



Anita Smith (La Trobe University)

Anita Smith is a Charles La Trobe Research Fellow in Archaeology at La Trobe University and a member of the Australian Delegation to the UNESCO World Heritage Committee. Dr Smith is an archaeologist and heritage professional with nearly 20 years experience in Australia and the Pacific Islands. In Australia she has worked in the management of Indigenous, archaeological and historic built heritage within government and as a consultant, and in the development of policy for the protection of intangible cultural heritage. Since 2002 she has been a consultant to the World Heritage Centre in the Pacific 2009 Program, working with Pacific Island communities to build capacity in cultural heritage management. She is the chief author of a regional study, *Cultural Landscapes in the Pacific Islands*,



Andrea Witcomb (Cultural Heritage Centre for Asia and the Pacific)

Andrea Witcomb has been involved in the heritage field for close to twenty years. Currently an Associate Professor at Deakin University in the Cultural Heritage Centre for Asia and the Pacific, she began her professional career as a social history curator and later taught in cultural heritage and museology at Curtin University in Perth. She is the author of *Re-Imagining the Museum: Beyond the Mausoleum* (Routledge 2003) and a co-editor with Chris Healy of *South Pacific Museums: An Experiment in Culture* (Monash E-Press, 2006). She has written numerous book chapters and journal articles looking at the representation of the past in museums and heritage sites and has a particular interest in the impact of multimedia on exhibition practices.



Robin Wright (Swinburne University of Technology)

Robin Wright is a legal researcher whose work focuses on copyright and digital technologies and the legal and practical implications of providing online access to knowledge and cultural resources. She is currently Copyright Manager at Swinburne University of Technology. Prior to this she worked as a Research Fellow for the Centre for Media and Communications Law (CMCL) and the Intellectual Property Research Institute of Australia (IPRIA) at Melbourne Law School on the ARC Linkage research projects Cultural Collections, Creators and Copyright: Museums, Galleries, Libraries and Archives and Australia's Digital Heritage and The Future of Television: Australian Legal Protection of Digital Broadcast Content.



Theodor Wyeld (Flinders University)

Theodor Wyeld is the Director of Studies of Digital Media Studies at Flinders University. He has Masters Degrees in Architecture and Planning, with several years practicing and teaching in these fields, as well as in ICT. His current focus is in the field of digital media, in particular interactive media and its role in cultural heritage knowledge communication. He is also actively investigating alternative visualisation paradigms, such as Indigenous non-Western visualisation schemas, to uncover how they could inform new ways of visualising information and knowledge. He has published widely in these fields and is currently funded to develop a toolkit for Indigenous storytelling using a game engine.

### Symposium Convenors

Heather Burke (Flinders University)

Heather Burke is an Associate Professor in the Department of Archaeology at Flinders University. She has been an archaeological consultant in various parts of Australia and has conducted long term research on contact between Europeans and Aboriginal people in the Katherine East region of the Northern Territory. Her current research focus is Myth, Memory and Material Culture, with particular reference to World War II. Her published books include *Meaning and Ideology in Historical Archaeology* (Plenum Press, 1999), *The Archaeologist's Field Handbook* (with Claire Smith, Allen and Unwin, 2004), and *Digging it up Down Under: A Practical Guide to Doing Archaeology in Australia* (with Claire Smith, Springer, 2007).

Claire Smith (Flinders University)

Claire Smith is an Associate Professor at Flinders University and President of the World Archaeological Congress ([www.worldarchaeologicalcongress.org](http://www.worldarchaeologicalcongress.org)). She has worked closely with the Ngadjuri people in South Australia for ten years and has conducted long-term fieldwork with Aboriginal people in the Katherine East region of the Northern Territory for almost twenty years. Her current research focus is the impact of the Northern Territory Emergency Response on Aboriginal identity. Her published books include *Country, Kin and Culture. Survival of an Australian Aboriginal Community* (Wakefield Press, 2004), *The Archaeologist's Field Handbook* (with Heather Burke, Allen and Unwin, 2004), *Indigenous Archaeologies: Decolonising Archaeological Theory and Method* (with H. Martin Wobst, Routledge, 2005), and *Digging it up Down Under: A Practical Guide to Doing Archaeology in Australia* (with Heather Burke, Springer, 2007).

