

Structuring and Augmenting a Visual Personal Diary

Aiden R. Doherty and Alan F. Smeaton



Centre for Digital Video Processing (CDVP) & Adaptive Information Cluster (AIC), DCU

LIFELOGGING - CAPTURING ASPECTS OF YOUR LIFE, FOR YOU

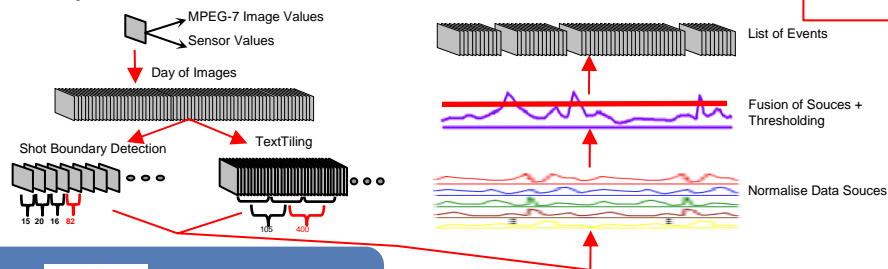
- When was my last walk at the park? What interesting things did I do last Wednesday? Let me all the pictures of that big football match I was at in Croke Park in July, etc.
- We investigate if it's possible to effectively segment lifelog images into events, accurately determine most unique events, and augment events with external images

LIFELOGGING DEVICE - THE SENSECAM

- Developed and funded by Microsoft Research Cambridge
- Captures an average of 2,000 images per day (approximately 650,000 per year)
- Intelligently captures images based on accelerometer, light, temperature, and infrared sensors

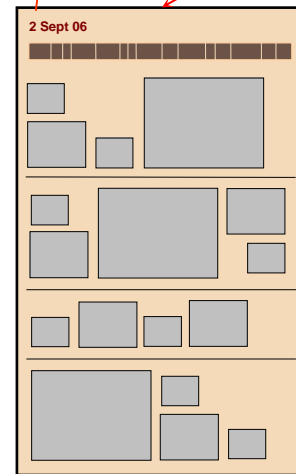
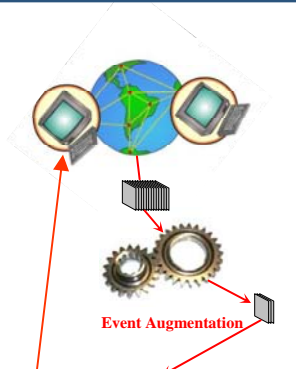
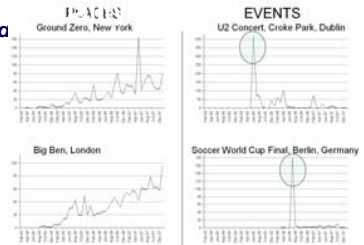
EVENT SEGMENTATION

- 2,000 images presents the user with too much information
- We group images together into distinct events/activities i.e. breakfast, on airplane, at work on PC, etc.
- We extensively trained many event segmentation solutions, incorporating 5 separate information sources
- Dataset of 271,163 images from 5 users over 1 month
- Optimal technique involves image processing in conjunction with accelerometer and infrared sensors



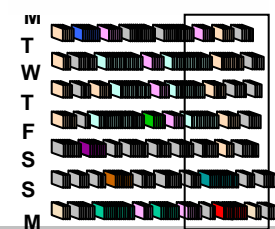
Augmenting Low-Quality LifeLog Images

- 45 MILLION Geotagged images on Flickr.com
- Images can be filtered by time and location
- Investigating benefits of filtering results by visual similarity to sample lifelog event
- Typically 2 query types
 - Place Specific e.g. Eiffel tower, Big Ben, etc.
 - Event Specific e.g. U2 concert, soccer final, etc.
- Only 22% of images uploaded to Flickr and Google Earth are geotagged though
- Automatic analysis on tags of geo-referenced images to construct new query terms to find non-geotagged images/videos e.g. from YouTube, Google Images, etc.



Identifying Important Events

- Want to place greater emphasis on more important/significant events
- Events with the presence of faces indicate important events (face detection precision = 63% on 1,758 images)
- Novel events are most *dissimilar* to past events
- Experiments on identifying similar events to a given event carried out on groundtruth of 13,399 judgements from 5 users on 3,286 events (273k images)
- 949 judgements made by 5 users on various methods
- Best approach to Event importance combines face-to-face conversation detection + novelty



DUBLIN CITY UNIVERSITY DCU



This material is based upon work supported by Microsoft Ireland; the Irish Research Council for Science, Engineering and Technology (IRCSET); Microsoft Research under grand number 2007-056; and by Science Foundation Ireland (SFI) under Grant No. 03/IN3/1361

