

# Designing Novel Applications for Emerging Multimedia Technology

Presented to The Design Group, Open University, 19 May 2010

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## Overview

- Centre introduction
- What I do - Interaction Design for Novel Technologies
- Two examples of my design:
  - Interactive TV ..... 15 min
  - LifeLogging ..... 10 min
- Challenges & Design Issues ..... 15 min
- Conclusion

## Example 1: Interactive TV for Multimedia

### Multimedia Techniques

- Shot Boundary Detection
- Scene Detection and Classification
- News Story Segmentation
- Sports Summarisation
- Content-based Searching
- Meta-data augmentation by crawling the Web
- Video Recommendation

+ Network and Storage on the TV set



## Characteristics of TV Interaction

- Lean-back (as opposed to Lean-forward)
- Multiple levels of viewer attention
- Use of remote control (as opposed to Mouse/Keyboard)
- Divided attention between playback and interactive elements

**=> Design Implications!**

## Solution – Combination of:

- Overlay & semi-transparency
  - Supporting passive & active viewing
- Multiple levels of interface sophistication
  - Simple interaction while supporting sophisticated features
- Colour buttons for flat (shallow) menu access
  - No deep navigation with remote
- Genre-dependent presentation
  - One button action resulting in variety of presentation depending on the context of watching
- Query without text input
  - Shift interaction burden from the viewer to the system



Lee H, Ferguson P, Gurrin C, Smeaton A.F, O'Connor N and Park H. Balancing the Power of Multimedia Information Retrieval and Usability in Designing Interactive TV. uxTV 2008 - International Conference on Designing Interactive User Experiences for TV and Video, Mountain View, CA, 22-24 October 2008. >>>

## Example 2: LifeLogging with SenseCam

## SenseCam: What is it?

- **Wearable digital camera** with sensors:
  - Light sensor
  - Passive infra-red sensor
  - Accelerometer (X-Y-Z axes)
  - Ambient thermometer
- Sensor status triggers automatic photo capture:  
**“Passive Capture”**

