Thomas Connolly is Professor and Head of Creative Technologies at the University of the West of Scotland, Director of the Research Institute for Creative Technologies and Applied Computing (ICTAC) and Chair of the Centre for ICT in Education (ICTE). He has published over 150 papers in online learning, games-based learning, Web 2.0 technologies, and database systems. He is also Director of the Scottish Centre for Enabling Technologies (SCET), whose mission is to support large and small companies in the adoption of emerging technologies, particularly with the Creative Industries sector. In the past 5 years, he has managed over 150 projects with Scottish companies, increasing company turnover by over £65 million and creating 500 jobs and safeguarding a further 900 jobs.

Thomas Hainey is a Lecturer of Computer Games Technology at the University of the West of Scotland and an active researcher in the Centre of Excellence for Serious Games and a member of the GALA Network of Excellent in Serious Game. His doctoral thesis focused on the development and evaluation of a computer game to teach requirements collection and analysis at tertiary education level. His main research interests are evaluation of serious games, motivations for playing computer games for educational purposes, assessment and content integration for serious games, and emotional AI. He has a number of journal publications and conference publications in this area and has worked on a number of European projects associated with Serious Games.

Elizabeth Boyle is a reader in psychology at the University of the West of Scotland. Her research interests are in thinking, learning, language, communication, and motivation. More recently, she has followed up these interests in the area of e-learning and digital games with publications in the area of engagement and learning in digital games. Elizabeth has been involved in research on games, including the GALA project, a European network of academics and businesses interested in serious games, and the CHERMUG project, which aims to design and develop a game to teach research methods and statistics to nurses and social scientists.

Gavin Baxter is a Lecturer in Games Technology at the University of the West of Scotland. He is a member of the University’s Information and Communication Technologies in Education (ICTE) Research Group. His research interests include the application of Web 2.0 and games technologies within Higher Education and Enterprises for the purposes of supporting learning, knowledge creation, and dissemination.
About the Contributors

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Yulia Bachvarova is currently working as a senior researcher at Cyntelix BV on FP7 EU projects related to serious games. Her main research interests are in incorporating pedagogical principles in serious games and the interrelation between pedagogical and engagement principles, designing metrics for the effectiveness of serious games for corporate training, Social Network Analysis, and Social TV. She worked previously with the University of Twente, The Netherlands, on automatic generation of multimodal interfaces, University of Lausanne, Switzerland, on the Swiss Virtual Campus federal programme and University of Sofia, Bulgaria, on EU projects in the field of e-learning.

Richard Beeby is Senior Lecturer and Leader of the Computer Games cluster group in the School of Computing at the University of the West of Scotland. He has over 25 years experience teaching in Higher Education and has served as a specialist reviewer in Computing for the Quality Assurance Agency both in the UK and overseas. He is part of the School’s research group on ICT in Education and has particular interests in the teaching and assessment of programming and software development.

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Dawn Blasko is an associate professor of psychology at the Pennsylvania State University at Erie. She received her M.S. and Ph.D. at Binghamton University, State University of New York in experimental psychology. She teaches research methods, cross-cultural psychology and cognitive psychology. Her research focuses on individual differences in linguistic and spatial reasoning. She was an early adopter
of educational technology and more recently has focused on ways to develop serious games that can enhance learning in difference populations of learners. She has worked with the multi-university NSF funded project, EnVISIONS-Enhancing Visualization Skills-Improving Options aNd Success. The goal of the EnVISIONS project was to disseminate programs developed at Michigan Tech and Penn State Erie to broad range of institutions in order to develop a spatial visualization curriculum to improve student success and enhance the opportunities for women and minorities.

**Holly Blasko-Drabik** received her B. S. in psychology at Penn State Erie, the Behrend College in 2001. She attended the University of Central Florida when she completed her M.Sc in Modeling and Simulation and is currently completing her Ph.D. in Applied Psychology and Human Factors. Her dissertation involves developing and validating a method to assess the effectiveness of serious games and simulations. For the past several years, her research focus has focused on the use of virtual technology for simulation and training and on user interface and design. She has conducted several studies with the US Navy examining the important of communication and training methods in learning and recalling material. Her other research interests include studying individual differences in learning styles and working memory on the use of serious games. She has also taught human factors and engineering psychology at Penn State and designed a user interface for teaching and administrative software.

