

Video Brainstorming and Prototyping: Techniques for Participatory Design

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ABSTRACT

This tutorial is designed for HCI designers and researchers interested in learning specific techniques for using video to support a range of participatory design activities. Based on a combination of lectures, video demonstrations and hands-on exercises, the tutorial will give participants practical experience using video to observe users in laboratory and field settings, to analyze multimedia data, to explore and capture design ideas (video brainstorming), to simulate interaction techniques with users (Wizard-of-oz and video prototyping) and to present video-based design ideas to users and managers. Participants will gain experience shooting video and will address practical issues such as maintaining video archives and ethical issues such as obtaining informed consent. Although these video techniques are applicable in a variety of design settings, the emphasis here is on participatory design, using video as a tool to help users, researchers and designers gather and communicate design ideas.

KEYWORDS: Participatory Design, Video, Brainstorming, Prototyping, Ethics, User observation

INTRODUCTION

As cost of video equipment continues to drop, and as new technologies (particularly digital video) are introduced, HCI designers and researchers are increasingly incorporating video into their work. This tutorial is designed to help individuals take advantage of their investment in video equipment (or help them decide whether or not to purchase it) while learning the philosophy and practice of participatory design.

Lectures

Lectures cover a variety of participatory design techniques, with a special emphasis on those that benefit from using video. Topics include an overview of participatory design, technical aspects of video (including shooting tips, organizing and maintaining a video library, video formats and choosing between digital and analog video); techniques for observing users (including interviewing using critical incident technique, field observation of users and videotaping laboratory or usability studies), techniques for generating ideas (including video brainstorming and creating scenarios), techniques for rapid prototyping (including wizard of oz and video prototyping), techniques for evaluating design prototypes (including walkthroughs and usability

studies), techniques for presenting video (stand-alone, presentations to management, presentations to users) and finally, a discussion of the legal and ethical issues surrounding the use of video (including how to obtain informed consent). Participants will be encouraged to ask questions and discuss the use of video, particularly their own design problems and ethical issues they face.

Video Demonstrations

Video demonstrations demonstrate and explain technical aspects of shooting, managing and presenting video. We will also show video clips from our own participatory design projects, with examples of student work from previous courses: including field and laboratory studies of users, storyboards and design scenarios, video brainstorming sessions, wizard-of-oz video prototyping, multimedia data analysis and edited presentations of video prototypes.

Project exercises

Groups of participants, organized in groups of four, will work through a series of hands-on exercises to design and prototype an interactive Post-it Note application. This tutorial covers a great deal of material in a short period of time, so the exercises are spelled out in detail and have been carefully designed to build upon each other. Exercises include: videotaping interviews of users or users at work using critical incident technique, video brainstorming design ideas, video prototyping a design scenario, evaluating video prototypes with design walkthroughs, and presenting video to a group.

Exercise 1: Finding out about users

Each group will conduct two video-taped interviews, using critical incident technique, to obtain specific information about how people use paper Post-it notes. The related lecture will describe additional interviewing techniques and explain the different benefits of observing and interviewing users in field and laboratory settings. We will also touch upon multimedia data analysis and where to go to find out more information.

Exercise 2: Generating design ideas

Based on the interviews and observations in exercise 1, each group will brainstorm ideas for an electronic Post-it note system, demonstrating ideas and interaction using the camera. The related lecture will explain different approaches for collaboratively generating ideas with users and the importance of avoiding too-early evaluation of ideas. We will also discuss the roles of users and researchers and how brainstorming can be used to improve communication.

Exercise 3: Scenario-based prototyping

Based on the ideas generated in exercise 2, each group will develop and storyboard a scenario that illustrates the design of an electronic Post-it note application. Using the Wizard-of-Oz technique, with transparencies and sketches, participants will simulate a user interacting with their new system. The related lecture will explain different types of scenarios, the role of storyboards, and computer-based video prototyping techniques.

Exercise 4: Walkthrough-based evaluation

Each group will perform a design walkthrough to evaluate another group's video prototype. The related lecture will explain several formal and informal evaluation approaches and how video can be used to support each. We will discuss the benefits of qualitative and quantitative evaluations and address the benefits and dangers of making video presentations to management.

Although this tutorial cannot cover all the possible ways that video can be effectively used in participatory design, by the end of the tutorial, participants will have gained practical experience using video for a variety of participatory design activities and will have a deeper understanding of the technical and ethical issues surrounding the use of video.

Note: Each group will have access to one video camera during the tutorial. Participants with their own video equipment are encouraged to bring it.

ABOUT THE INSTRUCTORS

Wendy Mackay received her Ph.D. from MIT in the Management of Technological Innovation and is a former chair of ACM/SIGCHI. Initially trained as an academic Psychologist, she moved to Digital where she was first a programmer, then a manager, ultimately programming or responsible for over 30 multimedia software products, a pre-Hypercard multimedia authoring language and the computer industry's first multimedia system (IVIS). More recently, she has managed research and development groups in multimedia at Digital, MIT and Rank Xerox EuroPARC. She was Professor Associé at the University of Paris-Sud, and is currently a Visiting Professor of Computer Science at Aarhus University in Denmark. Her current research involves using video in the participatory design of augmented reality and multimedia applications.

Anne-Laure Fayard received her Ph.D. in Cognitive Science from the University of Paris and is currently a research scientist at EDF, where she conducts ethnographic research and participatory design studies using video. She is exploring the use of a new device, called the Subcam, which records video from a pair of glasses, enabling researchers and designers to record video from the subject's perspective.

This is a new course for CHI'99, based on the lecture/laboratory section of a semester course entitled *Design and Evaluation of Interactive Software*. We have taught variations of the course to University and Master's level students, as well one and two-day versions to HCI researchers and software designers from industry.

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