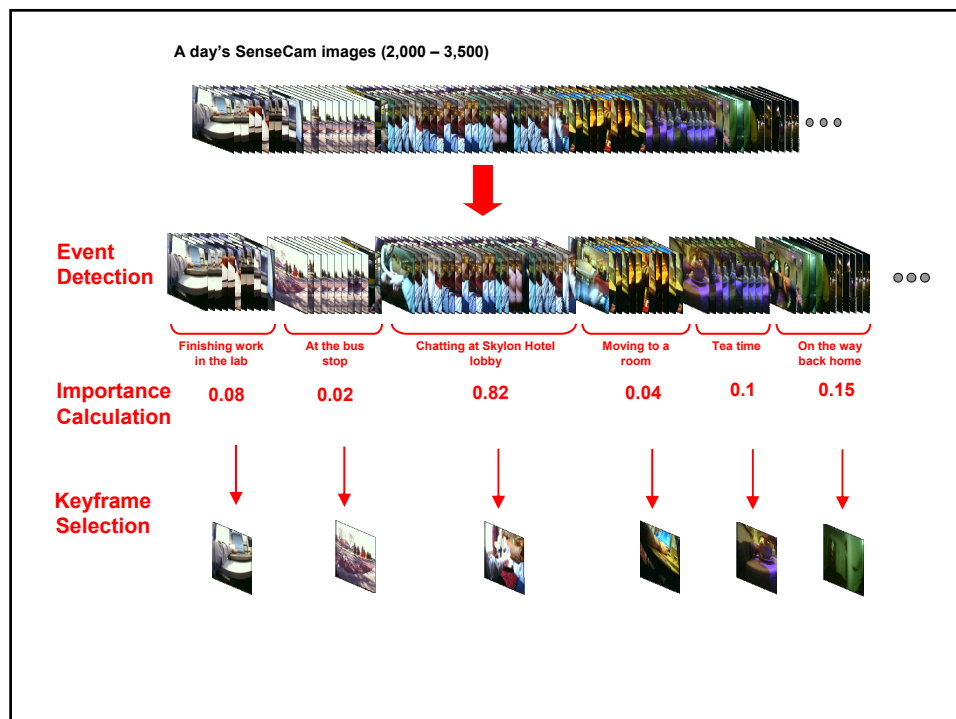


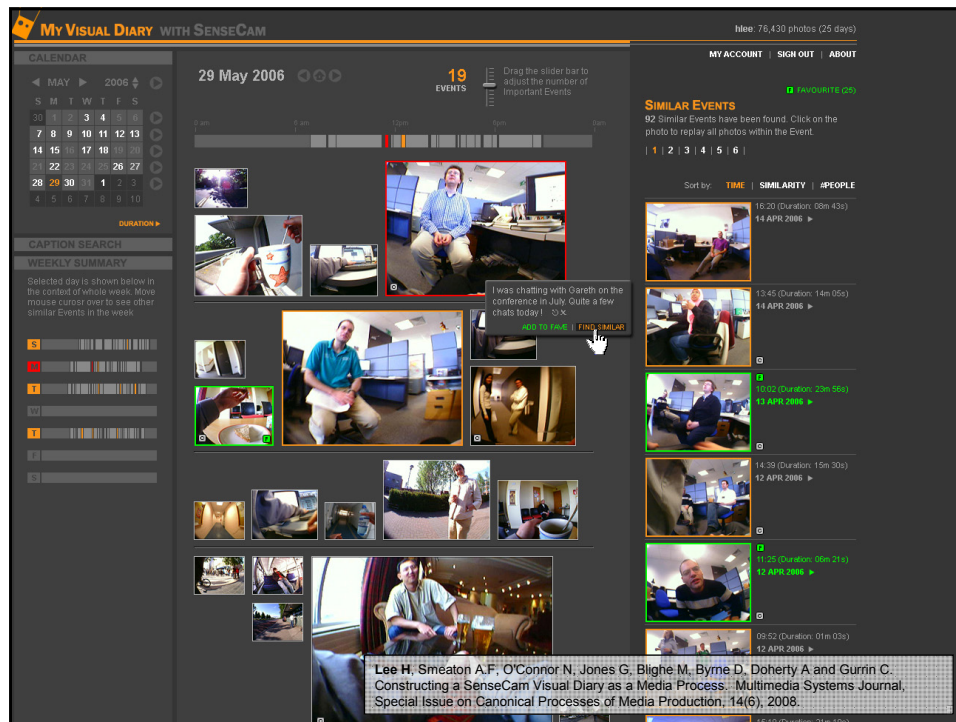
## What does it generate?

