Program

Artificial Intelligence and Interactive Digital Entertainment (AIIDE-05)

June 1–2, 2003

Marina del Rey Marriott
Marina del Rey, CA

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American Association for Artificial Intelligence

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Acknowledgments

The American Association for Artificial Intelligence wishes to acknowledge and thank the following individuals for their generous contributions of time and energy to the successful creation and planning of the First Annual Artificial Intelligence and Interactive Digital Entertainment Conference.

Conference and Finance Chair
R. Michael Young, North Carolina State University

Program Chair
John Laird, University of Michigan

Demonstrations, Exhibits, and Local Arrangements Chair
Michael van Lent, University of Southern California, Institute for Creative Technologies

Publicity Chair
Ian Lane Davis, Mad Doc Software

A complete listing of the AIIDE-05 Program Committee members appears in the conference proceedings.

Opening Reception

The AIIDE-05 Opening Reception will be held Wednesday, June 1, 6:00 – 8:00 PM in the Sierra room of the Marriott. This event will provide an opportunity for attendees to socialize before the evening invited talk. A pasta station, light hors d'oeuvres and a sundae station will be served. A hosted bar will also be available. Admittance to the reception is included in the AIIDE-05 registration fee. A $35.00 per person fee ($10.00 for children) will be charged for spouses and other nontechnical conference registrants.

Lunch Reception

An Executive Sandwich Buffet including a soup, a selection of salads and sandwiches, and dessert will be served in the Promenade Room on the lobby level of the hotel on Thursday, June 2 from 12:30–2:00 PM. Please enjoy the exhibit and demo displays during this period as well.

Invited Talks and Panels

AIIDE-05 invited talks will be held in the Pacific Room on the lobby level of the Marriott.

Wednesday, June 1

9:00 – 10:00 AM

AI Tools for Generating Player-Driven Emotional Experience in Videogames

Doug Church

As we move to the next-generation of game tiles, the industry is struggling to merge directed, dramatic gameplay (Medal of Honor series) with the open-ended feel of "Sandbox" games (Grand Theft Auto, Mercenaries). How can game AI evolve from its current role (pathfinding, line-of-sight, combat tactics) into a central role that enables designers to create said experiences?

We will be forced to move beyond simple parametrizations of speed, hit points, and take cover percentages. We will need to find flexible designer-driven tools for conceptualizing the space of player actions. How can our tools enable designers to guide game responses to players while maintaining authored elements, without us resorting to the endless if-then scripting?

Warning: This talk will not provide solutions to this problem. It will, however, present a collection of motivating examples (specific cases that we must address), which are detailed from the design perspective, but informed by the technical possibilities and constraints.

2:00 – 3:00 PM

A Design Perspective on AI

Will Wright, Maxis

What value does AI (and associated technology) bring to the overall entertainment experience? Up to now we've primarily used AI to drive behavioral agents in games. Taking two steps back, how can we harness intelligent systems in a broader way to create better games.

8:00 – 9:00 PM

The Turing Test for Game AI

W. Bingham (Bing) Gordon, Electronic Arts

The new "nextgen" of videogame consoles will (finally) have sufficient processing power and memory to change the rules of AI in popular games. But the question is: where will game designers focus their attention?

As Electronic Arts develops sports, shooter, strategy and people games for Xbox 2 and Playstation 3, we are developing techniques to turn the promise of "better AI" into a definable metric, which makes sense to marketing and development leaders alike.

Thursday, June 2

9:00 – 10:00 AM

Interactive Story Writing Using ScriptEase

Jonathan Schaeffer, University of Alberta

ScriptEase is a tool for writing interactive stories in RPG games that frees the author from doing explicit computer programming. Stories are created by selecting and customizing patterns for the plot, encounters, behaviors and conversations. It has been implemented as a front end to BioWare's Neverwinter Nights game. We will describe our experiences using ScriptEase as part of a high school English curriculum.

7:30 – 9:00 AM

PANEL: Artificial Intelligence for Serious Games

Panelists: W. Lewis Johnson, Center for Advanced Research in Technology for Education (CARTE), USC / Information Sciences Institute; Brian Slator, Computer Science and Operations Research, North Dakota State University; and Jan Cannon-Bowers, School of Film and Digital Media, University of Central Florida

Invited Talks & Panels

Friday, June 1

9:00 – 10:00 AM

Blending Real Intelligence with Artificial Intelligence

Chris Crawford

There are no algorithms for entertainment; it is at root an artistic endeavor. Digital entertainment, however, requires artists to express themselves algorithmically. This talk will explore the gray zone between the artist and the programmer, offering suggestions for how the two may best work together.

2:00 – 3:00 PM

Spatial Competence

Damian Isla, Bungie Studios

Characters that live in a 3d spatial world need to be spatially competent. In this talk we present some of the lessons learned from the development process of Halo2 in the areas of spatial representations, pathfinding, navigation, dynamic obstacle/object interaction and the interaction of all of these with behavior.