**Stefano Bocconi** graduated in Electrical Engineering at the Faculty of Florence, Italy. After working for several years in ICT companies, he went back to academia and obtained his Ph.D. in Computer Science at the CWI in Amsterdam, with a thesis titled “Vox Populi: Generating Video Documentaries from Semantically Annotated Media Repositories.” Subsequently, he carried on research as a post doc in Model-Based Diagnosis at the Computer Science department, University of Turin, and on Semantic Web at the Knowledge and Reasoning department at the Free University Amsterdam. He is currently working as a senior researcher for Cyntelix, a company involved in several FP7 EU projects.

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**António Brisson** is a PhD student at Instituto Superior Técnico, Technical University of Lisbon, and a research assistant at the GAIPS research group at INESC-ID. After finishing his MSc in Information Systems Computer Engineering where he developed I-Shadows an Affective and Interactive Drama, he decided to continue his research on the boundaries of theatre and interactive media. He is particularly interested in studying the contributions of cognitive research in improve theatre to interactive storytelling.

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André Carvalho is currently a Software Engineer at Altitude Software. He finished his MSc in Computer Graphics, Multimedia and Software Engineering at Instituto Superior Técnico, Technical University of Lisbon in 2012. His thesis dealt with computational humour and interactive storytelling, using autonomous agents with an underlying emotion framework, and was developed under supervision of Prof. Ana Paiva, as an intern at the GAIPS research group at INESC-ID.

Yaëlle Chaudy is a PhD student at the University of the West of Scotland. She obtained an MSc in computing from INSA Lyon (National Institute of Applied Science) and a bachelor in French as a Second Language from Stendhal University in Grenoble. Interested in both computing and education, she is now studying the integration of assessment in GBL applications.

João Dias is currently an assistant professor at the Computer Science Department of Instituto Superior Técnico – Technical University of Lisbon (IST-UTL), where he teaches courses on Introduction to Programming, Artificial Intelligence, Logic Programming, and Autonomous Agents and Multi-Agent Systems. He is also currently a researcher at the Intelligent Agents and Synthetic Characters Group (GAIPS) of INESC-ID. In his research, he is interested in developing and studying cognitive, emotional and social agents, and is currently exploring the use of emotional intelligence skills in agents to establish social relations with others in interactive scenarios.

Joana Dimas is a research assistant from GAIPS, Intelligent Agents and Synthetic Character Group at INESC-ID. She received her MSc degree in Psychology at Instituto Superior de Psicologia Aplicada, and is currently pursuing a PhD in Information Systems and Computer Engineering at Instituto Superior Técnico – Technical University of Lisbon, on the topic of Virtual Agent’s Identity. Her main interests are the improvement of computer game characters and enhancement of player’s experience through the combination of cognitive sciences and game design.

Elisabeth V. C. Friedrich studied Psychology at the University of Graz, Austria, and conducted her Masters thesis at the Laboratory of Neural Injury and Repair, Wadsworth Center, Albany, NY. She received her doctorate in natural science in 2012 at the University of Graz, Austria. Her main research interest is Brain-Computer Interfaces (BCI). She explored different mental tasks to control an EEG-based BCI, the impact of distraction on user performance as well as improvements of BCI usability for severely motor impaired individuals. She is currently involved in the EU GALA Network of Excellence (www.galanoe.eu).

Erwin Hartsuiker worked as a software developer for digital EEG systems (clinical neurophysiology, evoked potentials, and brain mapping) from 1986 to 1992. He founded the Mind Media enterprise (Netherlands) in 1992 after he became interested in Psychophysiology, Bio- and Neurofeedback. For four years (1988-1992), he was also involved part-time in the computer games industry. Within Mind Media, he is active as senior software developer creating the first Microsoft Windows based data processing and multimedia software platform for Bio and Neurofeedback in 1994, which became a standard in the industry. This software was later renamed to BioTrace+. He also created a new line of portable wireless technology (NeXus-10) for physiological research and bio- and neurofeedback, which was introduced in the year 2004.
**Jannicke Baalsrud Hauge** is a research scientist at Bremer Institut für Produktion und Logistik (BIBA). She teaches risk management, decision-making, and collaboration in SC at the University of Bremen and Jacobs University. Main interest: Serious games, TEL, use of ICT in logistics. She has been responsible for and managed the BIBA contribution in several EU and national projects in the field of innovation, logistics, ICT for logistics and productions as well as education/training. She is responsible for the BIBA gaming lab. Her main research topic is logistics and risk management in production networks and the mediation of skills using educational games. She has been and is responsible for many WPs in EU and national projects on ICT applications, logistics and serious games and TEL. Authored 100+ papers.