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Hetzel Lecture Theatre

Institute Building

State Library of South Australia

Tuesday, 22 September, 2009

Programme, Speakers and Abstracts

## Digital Heritage Symposium Programme: Adelaide, Tuesday, September 22, 2009

### Opening (9.00-10.15am)

#### Welcome Address

*Beth M Robertson*  
Acting Associate Director, State Library of SA

#### Opening Address

*Ian Chessell*  
South Australia's Chief Scientist

#### Digitising the Humanities: Promises, threats, challenges

*Professor Richard Maltby*  
Deputy Executive Dean, Faculty of Education, Humanities, Law and Theology, Flinders University

#### Kaurna Welcome

*Josie Carney*

#### The Archaeology Data Service: 12 years on (KEYNOTE)

*Julian Richards*  
Director, Archaeological Data Service

### Session 1 (10.15-11.15am)

#### The Australian Newspapers Service and User Interaction Through Text Correction: A case study in providing access to documentary heritage materials using digital technologies

*Pamela Gatenby*  
National Library of Australia

#### The Digital Heritage of Digital Cultures: The uses of Internet histories

*Gerard Goggin*  
University of New South Wales

### Morning Tea (11.15-11.40am)

### Session 2 (11.40am-1.10pm)

#### Time Team – The Video Game

*John Welsh*  
Sydac

#### Image-Based 3D Modelling For All

*Anton Van den Hengel*  
University of Adelaide

#### Using Augmented Reality for Digital Heritage

*Bruce Thomas*  
University of South Australia

### Lunch (1.10-1.45pm)

### Session 3 (1.45pm -3.30pm)

#### Digital Antiquity (KEYNOTE)

*Keith Kintigh*  
Director, Digital Antiquity

#### Online Environments for Indigenous Knowledge Sharing

*Cat Kutay*  
University of New South Wales

#### Image-based Modelling for the Creation of Virtual Collections

*David McKinnon*  
Australasian CRC for Interaction Design

### Afternoon Tea (3.30pm-4.00pm)

### Panel Discussion (4.00-5.15pm)

#### Using a Digital Environment for the Needs of Industry, Government, Educators, Researchers, and the Wider Australian Community

<i>Jane Balme:</i> University of Western Australia	<i>Colin Long:</i> Deakin University
<i>Gavin Bannerman:</i> State Library of Queensland	<i>Anita Smith:</i> La Trobe University
<i>Alan Burns:</i> Brambuk National Park and Cultural Centre	<i>Andrea Whitcomb:</i> Research Institute for Citizenship & Globalisation
<i>Vincent Copley:</i> Ngadjuri Heritage Committee	<i>Robin Wright:</i> Swinburne University
<i>Ken Isaacson:</i> Southern Gulf Catchments Management Group	<i>Theodor Wyeld:</i> Flinders University
<i>Brett Leavy:</i> Cyberdreaming Australia	

#### 5.15pm Closing Statement

*Professor Faith Trent*  
Executive Dean, Faculty of Education, Humanities, Law and Theology, Flinders University

## Panel Speakers



Jane Balme (University of Western Australia)

Jane obtained her undergraduate degree in anthropology from the University of Western Australia and her PhD in prehistory from the Australian National University. She has worked in the Western Australian Museum, as a heritage consultant to the National Parks and Wildlife Service of New South Wales, and as an academic in the Archaeology and Palaeoanthropology Department at the University of New England and in Archaeology at the University of Western Australia. Most of Jane's research is on the archaeology of Indigenous Australia, especially for the Pleistocene period. She has also published on gender organization in hunter gatherer societies and on archaeology education. She has worked with Indigenous groups in projects in north and western NSW, southern Arnhem Land, the Kimberley region and in south west Australia.



Gavin Bannerman (State Library of Queensland)

Gavin is the Oral History and Digital Storytelling Coordinator at the State Library of Queensland. Gavin has been involved in commissioning, creating, acquiring, registering, documenting and making accessible oral histories and digital stories that relate to SLQ's strategic objective of capturing "Queensland Memory." Gavin is trained as an archivist, receiving a Graduate Diploma in Records Management and Archives from Curtin University. He has been involved with arranging and describing archival material, training cultural organisation staff in image digitisation, and consulting with Aboriginal and Torres Strait Islander communities regarding cultural clearance for images in SLQ's collection.



