Welcome to the proceedings of the 10th International Conference on Intelligent Virtual Agents (IVA), held 20-22 September, 2010 in Philadelphia, Pennsylvania, USA. Intelligent Virtual Agents are interactive characters that exhibit human-like qualities and communicate with humans or with each other using natural human modalities such as behavior, gesture, and speech. IVAs are capable of real-time perception, cognition, and action that allow them to participate in a dynamic physical and social environment.

IVA 2010 is an interdisciplinary annual conference and the main forum for presenting research on modeling, developing, and evaluating Intelligent Virtual Agents with a focus on communicative abilities and social behavior. The development of IVAs requires expertise in multimodal interaction and several AI fields such as cognitive modeling, planning, vision, and natural language processing. Computational models are typically based on experimental studies and theories of human-human and human-robot interaction; conversely, IVA technology may provide interesting lessons for these fields. Visualizations of IVAs require computer graphics and animation techniques, and in turn supply significant realism problem domains for these fields. The realization of engaging IVAs is a challenging task, so reusable modules and tools are of great value. The fields of application range from robot assistants, social simulation, and tutoring to games and artistic exploration.

The enormous challenges and diversity of possible applications of IVAs have resulted in an established annual conference. It was started in 1998 as a workshop on Intelligent Virtual Environments at the European Conference on Artificial Intelligence in Brighton, UK, which was followed by a similar one in 1999 in Salford, Manchester. Then dedicated stand-alone IVA conferences took place in Madrid, Spain in 2001, Irsee, Germany in 2003, and Kos, Greece in 2005. Since 2006 IVA has become a full-fledged annual international event, which was first held in Marina del Rey, California, USA, then Paris, France, in 2007, Tokyo, Japan, in 2008, and Amsterdam, The Netherlands, in 2009. Since 2005 IVA has also hosted the Gathering of Animated Lifelike Agents (GALA), a festival to showcase state-of-the-art IVAs created by university students, academic, or industrial research groups. The current conference represents well the range of expertise, from different scientific and artistic disciplines, and the value of both theoretical and practical work needed to create IVAs which suspend our disbelief.

The special application theme of IVA 2010 was “virtual human communities.” IVA achievements to date lead naturally to studies involving the formation, simulation, and understanding of ever widening social, cultural, and cognitive interactions among humans and virtual humans. Computer graphics techniques now permit the visual simulation of large collections of individual agents, offering real-time visualization platforms for expanding social units to families, co-worker teams, building inhabitants, and even an entire virtual populace. Mobile interactive devices and emergent human interests in real-time social networking provide some additional economic
incentives and a growing industry presence. This special topic also builds on the special theme of IVA 2009, games, in that participants in virtual environments will need to interact not just with the space or with individual IVAs, but perhaps with a group or community of IVAs in order to achieve desired situations or goal states. IVA 2010 presented an opportunity to further interdisciplinary cross-fertilization between the IVA and virtual populace simulation fields.

IVA 2010 received altogether 93 submissions. Of these, 18 papers were accepted as long papers and 34 as short papers. The poster session comprised 26 displays. Three invited speakers presented keynote presentations, one per conference day. The conference opened with a keynote talk by Motion Picture Academy 2010 Technical Achievement Award recipient Paul Debevec titled “From ‘Spider-Man’ to ‘Avatar’: Achieving Photoreal Digital Actors”; the second morning keynote was presented by neuropsychiatrist Ruben Gur on “The Neurobiology of Emotion Processing by Humans and Computers”; and the third keynote was offered by video game writer and designer Lee Sheldon on “Virtual Agents in the Modular World.”

IVA 2010 was locally organized by the SIG Center for Computer Graphics at the University of Pennsylvania, and took place in the Inn at Penn, an on-campus hotel. We would like to thank the people who contributed to the high scientific quality of the event: the members of the Program Committee for their reviews and the members of the Senior Program Committee for their advice on preparing the event and evaluating the papers. We express our appreciation to Stacy Marsella for his careful selection of the Best Paper Awards, Phil Heslop and Laura Pfeifer for organizing the GALA, and to Chris Czyzewicz and Daniel Schulman for arranging the busy poster and demo session. Special thanks go to Alla Safonova who guided and navigated the submission and selection process. We are greatful to Nop Jiarathanakul and Ashley Yuki for designing and administrating the conference web site. We express our sincere appreciation to Catherine Stocker for her thorough and adept local organization and care of many of the practical matters of the conference, to Penn Conference Services for managing the registration website and handling many financial matters, to Mark West for financial help and advice, to Jessica Marcus of Penn’s Institute for Research in Cognitive Science for assisting onsite operations, and to the student volunteers for their assistance as needed. We are grateful for the support of our sponsors, which was essential to make the event happen.

Last, but not least, these proceedings represent the scientific work by the participants of IVA 2010. We thank all of them for their high-quality contributions. We hope that this volume will foster further research on IVAs, and we look forward to hearing of new work at future IVA conferences.

July 2010

Jan Allbeck
Norman Badler
Timothy Bickmore
Catherine Pelachaud
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