

Preface

The Cambridge Workshops on Universal Access and Assistive Technology (CWUAAT) are a series of workshops held at a Cambridge University College every two years. This volume: “Inclusive Designing: Joining Usability, Accessibility, and Inclusion” comes from the 7th in this series of highly successful events, held March 2014 at the University of Cambridge.

The workshops are characterised by a single session running over 3 days in pleasant surroundings with delegates from home and abroad staying on site. Allowing speakers longer presentation times, carrying discussion on through sessions into plenaries and shared social and leisure spaces generates an enjoyable academic environment that is both creative and innovative. CWUAAT is one of the few gatherings where people interested in inclusive design, across different fields, including *designers, computer scientists, engineers, architects, ergonomists, policymakers and user communities, meet, discuss and collaborate*. CWUAAT has also become a much more international workshop, representing diverse cultures including India, China, Slovakia, USA, Belgium, UK, Denmark and many more. CWUAAT has worked towards the goal of being internationally inclusive. In addition, the doctoral consortium has successfully returned to the programme in 2014.

Inclusive Design Research involves developing tools and guidance enabling designers to design for the widest possible population, for a given range of capabilities. In the context of emerging demographic changes leading to greater numbers of older people and people with disabilities, the general field of inclusive design research strives to relate the design of products to the capabilities of the population. Inclusive populations of older people contain a greater variation in sensory, cognitive and physical user capabilities. These variations may be co-occurring and rapidly changing which leads to a demanding design environment. Inclusive Design Research involves developing methods, technologies, tools and guidance for supporting product designers, software developers and architects to design for the widest possible population for a given range of capabilities, within the contemporary social and economic context.

Recent research developments have addressed these issues in the context of wireless communications, governance and policy, daily living activities, the workplace, the built environment, interactive digital TV, computer gaming and mobile devices. This now reflects the multi-disciplinary approach that is required

for the diverse, sometimes conflicting demands of design for ageing and impairment, usability and accessibility and universal access. CWUAAT provides a platform for such a need. The workshop focused on six main themes:

I *Measuring Product Demand and Peoples' Capabilities*

Measuring users' capabilities has always been central to Inclusive Design. Biswas and Langdon extend this into a large developing world context by carrying out and analysing a survey of Indian users in a comparative study. Choi highlights the weaknesses of conventional ergonomic measures for predicting manual dexterity.

II *Designing Cognitive Interaction with Emerging Technologies*

The workshop now covers a wide range of cognitive science, from testing the use of advanced user modelling as an alternative to user trials, to manipulating the motivation of software users on a gender basis. This is without losing sight of its assistive technology roots, as papers here still represent: cursor manipulation, adaptive interfaces and the inclusive advantages of alternative operating system interfaces.

III *Reconciling Usability, Accessibility and Inclusive Design*

It is not enough to aim for improved usability or accessibility by simply following a set of design guidelines, without listening directly to potential users. Inclusive designing means both using existing knowledge and design guidelines and involving stakeholders throughout the design process, to improve the usability and accessibility of interfaces and products. Horton and Sloan document techniques for improved lifecycle models that incorporate policies, guidelines and inclusion. Chakraborty, Hritz and Dehlinger investigate design requirements for computer gaming by blind users, by collecting survey and usability testing feedback from six visually impaired gamers. Heitor et al. conducted a case study at a university campus, with people with various perceptual and motor impairments and analysed the physical accessibility of the campus, revealing major problems.

IV *Designing Inclusive Spaces*

Contributions to CWUAAT for the architectural field are now so established that they manifest an eclectic range of methods and topics, within the broad constraint of buildings and spaces. For example, the journey to the operating room; surveying an inclusive educational environment in Bratislava; sampling the views of residents of 35 care homes in London; and charting the differences of geographically distributed public transport train companies, all come within its scope.

V *Collaborative and Participatory Design*

A common theme heard from disability advocates is 'nothing for us, without us'. At the core, inclusive design is not only about designing for diversity, but also designing with diverse groups, ensuring that the user populations themselves drive the design process. Researchers and practitioners continue to look for new approaches and methods to more successfully manage the

design process while including diverse voices. All the papers in this section illustrate both breadth and depth of this approach.

VI *Legislation, Standards and Policy*

Researchers are increasingly investigating how public policies (both from governments and international non-governmental organisations) influence inclusive and accessible design. Wentz and Lazar describe how, due to changes in how government provides services, citizens are often coming to public libraries for help, and their chapter describes the inclusive design process for online resources for public librarians. Gomez et al. present considerations behind comparative studies of barriers to employment in Chile and the UK, raising intriguing issues of the existence of religious models of disability.

This book contains the best reviewed papers from CWUAAT 2014 that were invited for oral presentation. The papers that have been included were selected by blind peer review carried out by an international panel of currently active researchers. The chapters forming the book represent an edited sample of current national and international research in the fields of inclusive design, universal access and assistive and rehabilitative technology.

We would like to thank all those authors and contributors who have contributed to CWUAAT 2014 and to the preparation of this book. We would also like to thank the additional external reviewers who took part in the review process. Many thanks are also due to the reviewing members of the Programme Committee who continue to support the workshop series. Finally, Mari Huhtala and Anthea Maybury do a superb professional job in taking the final submissions through to publication-ready manuscript in time for the Workshop itself. We are grateful to the staff at Fitzwilliam College for their patience and help.

March 2014

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Inclusive Designing

Joining Usability, Accessibility, and Inclusion

Langdon, P.M.; Lazar, J.; Heylighen, A.; Dong, H. (Eds.)

2014, XVI, 282 p. 47 illus., 32 illus. in color., Hardcover

ISBN: 978-3-319-05094-2