Alan Burns (Brambuk National Park Cultural Centre Victoria)

Alan Burns is an Aboriginal man from the Wiradjuri and Yorta Yorta tribal groups in Victoria and New South Wales, Australia. His clan group is Ulupna, in Victoria, and his ancestors come from both sides of the Murray River. He has worked as a cultural heritage protection officer in Victoria for 22 years.



Vincent Copley (Ngadjuri Walpa Juri Lands and Heritage Association)

Vincent has extensive experience in state government and in cultural heritage management, as with community organisations. He is the leader of the Ngadjuri Heritage Project, a long-term collaborative program with Flinders University, which undertakes research, planning and management of key areas and regions in Ngadjuri lands in South Australia.



Ken Isaacson (Southern Gulf Catchment Management Group)

Ken Isaacson is the Indigenous Director of Southern Gulf Catchments Management Group, and a Waanyi man from Northwest Queensland. He has worked in cultural heritage for 51 years. He has worked in a wide range of capacities in cultural heritage, including working with Elders and young people with the Kalkadoon Tribal Council and, most recently, being in charge of Indigenous training for Extrata Mining. Ken is a former Council member of the World Archaeological Congress. He is interested in how a digital information environment can be used to assist Indigenous people to control their heritage.



Brett Leavy (Cyberdreaming)

Brett Leavy is the Manager of Cultural Heritage for the Queensland Water Infrastructure working across South East Queensland. His direct involvement in Aboriginal Knowledge Management began through his involvement in Native Title and the preservation and protection of his own family knowledge and heritage. His passion has been translated into a Masters of Creative Industries with Queensland University of Technology, along with a number of innovative and practical ICT applications which were undertaken in partnership with Aboriginal Community Leaders. Since 1992 he has held a number of roles in Aboriginal media, culture, language, and knowledge management. Recently he managed all the logistical aspects for one of South East Queensland's largest Aboriginal archaeological digs.



Colin Long (Cultural Heritage Centre for Asia and the Pacific)

Colin Long lectures in cultural heritage and cultural tourism at the Cultural Heritage Centre for Asia and the Pacific at Deakin University. He is an urban historian with interests in Vietnamese, Lao and Cambodian history and heritage, Australian urban and labour history, and heritage in post-communist societies. His recent publications range from football and urban planning in Melbourne to traditional housing in Laos, the use of heritage in post-communist nations, tourism and world heritage in Havana, the commemoration of genocide in Cambodia, and a history of Vientiane (with Bill Logan and Marc Askew).

## Image-Based 3D Modelling For All



Anton Van den Hengel  
Director, Australian Centre  
for Visual Technologies  
University of Adelaide

VideoTrace is an image-based modelling package which allows the ordinary computer user to generate 3D models of real objects with relative ease. VideoTrace thus represents a significant change in the way 3D models are made, and exemplifies a new kind of interface design. The VideoTrace user sketches the shape they require over a frame of a video sequence, and automated image analysis techniques generate the model. The interface is thus intuitive, and easy to use, but supported by strong mathematical analysis. It allows unskilled users to achieve models that would be impossible using more conventional modelling software, and skilled users to dramatically improve their accuracy and productivity.

**BIO:** Anton van den Hengel is the founding Director of The Australian Centre for Visual Technologies (ACVT), an interdisciplinary research centre focussing on innovation in the production and analysis of visual digital media. Professor van den Hengel has had over 60 publications, two patents, three patent applications, more than \$5 million in research funding, and over \$1 million in consulting. Current research interests include interactive image-based modelling, large-scale video surveillance, and image-based search of multi-million image databases.

## Time Team – The Video Game



John Welsh  
Development Manager  
Serious Games  
Sydac Pty Ltd

At the risk of being lynched, I like *Time Team*. Actually I am a HUGE fan! Through that one program, for all its entertainment bias, history, archaeology and heritage have been made accessible. And no more so than through the visual interpretations the program provides, varying from the reconstructions of vases and dishes to immersive environments presenting ancient landscapes through which the presenters can wander. And it's not alone. *Prehistoric Park* is a firm family favourite.

Experiential interpretation – being able to “feel” what the world may have been like at a time that is not our own – is precisely what “serious games” bring to this sector – the ability to engage, expand upon, reconstruct and represent immersive experiential interpretations of our heritage and our history.