- **About 2,000 - 3,500 photos** on an average day

# Automatic Photo Processing

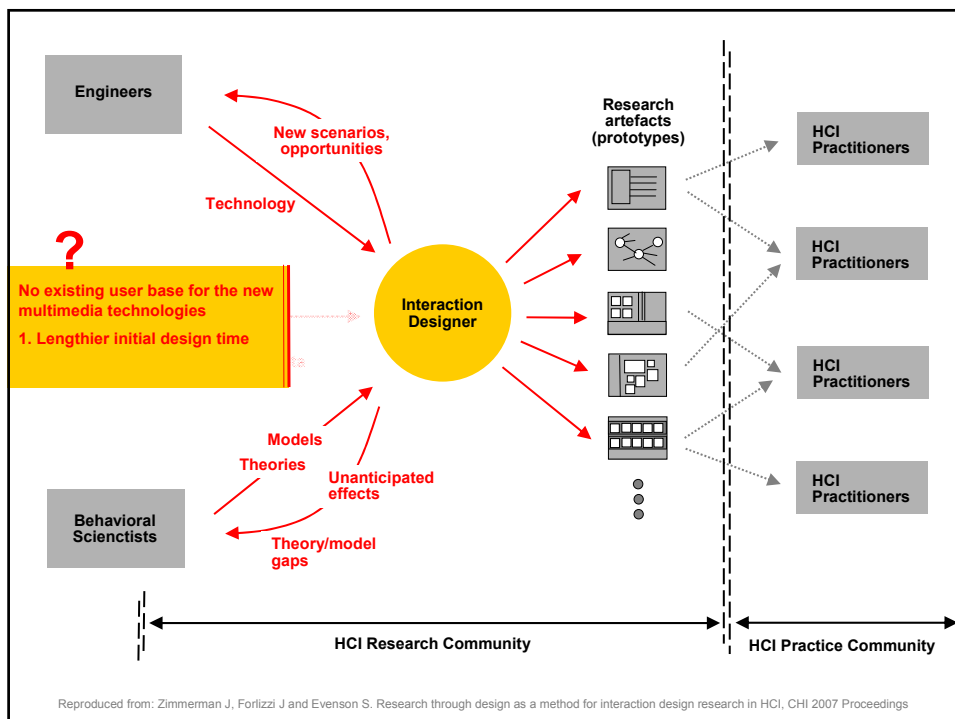
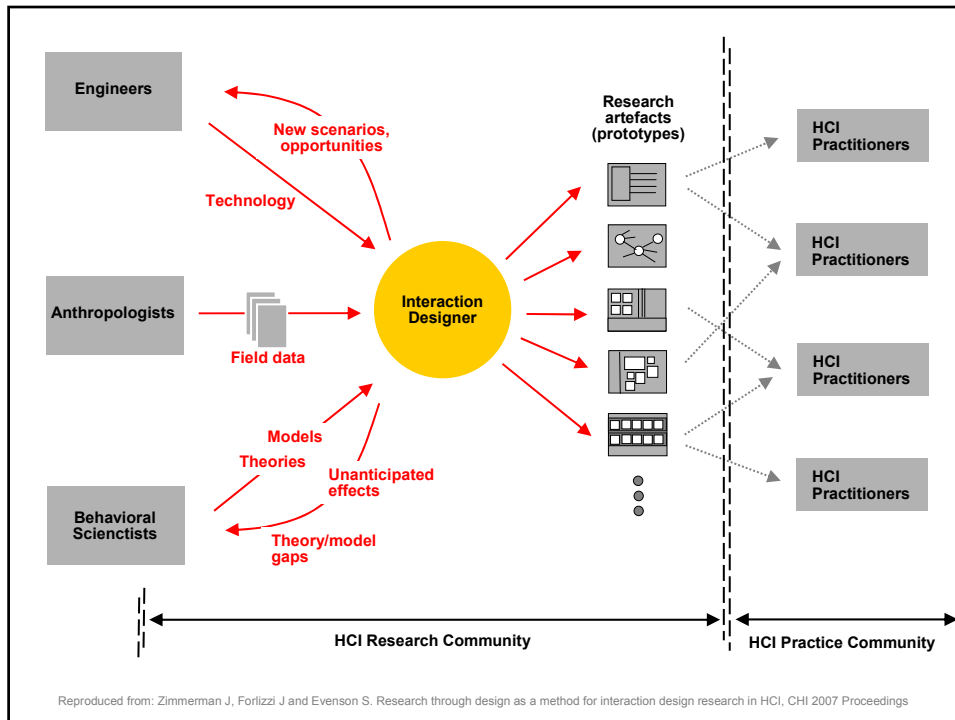
- To structure images automatically, using content-based Multimedia techniques...



