Recap of the 2010 AI and Interactive Digital Entertainment Conference

G. Michael Youngblood, Vadim Bulitko, and Ben Weber

■ *On October 11–13, 2010, AAAI hosted the sixth annual international AI and Interactive Digital Entertainment (AIIDE) Conference at Stanford University. The report briefly summarizes the conference.*

The AI and Interactive Digital Entertainment (AIIDE) Conference is the definitive point of interaction between entertainment software developers interested in AI and academic and industrial AI researchers. The conference is targeted at the research and commercial communities, promoting AI research and practice in the context of interactive digital entertainment systems with an emphasis on commercial video games.

AIIDE 2010 was held October 11–13, 2010, at Stanford University ajacent to Palo Alto, California. The conference featured 17 paper presentations, 18 posters, 5 demos, 5 invited speakers, a panel on teaching game AI in academe, and the first StarCraft AI competition. Led by the conference chair, Michael Youngblood (University of North Carolina at Charlotte), and the program chair, Vadim Bulitko (University of Alberta), the three days of AIIDE contained a dense and exciting agenda highlighting new research and revealing how AI is applied in many commercial endeavors.

The first day was kicked off with an invited talk from Chris Jurney, lead developer of Double Fine Productions, who detailed his work on the nonplayer character pathfinding of *Dawn of War II* during his time at Relic Entertainment. The morning was completed by research presentations on behavioral techniques with notable work on producing realistic behaviors through alibi generation (Ben Sunshine-Hill and Norman Badler, University of Pennsylvania), which has been widely discussed in the community since, and Ben Weber's (University of California, Santa Cruz) work applying goal-driven autonomy to playing StarCraft (awarded AIIDE 2010 Best Student Paper). During lunch, interested members of the community discussed the state of journal venues for work related to AI and interactive digital entertainment. The consensus was to fully support *IEEE Transactions on Computational Intelligence and AI in Games* (TCI-AIG, pronounced tee-keg) as the current main outlet. After lunch, the invited talk by Bob Sottilare from the U.S. Army Simulation and Training Technology Center gave a perspective on the use of digital media and AI in serious games and training, illustrating its importance in training the current and next generation of Department of Defense personnel. The afternoon continued with research talk sessions in machine learning and

using AI in content generation highlighted by Kevin Gold's (Rochester Institute of Technology) work in the online training of goal recognition from low-level inputs in an action-adventure game and using machine translation to convert between difficulties in rhythm games (such as Guitar Hero). The evening ended with a great reception where everyone had a chance to catch up with friends and colleagues, meet new people, discuss the exciting events of the day, and observe highlights from the StarCraft competition.

R. Michael Young (North Carolina State University) started off the second day with his invited talk on the computational modeling of interactive narrative and the role that the nature of narrative and its comprehension by people has played in setting research goals in this area. This set the tone for the session of research talks on interactive narrative that rounded out the morning. During lunch, independent game designer and developer Chris Hecker offered a chance for AIIDE attendees to play his latest game, Spy Party. Spy Party is a two-player asymmetric game where one player takes on the role of a spy at a party who must complete missions in the party room among a dozen or so AI-driven characters, essentially having to blend into the crowd. The second player assumes the role of a sniper with a single shot who must identify the spy looking in through windows from the outside before time runs out. The lunch play session rolled seamlessly into Hecker's invited talk where he provided insight into his vision and challenges working on Spy Party and ventured into positing that at its core, game AI is really game design because it has such a profound impact on the rules of the game. Hecker conjectures that tuning game AI is really just tuning the game and game play, so it is important that game AI designers be good game designers.

Another session on machine learning led into the poster and demo session, which went on into the evening. An exciting set of research posters filled the room at Stanford's Tresidder Memorial Union and covered diverse work from player modeling to agent creation to interactive narrative to automated analysis. Demos highlighted new tools and games involving content generation, alternate reality game retargeting, social game play, and character behavior creation. During the session AIIDE attendees were also treated to a showcase game of the StarCraft competition in a bot versus human match. In the exhibition match, Oriol Vinyals, a World Cyber Games 2001 competitor played against and defeated the top-ranking bot of the competition. The result was an exciting man versus machine match that demonstrated that real-time strategy (RTS) AI still has room for development.

The third and final day of AIIDE 2010 featured invited speaker Sumit Basu from Microsoft Research who talked about the interactive machine learning used to make the commercially available Songsmith program add style to music, create accompaniment to a melody, and aid singers to produce their desired notes. Following Sumit's inspiring and creative talk came the much anticipated results from the popular StarCraft competition.

AIIDE 2010 hosted the first StarCraft AI competition under a generous permission from Blizzard Entertainment, enabling researchers to evaluate their AI systems in a commercial real-time strategy game. Participants were presented with the objective of building the best performing "bot" for head-to-head AI matches in a double-elimination bracket.

The competition consisted of four tournaments, which ranged in complexity from small-scale combat to complete game play, simulating the environment faced by professional gamers. The goals of the competition were to provide a testbed for AI and to promote game research by exhibiting techniques in an immensely popular commercial game. It included 26 participants from several universities, as well as industry professionals and hobbyists. FreScBot created by Florent D'Halluin and Valentin Leon-Bonnet won the micromanagement and small-scale combat tournaments. The tech-limited game tournament was won by MimicBot created by Luke Perkins of Rensselaer Polytechnic Institute. The main event, a full StarCraft game-play tournament, was won by Overmind, which was created by the University of California Berkeley team led by David Burkett and David Hall under the supervision of Dan Klein. Their system employed a variety of techniques for managing different competencies including adaptive potential fields and a threat-aware pathfinding algorithm. The runner-up was Krasi0, created by Krasimir Krastev, which used a set of finite-state machines for encoding Krasimir's knowledge of the game. Blizzard generously supplied prizes to winners present at AIIDE.

The events continued with sessions on pathfinding and a panel on Game AI Education moderated by Mark Riedl (Georgia Institute of Technology) and featuring the insights of Charles Rich (Worcester Polytechnic Institute), John Funge (Netflix, University of California, Santa Cruz), Brian Magerko (Georgia Institute of Technology), and Julian Togelius (ITU Copenhagen). The day and the conference were capped with an AIIDE 2010 best paper research talk on realistic fireteam movement in urban environments by Christian Darken (Naval Postgraduate School).

The AIIDE chairs and organizational committee would like to thank all of the attendees of AIIDE 2010, those who submitted and shared their outstanding work, everyone who worked hard to make it a high-quality conference on the program and advisory committees, and everyone at AAAI who made this conference possible. We hope that everyone doing exciting work in AI and interactive digital entertainment will consider submitting to AIIDE 2011 and beyond. To see what AIIDE is about, please look for the conference videos on videolectures.net.

G. Michael Youngblood is an assistant professor, codirector of the Game Design and Development Program, codirector of the Games + Learning Laboratory, and head of the Game Intelligence Group at the Department of Computer Science, University of North Carolina at Charlotte.

Vadim Bulitko is an associate professor of computer science at the University of Alberta, Edmonton, Alberta.

Ben Weber is a Ph.D. candidate working with Michael Mateas in the Expressive Intelligence Studio at the University of California, Santa Cruz.