This presentation will first provide an overview of what serious games are: their design, technologies and applications. It will then explore how such applications are already being used to build better understanding, interpretation and depth of interest for a very wide audience. From re-enactments of Roman battles for the History Channel to being part of the ABC's Gallipoli landings, serious games are being used to develop ideas that can continue beyond the visit to a museum or the closing credits of a TV documentary. The presentation will conclude with a look at how video games and game-inspired technologies are developing, and how this might be applied to the Digital Heritage of the very near future.

**BIO:** With a background that includes “blowing things up” and the entertainment video games industry, John Welsh is a program and business development manager with Sydac Pty Ltd. Based in Adelaide, he provides simulation solutions to industries including defence and healthcare. He is also spearheading serious game initiatives and the application of video game technologies to a variety of relevant industry areas. Passionate about experiential learning he also has a great interest in bringing to life historical interpretation. Pursuing serious game applications in the UK, he was involved in a number of proof-of-concept activities in the heritage sector. He is rubbish at video games.

## Keynote Speakers

### The Archaeology Data Service: 12 years on



Julian D. Richards  
Director, Archaeology Data Service  
Department of Archaeology  
University of York

The Archaeology Data Service (ADS) was established in 1996 as a digital archive for primary archaeological data. Its mission statement is “to support research, learning and teaching with high quality and dependable digital resources”. It does this by preserving digital data in the long term, and by promoting and disseminating a broad range of data in archaeology. The ADS promotes good practice in the use of digital data in archaeology, it provides technical advice to the research community, and it supports the deployment of digital technologies.

The e-journal *Internet Archaeology* was also first published in 1996 and has worked with ADS to break down the distinctions between publication and archive. Most recently we have been working on the LEAP project to Link Electronic Archives and Publications and, with the support of the Andrew W Mellon Foundation, to create exemplars which demonstrate the potential of enabling readers to seamlessly ‘drill down’ from synthetic publications to supporting data sets, allowing them to test existing interpretations and develop new ones.

This paper will look at the development of ADS and *Internet Archaeology* and will highlight some achievements and some lessons learned. It will outline future challenges and focus particularly on the ways that information technology can assist in the dissemination of archaeological research results in a range of formats and to a variety of audiences. See: <http://ads.ahds.ac.uk>; <http://intarch.ac.uk>

**BIO:** Julian Richards is a Professor of Archaeology and Head of Department at the University of York. His direct involvement in archaeological computing began in 1980 when he started his PhD research studying pre-Christian Anglo-Saxon burial ritual using the computing power of an ICL mainframe and an early Z80 micro-computer. In 1985 he co-authored the first textbook in archaeological computing for Cambridge University Press, and has subsequently written numerous papers and edited a number of books on the applications of information technology in archaeology. Since 1996 he has been Director of the Archaeology Data Service and Co-Director of the e-journal *Internet Archaeology*. He is currently leading two major ICT research projects: the first looking at the relationship between electronic publication and archives; the second at the application of data mining and faceted classification. Apart from computer applications his research interests focus on Anglo-Saxons and Vikings. He has directed excavations of Anglo-Saxon and Viking settlements at Wharram Percy and Cottam, and of the Viking cemetery at Heath Wood, Ingleby. He is author of *Viking Age England*, now in its third edition, and of OUP's *Very Short Introduction to Vikings*.

### Digital Antiquity



Keith Kintigh  
Director, Digital Antiquity  
Department of Anthropology  
Arizona State University

Digital Antiquity is a new, collaborative organization devoted to enhancing preservation and access to digital records of archaeological investigations in the Americas. Its goals are to permit scholars to more effectively create and communicate knowledge of the long-term human past, to enhance the management of archaeological resources, and to provide for the long-term preservation of irreplaceable records of archaeological research. Digital Antiquity seeks to become a financially and socially sustainable, trusted digital repository for data and documents produced by ongoing archaeological investigations as well as legacy data collected through more than a century of archaeological research. This presentation will focus on how the aspirations and challenges faced by Digital Antiquity have shaped its organizational design and business model, as well as the software requirements. In collaboration with government agencies and professional organizations, Digital Antiquity is working to stimulate a gentle transformation of the practice of archaeology in the US so that archiving and use of digital records becomes a professional norm. Success in capturing a substantial fraction of the digital records of archaeological research will lead to an unprecedented capacity for synthetic and comparative research that we believe has the potential to revolutionize our knowledge of the past. See: <http://digitalantiquity.org>