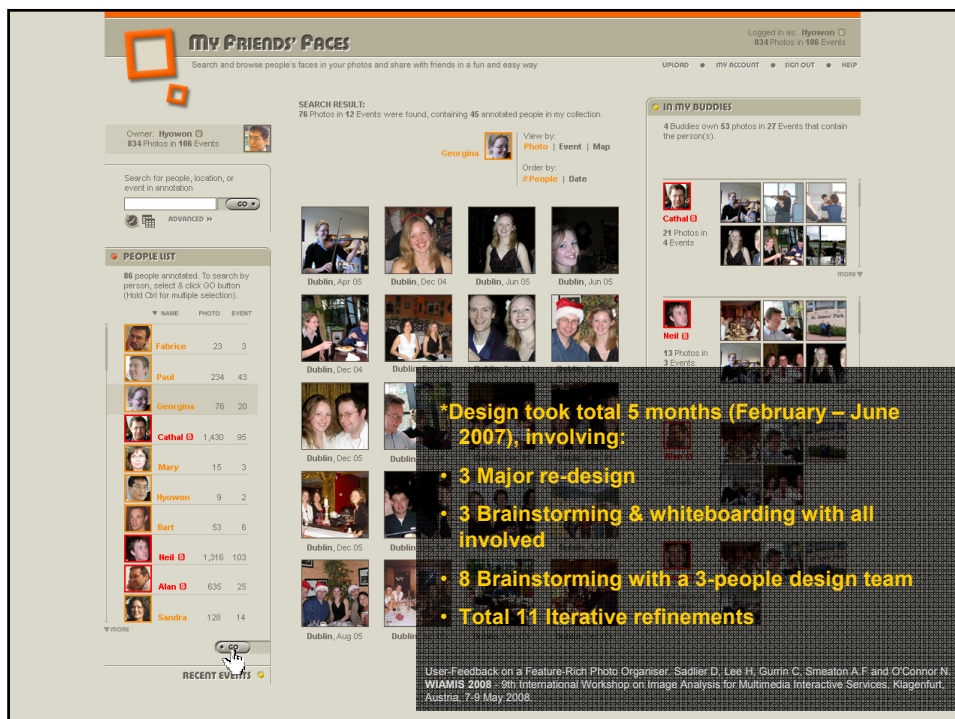


## Interaction Design for Multimedia: Challenge

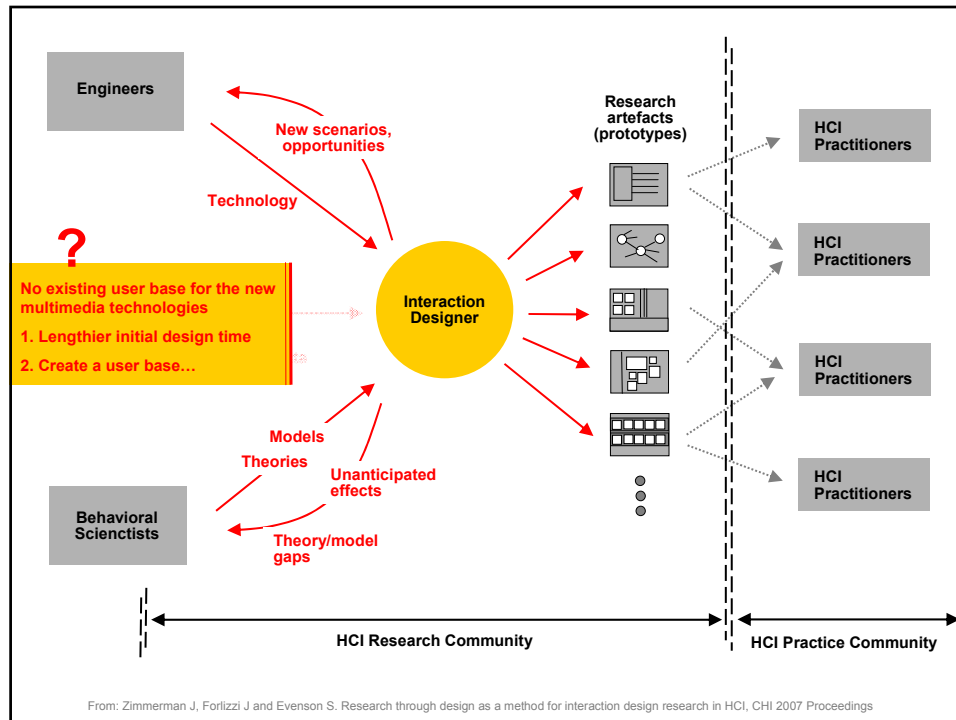
- Often no “typical users” available: new breed of automatic multimedia indexing systems not yet currently in use
    - Establishing user requirements & needs problematic
    - User testing problematic
- => So I tend to depend heavily on general principles & my own “instinct”











**MOVIE BROWSER**  
BROWSE, SEARCH AND NOTE THE SCENES IN MOVIES

SEARCH WITHIN MOVIE  
In-depth search and browse for further analysis

VIEW CATEGORY  
PLAY

VIEW BY KEYFRAME:  
Dialogue  
Exciting  
Montage  
All

MY MOST NOTED MOVIES  
The Royal Tenenbaums  
About Adam

**Shrek (2001)** Movie Info >>

Dialogue(62)  
Exciting(15)  
Montage(17)

Exciting 10 (13 shots)  
Exciting 11 (8 shots)  
Exciting 12 (10 shots)

Working with School of Communications:

- Deployed for students (>260) in film study class 2008
- Monitored the usage for the whole semester
  - Interaction logging
  - Interview, questionnaire...

Mohamad Ali N., Smeaton A.F. and Lee H. Developing, Deploying and Assessing the Usage of a MovieBrowser Among Students of Film Studies. HCI International 2009 - 13th International Conference on Human-Computer Interaction, San Diego, CA, 19-24 July 2009.

## Interaction Design for Multimedia: Challenge

- Often no “typical users” available: new breed of automatic multimedia indexing systems not yet currently in use
  - Establishing user requirements & needs problematic
  - User testing problematic
  - => So I tend to depend heavily on general principles & my own “instinct”
- Deployment effort to monitor how people use such novel applications

## Conclusion

- Design for Novel Applications
  - Come up with novel application scenarios
  - Design interaction strategies
  - Design concrete user-interfaces
- Design consultancy within the group... loved & hated
- “Educating” our members on Design and Usability
- Help our group envisage the future usage of the developing technologies

**Thank you**