

ET4S

Eye Tracking for Spatial Research

Proceedings of the 1st International Workshop

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Peter Kiefer, Ioannis Giannopoulos, Martin Raubal, Mary Hegarty (Eds.)

Editors

Peter Kiefer, Ioannis Giannopoulos, Martin Raubal

ETH Zurich

Institute of Cartography and Geoinformation, IKG

Wolfgang-Pauli-Strasse 15

CH-8093 Zurich

Switzerland

{pekiefer, igiannopoulos, mraubal}@ethz.ch

Mary Hegarty

University of California, Santa Barbara (UCSB)

Department of Psychological & Brain Sciences

Building 251, Room 3812

mary.hegarty@psych.ucsb.edu

Preface

This document contains the proceedings of the 1st International Workshop on Eye Tracking for Spatial Research (ET4S 2013), held on September 2, 2013 in Scarborough, U.K., in conjunction with the Conference on Spatial Information Theory 2013 (COSIT).

Eye tracking has become a popular method for investigating research questions related to spatial information theory. This includes studies on how people interact with geographic information systems and studies on how space is perceived in decision situations. Knowledge of how people perceive spatial information can help us, for instance, designing better maps and other spatial representations or deciding on the optimal placement of signage in indoor and outdoor environments. Recent technological developments in the area of mobile eye trackers have opened up new perspectives for their use in spatial research by allowing for studies outside the research lab, adding the user's position as another aspect of the data.

Independent of this, the human computer interaction (HCI) community has been using eye trackers as input devices for building interactive systems that react to the user's gaze. These gaze-aware assistance technologies are likely to change the way we will access and interact with geographic information in the future, especially as augmented reality glasses with integrated eye trackers will reach the mass market in the forthcoming years.

The aim of this workshop was to bring together researchers from different areas with a common interest in using eye tracking for research questions related to spatial information. It should stimulate the exchange of ideas between the different areas, laying out a road map for using eye tracking for spatial research.

The ET4S 2013 workshop featured a keynote talk, six presentations of short papers, and two discussion sessions. We would like to thank all authors for contributing their work, the members of our program committee for their time, and our keynote speaker — Benjamin Tatler (School of Psychology, The University of Dundee). Finally, we would like to acknowledge the COSIT organizers' help in organizing the workshop.

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Peter Kiefer
Ioannis Giannopoulos
Martin Raubal
Mary Hegarty

Program Committee

Arzu Çöltekin	University of Zurich, Switzerland
Andrew Duchowski	Clemson University, SC, USA
Sara Irina Fabrikant	University of Zurich, Switzerland
Ioannis Giannopoulos	ETH Zurich, Switzerland
Christoph Hölscher	ETH Zurich, Switzerland
Peter Kiefer	ETH Zurich, Switzerland
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Organizing Committee

Peter Kiefer	ETH Zurich, Switzerland
Ioannis Giannopoulos	ETH Zurich, Switzerland
Martin Raubal	ETH Zurich, Switzerland
Mary Hegarty	UCSB, CA, USA

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Vision in Action

Benjamin Tatler

School of Psychology, The University of Dundee, Scotland, UK

b.w.tatler@dundee.ac.uk

Keynote Talk

Abstract

Successful completion of real world activities requires precise control over where and when we move our eyes. Eye movements target behaviourally relevant information in our surroundings. Behaviourally informative locations change with progress through a task, so gaze allocation must be to the right places at the right times to serve behaviour. Current computational models of fixation selection offer high explanatory power for some aspects of static scene viewing, and models of dynamic scene viewing are emerging. However, few engage with the need to consider visual selection as being fundamentally and intricately linked to action. Across a wide variety of natural tasks common fixation selection principles can be identified. These principles change the emphasis of what should be modeled and identify a need for new classes of models for explaining visual behaviour in natural task settings. A framework incorporating behavioral rewards provides a powerful potential framework for explaining eye movement behaviour, and for the development of formal models of eye guidance.

Speaker's Info

Dr. Ben Tatler's research considers how information is gathered and used by the visual system, particularly in the context of natural behaviour. He uses a combination of fully mobile and desk-mounted eye trackers to study visual behaviour over a range of settings, but with a particular emphasis on the importance of studying vision in the context of natural behaviour in real environments, rather than exclusively in laboratory settings. Dr. Tatler has published a range of articles and books on eye guidance and memory for scenes. Dr. Tatler received his PhD in Neuroscience from the University of Sussex in 2002 and is now a Reader in the School of Psychology at the University of Dundee, UK, where he runs the Active Vision Lab (www.activevisionlab.org).