**BIO:** Keith W. Kintigh is Professor with the Department of Anthropology, Arizona State University, and currently Director of Digital Antiquity, and has had research and academic appointments with Arizona State University, Pueblo of Zuni- New Mexico, and the University of California-Santa Barbara. He completed his PhD in Anthropology at the University of Michigan in 1982, having completed a Masters in Computer Science after a Degree in Sociology, both at Stanford University. He has published a number of books including *Settlement, Subsistence, and Society in Late Zuni Prehistory* (1985) and *Archaeological Settlement Pattern Data from the Chalco, Xochimilco, Ixtapalapa, Texcoco and Zumpango Regions, Mexico* (1983), as well as numerous articles for a number of major publications. Extramural service has seen him contribute to organizations such as the National Science Foundation (US), Society for American Archaeology and Union Internationale des Sciences Préhistoriques et Protohistoriques as well as contributions to Editorial teams with Native Peoples Magazine and Prehistory Press.

## The Australian Newspapers Service and User Interaction Through Text Correction: A case study in providing access to documentary heritage materials using digital technologies



Pam Gatenby  
National Library of Australia

The National Library of Australia has been collecting Australian documentary resources in digital form and digitising its existing collection materials for better public access, since the mid-1990s. The Library's Directions 2009-2011 statement identifies access to its collections using innovative technologies as an ongoing, high priority. The Australian Newspapers service is an example of this strategy and demonstrates the extraordinary potential for digital technology to connect people with their cultural heritage. The beta service was released to the public as a free service in July 2008. To improve the quality of the searchable text generated electronically using OCR software, the service incorporated text correction functionality. During the first 6 months several thousand members of the public found the beta service, largely through social network services, and a text correcting community of around 1300 people quickly developed with 2 million lines of text in 100,000 articles corrected in the first 6 months.

The symposium paper places the newspaper digitisation project within the broader context of the National Library's use of digital technologies and the associated considerations. It also outlines some of the issues we considered in developing the user interaction features of the Australian Newspapers service, the user research we conducted into what motivates people to correct text, and some of the conclusions we have reached about the value of digital technology for engaging people with cultural collections.

**BIO:** Pam Gatenby has worked at the National Library of Australia since the late 1970s in a range of management positions. Her career started in cataloguing and she has maintained a special interest in ways of expediting access to collections through metadata creation and using digital technologies. She currently holds the position of Assistant Director General, Collections Management Division. In that position she is responsible for collecting Australian and overseas publications, including publications in digital form, and for cataloguing, digitisation and preservation of all formats of material in the Library's collections.

## The Digital Heritage of Digital Cultures: The uses of internet histories



Gerard Goggin  
University of New South Wales

The digital environment offers extraordinary opportunities for the preservation and promotion of cultural heritage, as well as presenting new challenges. So what about the relatively new heritage of digital cultures themselves? By this, I mean the cultures that sprung into being and flourished around, for instance, early computer games, email lists, conferences and chatrooms, websites and their predecessor forms? Or the vibrant heritage-under-construction that has been blossoming over the past few years through blogs, virtual worlds, social networking, the geoweb, Google Street View, locative technologies, or mobile media? In this paper, I draw on early thinking about a comparative Asia-Pacific project on cultural histories of the Internet, to sketch some possibilities, and pose some questions about directions in digital heritage. In particular, I wish to explore the idea that the nascent field of research into the histories of the Internet itself has much to offer for thinking about the wider questions of how we — in a digital environment — archive, collect, preserve, interpret, represent, and make available the heritage of the Internet's own digital cultures.

**BIO:** Gerard Goggin is Professor of Digital Communication, and Deputy Director of the Journalism and Media Research Centre, University of New South Wales (g.goggin@unsw.edu.au; jmrc.arts.unsw.edu.au). Gerard has researched and published widely in media, cultural, and communication studies, with a focus on Internet, mobiles, telecommunication, and disability. His books include *Global Mobile Media* (forthcoming, 2010), *Cell Phone Culture* (2006), *Virtual Nation: The Internet in Australia* (2004) and, with Christopher Newell, *Disability in Australia* (2005) and *Digital Disability* (2003).

Gerard has a long-standing interest in Internet cultures and histories, and the digital heritage issues they raise. Currently he is developing a comparative project on 'Internet Histories', with Mark McLelland, building on their collection *Internationalizing Internet Studies: Beyond Anglophone Paradigms* (Routledge, 2009).