**Hans Hummel** gained his PhD degree with research on process support within multimedia practicals. He was responsible for the development of various innovative, interactive programs for the acquisition of workplace-based competences for various domains. Amongst others, he led EMERGO project that has developed an approach and toolkit for developing Serious Games (awarded the Comenius Multimedia Award 2008). Hummel has seated in various program committees, is in the editorial board of various journals, and by now has published over 100 articles in peer-reviewed journals. Currently Hans holds both the position of associate professor at the CELSTEC and as chair on the lectorate Workplace learning and ICT at the NHL University of Applied Science in Leeuwarden, The Netherlands.

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**Milos Kravcik** has a diploma degree in computer science and a doctoral degree in applied informatics from the Comenius University in Slovakia. He has been dealing with Technology Enhanced Learning (TEL) since 1988 in various national and international projects, later also at the Fraunhofer Institute for Applied Information Technology in Germany and at the Open University in The Netherlands. Since 2010, he has been working as a Research Fellow at the RWTH Aachen University and his main research interests include personalized learning environments and self-regulated learning. He co-organized several TEL doctoral schools and serves also as executive peer-reviewer or editorial board member for several journals related to learning technologies.

**Jürgen Kurzmann** is an associate staff in the Department of Neuropsychology at the University of Graz. He holds a Master degree in Biomedical Engineering from the Graz University of Technology. Currently, he is writing his dissertation on real-time neurofeedback using near-infrared spectroscopy. Another focus of his research is studying the effects of neurofeedback on cognitive performance. Further research interests are mental rotation, motor imagery and brain-computer interfaces. With his technical background as an electronic and software engineer, he has developed several tools for biomedical signal processing. Combining technical engineering and psychological research is one of his favourite passions.
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**Theodore Lim** is an academic researching haptic-VR environments, Serious Games for engineering, neurometrics, knowledge engineering, and human factors. The emphasis of research is in conceptual design of products and integrated systems. Since 1997, he has developed automatic feature recognition algorithms and GPU methods for path planning both of which have since been commercialised. He has also been involved with a number of EU and EPSRC projects, the most recent in the domain of engineering learning via game ware for next generation engineering applications. Since 2009, he has applied games for teaching engineering design and manufacturing.

**Heather Lum** is a research associate of psychology at Penn State Erie, the Behrend College. She received her Ph.D. in applied experimental and human factors psychology from the University of Central Florida. Her research foci include human-robot interaction, human-animal interaction, and more broadly how individuals perceive and interact with technology. At Behrend, she is responsible for teaching human factors/engineering psychology, human-animal interaction courses, science, technology, and society courses, and the psychology of gaming. She is also the laboratory coordinator for the psychology program. In her downtime, she is a member of a local canine search and rescue team, which is responsible for finding lost individuals in Northwest Pennsylvania.

**Carlos Martinho** received his PhD degree in Computer Science and Engineering from Instituto Superior Técnico, Technical University of Lisbon. He is currently a Senior Researcher in the Intelligent Agents and Synthetic Character Group at INESC-ID and an Assistant Professor in the Computer Science and Engineering Department of IST. His research focuses on using artificial intelligence to enhance user experience with computer and video games. His research interests include autonomous synthetic characters, affective and anticipatory computing, and user adaptation in serious games. He has co-authored over 100 papers, served on the program committee of international conferences as ACII, IVA, and AAMAS, and as a reviewer for international journals such as *Computational Intelligence, JAAMAS, and TAFFC*. He is currently working in EU FP7 project SIREN, developing intelligent interactive software to support teaching conflict resolution skills to children, and in UT Austin–Portugal cooperation agreement project INVITE, developing autonomous characters with social identity awareness.

**Samuel Mascarenhas** received the MSc degree in computer science from the Instituto Superior Técnico, in 2009, Lisbon, Portugal. Since then, he is presently a PhD student at the same university, working as a research assistant at the Intelligent Agents and Synthetic Characters Group (GAIPS) / Inesc-ID Taguspark, in Porto Salvo, Portugal. His main research interests are in artificial intelligence, virtual agents and cognitive and affective sciences. In his PhD, he aims to study the integration of cultural aspects in virtual agents. This should improve their ability to act with other humans in social contexts, as human cultures are very different in terms of values, norms, symbols, gestures and rituals.
**Igor Mayer** is an associate professor in Public Administration and Gaming in the Faculty of Technology, Policy, and Management, and director of the Serious Gaming Research Center, TU Delft, The Netherlands.

