Signature
Walking Accelerometer Signature
Driving Accelerometer Signature
Image Processing

Colour Descriptors

Source:
http://cns.bu.edu/~gsc/ColorHistograms.html
Image Processing

Edge Descriptors

Source:
http://cns.bu.edu/~gsc/ColorHistograms.html
Concept detection process

- Lifelog images → Labeled examples
- Visual features → Concept probability

- Colour Layout
- Feature Fusion
- Scalable Colour

- SVM

- Classifier Fusion
Activity Recognition using Images

- 27 “activities”
- Validated on 95k annotated images

Comparison of Lifestyle Within People

- steeringWheel
- eating
- insideVehicle
- vehiclesExternal
- reading
- holdingPhone

Z-Score

user 1 user 2 user 3 user 4 user 5
Saturday
15 January 2011

1859 Photos  (11:58 AM - 20:24 PM)
You can touch one of the events below to view the photos within it.

Show Calendar
Touch the button above to view different days

58 of 104 photos

Add Photos
Help
With sincere gratitude to Neville Owen and all the folk at Queensland and Baker IDI
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Event Segmentation

DCU/CLARITY SenseCam & Vicon Revue Browser Featuring Event Segmentation

Project Description
This browser caters for the viewing of SenseCam & Vicon Revue images. The browser automatically segments images into distinct events, making use of the SenseCam’s onboard sensors. See paper “Automatically Segmenting Lifelog Data into Events” (Doherty & Smeaton, 2008).

Updated SenseCam Browser - RELEASED 13th May 2011
Researchers in the British Heart Foundation Health Promotion Research Group in the University of Oxford and CLARITY: Centre for Sensor Web Technologies in Dublin City University have extended the original SenseCam browser. It is recommended that all SenseCam researchers now use this browser.

Advantages of this browser:
- bug fixed for handling when camera firmware is reset
- participant name now displayed on main screen
- new participant subfolder now uses participant name rather than participant integer id
- calendar updated to now visually show complete bottom line of days
- upload of troublesome images now reports more accurate progress percentage
- ability to do multiple uploads in single browsing session
- ability to cancel concept annotations (little “x” button in image viewer)
- ability to modify concept annotation categories (“Edit Event Type List”) in event image viewer mode
- can now click on yellow buttons either side of horizontal zoom scrollbar on main page to zoom in/out

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http://sensecambrowser.codeplex.com
Inter-disciplinary mix of researchers, clinicians and practitioners.

Applications for using this technology in research for both physical activity & nutrition behaviours.

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