## Online Environments for Indigenous Knowledge Sharing



Cat Kutay  
School of Computer Science and Engineering  
University of New South Wales

Cat Kutay will present her recent research on providing suitable online environments for Indigenous knowledge sharing. Within the context of the necessary trust of and access to the technology, we focus on providing the grammar for information linkage and the protocol for information sharing that will enable Aboriginal and Torres Strait Islander people to manage their knowledge online in a trusted environment. This work aims to retain oral records in a form that is suitable for ongoing education of future generations in both collective memory and their individual identity.

By enabling the components of information technology, in this case the programs, to be altered using a language emulating the spoken tongue, we have a technology that is readily adapted to new situations. Dr Kutay will explain work on open source software to enhance IT participation in Aboriginal and Torres Strait Islander cultures and communities across Australia.

**BIO:** Cat Kutay has been working in technology training for Indigenous people in Australia and the Pacific, and in developing appropriate technology for these cultures since mid 1980s. She is based in Sydney and works to promote the recognition and respect of the strong

## Using Augmented Reality for Digital Heritage



Bruce H. Thomas  
Director, Wearable Computer Lab  
School of Computer and Information Science  
University of South Australia

Augmented Reality is the process of overlaying and attaching virtual graphical information over a user's view to objects in the physical world. This technology allows for the presentation of *in-situ* information to provide a better context for the user of the information within the physical world around them. Augmented Reality is an ideal technology to present Digital Heritage, as the presentation of digital information as 3D graphics, text, diagrams, or video *in-situ* with a heritage site provides users with a greater understanding of our current knowledge and this history surrounding that heritage site. This lecture will provide an overview of the current state of the art in the domain of Augmented Reality, including spatial, handheld, head mounted display, and outdoor Augmented Reality. Examples of the use of Augmented Reality for the presentation of Digital Heritage information will be shown, and a number of future directions of Augmented Reality in the Digital Heritage domain will be outlined.

Bruce H. Thomas is the current the Director of the Wearable Computer Laboratory at the University of South Australia. He is currently a NICTA Fellow, CTO A-Rage Pty Ltd, and visiting Scholar with the Human Interaction Technology Laboratory, University of Washington. Prof. Thomas is the inventor of the first outdoor augmented reality game ARQuake. His current research interests include wearable computers, user interfaces, augmented reality, virtual reality, CSCW, and tabletop display interfaces.

**BIO:** Bruce Thomas' academic qualifications include a B.A. in Physics, George Washington University, an M.S. in Computer Science from the University of Virginia with a thesis titled: *Pipeline Pyramids in Dynamic Scenes*, and a Ph.D. in Computer Science from Flinders University, with a thesis titled: *Animating Direct Manipulation in Human Computer Interfaces*. His experience includes working at the School of Computer and Information Science, University of South Australia since 1990. He has run his own computer consultancy company. He was a Computer Scientist at the National Institute of Standards and Technology (a major US government laboratory for the Department of Commerce), and a software engineer for the Computer Sciences Corporation and the General Electric Company.

## Image-based Modelling for the Creation of Virtual Collections



David McKinnon  
Australasian CRC  
for Interaction Design

Image-based modelling is a cheap and versatile method for creating 3D replicas of objects or environments. This talk will discuss the experience of applying a versatile 3D reconstruction system to the task of modelling artefacts both in a controlled museum environment and in more uncontrolled settings. Implications for the use of such technologies in preservation, community access and meta-data presentation will be discussed.

**BIO:** David McKinnon received a B.Eng degree in electrical engineering in 1999 and a Masters of Engineering (Research) in 2001, both from the University of Queensland, Brisbane, Australia. His doctoral research in computer vision and multiple view geometry was undertaken at the University of Queensland. Dr McKinnon was with the Centre for Magnetic Resonance from 2003 to 2005 working in medical imaging. He is currently the Project Leader for the ACID Vision project at the Australasian CRC for Interaction Design (ACID). His principal research interest is 3D modelling from images and he has developed a versatile set of software libraries for this purpose. He created the world's first free-to-use image-based 3D reconstruction web-service <http://3dsee.net>. His extended research interests include cultural heritage modelling, GPU accelerated algorithms, vision-based robotics and computer graphics for VFX and gaming.