**Carol McGuinness** is Professor of Psychology at Queen’s University in Belfast, Northern Ireland. Her research interests are in the applications of cognitive psychology to classroom learning. Specifically, she has researched how teachers can promote the development of children’s thinking skills, and the role of educational games in this context. She is director of the ACTS (Activating Children’s Thinking Skills) project, which uses an infusion methodology for enhancing children’s thinking skills across the curriculum, and has helped launched similar projects in Wales, England, and Scotland. She is author of the influential report, *From Thinking Skills to Thinking Classrooms*, which was commissioned by the UK Department of Education (1999) and acted as an advisor to the Northern Ireland Curriculum Council (CCEA) developing a Framework for Thinking Skills and Personal Capabilities, which is part of their statutory curriculum introduced in 2007.

**Ricardo Javier Rademacher Mena** obtained his PhD in particle physics in 2002 and immediately started teaching at local universities. Since then, he founded Futur-e-Scape, LLC, a company dedicated to leveraging emergent technologies toward physics education. He has also been extremely active in the world of online higher education having taught at several pure online schools as well as written on best practices for teaching science online. On top of running his company, teaching for offline institution, and teaching for online schools, he is also an avid electric bass player.

**Alex Moseley** is a National Teaching Fellow, and an Educational Designer and University Teaching Fellow at the University of Leicester, where he has had long experience as both practitioner and researcher of course design and development for higher education. He has particular interests in online and distance education, student engagement, and provision of effective research skills and student induction. His principle research area is in games based learning; he recently co-authored *Using Games to Enhance Teaching and Learning* (Routledge, 2012) and has suggested key features of online immersive games, which can be transferred to higher education to ensure high engagement and community development. He was part of the team behind the first charity Alternative Reality Game, Operation: Sleeper Cell, co-chairs the Association for Learning Technology special interest group on Games and Learning, and co-organises the Let’s Change the Game cross-sector conference.

**Rob Nadolski** is assistant professor technology enhanced learning at the Centre for Learning Sciences and Technologies (CELSTEC) at the Open University of the Netherlands. His main interests are in competence-based education and serious games, especially enhancing learner support facilities by exploiting newest technologies (like sensors). He has done the design and project management of e-learning applications for acquiring complex cognitive skills as well as research on such applications (i.e., serious games) and has participated in various European and national projects. He now participates in the EU-project GaLA.
Christa Neuper obtained her Ph.D. degree from the University of Graz in 1984. From 1985-1986, she worked as Scientific Co-Worker at the Department of Psychology at the University of Graz. Between 1990 and 1994, she was University Assistant at the Institute for Biomedical Engineering, University of Technology Graz, and from 1994-2005, she worked as Senior Scientist at the Ludwig Boltzmann-Institute for Medical Informatics and Neuroinformatics, University of Technology Graz. Between 2002 and 2005, she was Assistant Professor at the Department of Psychology, University of Graz, where she has the rank of a full professor of ‘Applied Neuropsychology: Human-Computer Interface’ since 2005. Additionally, since 2010 she has the rank of professor at the Institute for Knowledge Discovery, Laboratory of Brain-Computer Interfaces at the University of Technology Graz. Her research topics are EEG-based brain-computer communication and neurofeedback, event-related brain oscillations and cognition, sensorimotor processing in motor actions and motor imagery, sense of presence in virtual realities, and neurophysiology of individual differences in cognition.

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Karen Orr is a Research Assistant in the Centre for Effective Education, within the School of Education at Queen’s University, Belfast. Her research interests lie broadly within the areas of Psychology and Education, with a focus on attitude measurement, educational programme evaluation, and the use of interactive technologies in the classroom. Karen graduated with a PhD in Psychology in 2011. Her thesis (“Games-Based Learning Environments in the Classroom: Attitudes, Dialogue, and Thinking”) focused on the measurement of teacher and pupil attitudes towards games for learning purposes, as well as an exploration of the thinking strategies employed by young people engaged with games in the classroom.

Ana Paiva is an Associate Professor at Instituto Superior Técnico, Technical University of Lisbon and the GAIPS research group leader at INESC-ID. She is well known in the area of Intelligent Agents, Virtual Agents, Affective Computing, and Artificial Intelligence Applied to Education. Her research is focused on the affective elements in the interactions between users and computers and in particular in the creation of affective behavior in synthetic virtual agents. Prof. Ana Paiva served as a member of numerous international conferences and workshops. She has (co)authored over 120 publications in refereed journals, conferences, and books, and coordinated the participation of INESC-ID in many international and national research projects. Prof. Ana Paiva is member of the IEEE, ACM, and AAAI.

