

Technologies for Enhancing Visual Methods and Data

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Introduction

Visual methods involved with images, paintings, photos, or videos are becoming popular in social scientific research. For instance, researchers at the ESRC National Centre for Research Methods (NCRM) QUALITI¹ Node and Real Life² Node have identified the need for research on the use of video and other visual methods (such as photography) in undertaking qualitative research. It was noted that technological advancements in hardware and software have enabled a range of visual data to be created and that these visual images could be employed in research to provide insight into understandings of behaviours, attitudes, emotions and beliefs, and to result in methodological advancements or innovations (see e.g. Bardsley & Wiles, 2006: 18).

Several NCeSS projects have been funded in response to the need for visual methods. Some of them are about developing tools for data collection and analysis (e.g. Digital Replay System³, HeadTalk⁴, Replayer⁵). The others are about exploring new ways of doing research in an image-based visual environment (e.g. Mixed Media Grid (MIMEG)⁶, using Access Grid Nodes in field research and training⁷).

Meanwhile, we also observe some development in medical image processing, image understanding and analysis which is parallel to this visual fashion in social sciences (see e.g. the work of Pau-Choo Chung⁸). On the one hand, medical researchers and social scientists may face similar socio-technical and ethical issues when collecting, analysing and sharing visual data. On the other hand, recent techniques for processing visual data in medical research (e.g. "Fall detection using modular neural networks and back-projected optical flow"⁹ and "Vision-based gait analysis"¹⁰) may provide valuable lessons for (semi-)automating the analysis of large amount of visual data in social sciences (e.g. classifying and clustering similar types of movements or images together).

Hence, there is a need of marrying researchers engaged with visual methods in different disciplines, comparing the techniques they use for their research, exchanging their experiences, and identifying good practices and tools for pursuing future research.

Objectives

This half-day workshop, partly sponsored by the British Academy and Taiwan National Science Council international collaboration fund, will provide an opportunity for people engaged in visual methods to share their work and experiences. Developers and users from different disciplines are both invited.

The aims of the workshop are to:

- investigate the capacity of tools and techniques for visual methods in social sciences and

1 <http://www.cardiff.ac.uk/socsi/qualiti/>

2 <http://www.reallifemethods.ac.uk/>

3 <http://www.ncess.ac.uk/research/nodes/DigitalRecord/software/drs/>

4 <http://www.ncess.ac.uk/research/sgp/headtalk/>

5 <http://www.dcs.gla.ac.uk/%7Emorrisaj/Replayer.html>

6 <http://www.ncess.ac.uk/research/nodes/MiMeG/>

7 http://www.ncess.ac.uk/research/sgp/new_technologies/

8 <http://neural.ee.ncku.edu.tw/EN/Links/MTable/ResearchPlan/ResearchPlan.htm>

9 <http://neural.ee.ncku.edu.tw/EN/Links/MTable/ResearchPlan/Links/fall%20detection.htm>

10 <http://neural.ee.ncku.edu.tw/EN/Links/MTable/ResearchPlan/Links/visionBasedGait.htm>

medical studies;

- discuss the challenges in the development and implementation of the tools and techniques mentioned above (including social, ethical and HCI usability issues);
- develop effective strategies for engaging users (across different disciplines and domains)
- provide suggestions for further development and implementation (e.g. automating the analysis of visual data, linking visual data and integrating the visual data with textual and numerical data) (This might lead to international collaboration.)

Implications

The discussion at this workshop will 1) raise awareness of visual methods for social scientific research, 2) encourage the adoption of new technologies for collecting and analysing visual data, 3) improve our understandings of social and ethical and usability issues involved in the development process of new technologies for enhancing visual methods and visual data, and 4) implicate in methodological innovation in social sciences and other research areas.

We also anticipate to identify key collaboration areas for formulating longer term international research projects.

Format

The workshop will kick off with several short presentations giving an overview of state of art for enhancing visual methods in different disciplines, and the challenges encountered in developing and adopting these technologies. Then, we will take ten minutes to prioritise discussion topics for break-up discussion later. The workshop will conclude with the summary of the break-up discussion. The workshop will be chaired by Terry Hewitt.

Audience

We expect that a workshop on technologies for enhancing visual methods and data would be of interest to many attendees at the e-Social Science Conference, especially those work with visual methods and data across different disciplines. The number of attendees will be kept under 20.

Qualifications and expertise of leaders

Pau-Choo Chung is a professor at the department of electrical engineering at the National Cheng-Kung University in Taiwan. She is an expert in image processing and pattern recognition.

Michael Daw is Head of the UK Access Grid Support Centre¹¹ and manager of two collaborative projects: e-Infrastructure for the Social Sciences¹² and Collaborative Research Events on the Web¹³.

Terry Hewitt is the NCESS Deputy Executive Director and the Director of the Research Computing, Manchester Computing, University of Manchester. His research interests are systems and software tools for HPC, distributed computing, Grid, high-performance 3D interactive visualization, and free-form curves and surfaces, particularly NURBs.

Yuwei Lin is a research associate at NCESS. Her research interests centre on sociology of science and technology, interactions in virtual communities, open source software development, usability studies (particularly on user involvement) and online research methods.

Equipments needed

a laptop, a data projector, flip charts

References

Bardsley, N. & Wiles, R. (2006) A Consultation to Identify the Research Needs in Research Methods in the UK Social Sciences. ESRC National Centre for Research Methods.

11 <http://www.agsc.ja.net/>

12 <http://www.ncess.ac.uk/research/hub/einfrastructure/>

13 <http://www.mc.manchester.ac.uk/research/collaborativeresearcheventsontheweb>