Gonçalo Pereira is a PhD student at Instituto Superior Técnico (Technical University of Lisbon) and an assistant researcher at the GAIPS research group of INESC-ID. In 2009, he finished his MSc thesis on adaptive map generation for turn based strategic multiplayer browser games. After this in 2010, he started his PhD studies at the Intelligent Agents and Synthetic Characters Group (GAIPS). His research addresses the concept of social power, its dynamics, and how to integrate those in socially intelligent virtual agents.
About the Contributors

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**James Ritchie** is a professor specialising in design, manufacture, and manufacturing management. With over 150 publications, his recent research includes product development applications including the use of virtual reality in design and manufacture, rapid prototyping, design process capability analysis and mechanical engineering knowledge and information capture. He has been involved in a large number of EPSRC-funded research projects and Knowledge Transfer Partnerships, all of which involve industrial companies, as well as EU-funded work. He is a member of Heriot-Watt University’s Innovative Manufacturing Research Centre’s Management Committee and Academic Director of the University’s Advanced Manufacturing Unit.

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**Peter van Rosmalen** (associate professor) has been active in educational technology since the early eighties as e-learning consultant for the financial and industrial sector. In 2000, he was co-founder and director of a company in e-learning and knowledge management. In 2003, he joined the Centre for Learning Sciences and Technologies at the Open University of The Netherlands. He participated both as a researcher and as a project manager in a large number of Dutch and European research and development projects on topics such as authoring tools, simulations, e-universities, computer-supported cooperative learning, adaptive e-learning, peer support, networked competence, language technologies for learning, and serious games. His current research activities include research on serious games, the application of language technologies in technology enhanced learning, creativity, and learner support services.

**Michel Rudnianski** holds a Master in History and a Doctorate in Systems Theory, which a specialization on Game Theory. Having developed then theory of Games of Deterrence, and applied it to a variety of fields, he is presently the Head of the MBA and Specialized Masters in Management Branch at the CNAM’s Ecole Management and Society in Paris, and teaches decision making, negotiations, and strategy.

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**Marco Vala** is a researcher at the Intelligent Agents and Synthetic Characters Group (GAIPS) of INESC-ID, and a lecturer of information systems and computer engineering at Instituto Superior Técnico, Technical University of Lisbon. He received a diploma degree in information systems and computer engineering and an MSc in intelligent systems and multimedia, both from IST – Technical University of Lisbon. He participated in the EU-funded projects SAFIRA, ELVIS, VICTEC, eCircus, and LIREC. He has (co)authored over 20 publications in refereed journals, conferences, and books. Currently, his research focuses on embodied characters and intelligent bodily behaviour.

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**Matthew White** received a B. A. and B. Ed. from Cape Breton University in 2006 and 2007, respectively. He then completed a M. Ed. in Instructional Design and Technology from the University of New Brunswick at Fredericton in 2008. His recent Ph. D. work was completed at Memorial University of Newfoundland, and dealt with how video game players assimilate new information and play skills. Dr. White joined Penn State Behrend in August 2012. Prior to working with us, he studied Usability and User Experience at the University of Prince Edward Island, and was a professional Game Designer for an independent development studio called Snow Day Games. A member of the Canadian Game Studies Association, Digital Games Research Association, and International Game Developer’s Association, Dr. White’s interdisciplinary work involves creating and playing games, as well as studying them and their larger effects and significance.

**Nicola Whitton** is a Research Fellow at Manchester Metropolitan University and a director of the Technology, Innovation, and Play for Learning research group. She has written widely in the area of games for adult learners, and recently managed projects in motivation and games for older learners and collaborative game design in schools. Her research interests particularly focus on the value of play for creating safe learning spaces.

**Amanda Wilson** is in the last year of her doctoral studies in the School of Computing at the University of the West of Scotland and an active researcher in the Centre of Excellence for Games-Based Learning. Her thesis is focused on Games-Based Construction Learning at Primary Education Level using Scratch to teach programming concepts and has produced a framework for the integration of Games-Based Construction Learning into Primary level classrooms to be used by Primary educationalists. Amanda has a number of journal and conference publications presenting qualitative and quantitative empirical evidence in the area of Games-Based Learning and Games-Based Construction. Amanda has organised events with a number of Primary Schools and utilised Scratch to motivate children to learn programming concepts and construct their own playable games.
Matthias Witte is currently working as a University Assistant at the University of Graz, Austria. He received his diploma in biology (M.Sc. equivalent) from the University of Freiburg, Germany, in 2007. Until 2012, he worked as a Research Associate at the MEG Center, Institute of Medical Psychology and Behavioral Neurobiology, University of Tübingen, Germany. He obtained a Ph.D. in neuroscience from the Graduate School of Neural and Behavioral Sciences/International Max Planck Research School Tübingen in 2012. His work is inspired by questions from motor control, applications in brain-computer interfaces, and multivariate decoding techniques in neuroimaging.

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