Wednesday, June 1

8:45 AM

Welcome

R. Michael Young, AIIDE-05 Conference Chair, North Carolina State University

9:00 – 10:00 AM

Session Chair: John Laird

Invited Talk: AI Tools for Generating Player-Driven Emotional Experience in Videogames

Doug Church

10:00 – 10:15 AM

Break (Coffee Service)

10:15 – 10:45 AM

Session Chair: Greg Alt

Towards Learned Anticipation in Complex Stochastic Environments

Christian J. Darken, Naval Postgraduate School

10:45 – 11:15 AM

Semi-Automated Gameplay Analysis by Machine Learning

Finnegan Southey, Gang Xiao, Robert C. Holte, Mark Trommelen, University of Alberta; John Buchanan, Electronic Arts

11:15 – 11:30 AM

Break

11:30 AM – 12:00 PM

Session Chair: Bill Ferguson

Sequence Learning by Backward Chaining in Synthetic Characters

Peter Gorniak and Bruce Blumberg, MIT Media Laboratory

12:00 – 12:30 PM

Retaining Learned Behavior during Real-Time Neuroevolution

Thomas D'Silva, Roy Janik, Michael Chrien, Kenneth O. Stanley, and Risto Miikkulainen, University of Texas at Austin

12:30 – 2:00 PM

Lunch Break (no sponsored event)

2:00 – 3:00 PM

Session Chair: Ian Davis

Invited Talk: A Design Perspective on AI

Will Wright, Maxis

3:00 – 3:15 PM

Break

3:15 – 3:45 PM

Session Chair: Lewis Johnson

Scalable Solutions for Interactive Virtual Humans that can Manipulate Objects

Marcelo Kallmann, University of Southern California / Institute for Creative Technologies

3:45 – 4:15 PM

Particle-Based Communication among Game Agents

Michael Klaas, Tristram Southey, and Warren Cheung, University of British Columbia

4:15 – 4:30 PM

Break (Coffee Service)

Wednesday – Thursday, June 1–2

4:15 – 8:00 PM

AIIDE-05 Demonstrations Program

4:30 – 5:00 PM

Session Chair: Jonathan Schaeffer

Cooperative Pathfinding

David Silver, University of Alberta

5:00 – 5:30 PM

Applying Constraint Weighting to Autonomous Camera Control

Owen Bourne and Abdul Sattar, Griffith University

6:00 – 8:00 PM

Opening Reception (Sierra Room)

8:00 – 9:00 PM

Session Chair: Michael Young

Invited Talk: The Turing Test for Game AI

W. Bingham (Bing) Gordon, Electronic Arts

Thursday, June 2

9:00 – 10:00 AM

Session Chair: John Laird

Invited Talk: Interactive Story Writing Using ScriptEase

Jonathan Schaeffer, University of Alberta

10:00 – 10:15 AM

Break (Coffee Service)

10:15 – 10:45 AM

Session Chair: Paul Tozer

From Linear Story Generation to Branching Story Graphs

Mark O. Riedl, University of Southern California / Institute for Creative Technologies and R. Michael Young, North Carolina State University

10:45 – 11:15 AM

Search-Based Drama Management in the Interactive Fiction Anchorhead

Mark J. Nelson and Michael Mateas, Georgia Institute of Technology

11:15 – 11:30 AM

Break

11:30 AM – 12:00 PM

Session Chair: Jeff Orkin

Story Representation and Interactive Drama

Brian Magerko, University of Michigan

12:00 – 12:30 PM

Structuring Content in the Façade Interactive Drama Architecture

Michael Mateas, Georgia Institute of Technology and InteractiveStory.net; Andrew Stern, InteractiveStory.net and grandtextauto.org

12:30 – 2:00 PM

Lunch Buffet, Promenade Room

1:00 – 4:30 PM

AIIDE-05 Demonstrations Program

3:15 – 3:45 PM

Session Chair: Brian Magerko

Unscripted Narrative for Affectively Driven Characters

Sandy Louchart, University of Salford; Ruth Aylett, Heriot-Watt University; Joao Dias and Ana Paiva, INESC-ID/Instituto Superior Técnico—Tagus Park

3:45 – 4:15 PM

Dialogue Generation in Character-based Interactive Storytelling

Marc Cavazza and Fred Charles, University of Teesside

4:15 – 4:30 PM

Break (Coffee Service)

4:30 – 5:00 PM

Session Chair: Magy Seif El-Nasr

Natural Noun Phrase Variation for Interactive Characters

Donna K. Byron, Aakash Dalwani, Ryan Gerritsen, Mark Keck, Thomas Mampilly, Vinay Sharma, Laura Stoia, Timothy Weale, and Tianfang Xu, The Ohio State University

5:00 – 5:30 PM

Quagents: A Game Platform for Intelligent Agents

Christopher Brown, George Ferguson, Peter Barnum, Bo Hu, and David Costello, University of Rochester

7:30 – 9:00 PM

Session Chair: Michael Young

Invited Panel: Artificial Intelligence for Serious Games

Panelists: W. Lewis Johnson, Center for Advanced Research in Technology for Education (CARTE), USC / Information Sciences Institute; Brian Slator, Computer Science and Operations Research, North Dakota State University; and Jan Cannon-Bowers, School of Film and Digital Media, University of Central Florida

Friday, June 3

9:00 – 10:00 AM

Session Chair: John Laird

Invited Talk: Blending Real Intelligence with Artificial Intelligence

Chris Crawford

10:00 – 10:15 AM

Break (Coffee Service)

10:15 – 10:45 AM

Session Chair: Chris Darken

Hierarchical Parallel Markov Models of Interaction

Robert Zubek and Ian D. Horswill, Northwestern University

Thursday – Friday, June 2–3

Friday, June 3

10:45 – 11:15 AM

Speaking with Your Sidekick: Understanding Situated Speech in Computer Role Playing Games

Peter Gorniak and Deb Roy, MIT Media Laboratory

11:15 – 11:30 AM

Break

11:30 AM – 12:00 PM

Session Chair: Michael Mateas

Agent Architecture Considerations for Real-Time Planning in Games

Jeff Orkin, Monolith Productions, Inc.

12:00 – 12:30 PM

Hierarchical Plan Representations for Encoding Strategic Game AI

Hai Hoang, Stephen Lee-Urban, and Héctor Muñoz-Avila, Lehigh University

12:30 – 2:00 PM

Lunch (No sponsored event)

2:00 – 3:00 PM

Session Chair: Ian Davis

Invited Talk: Spatial Competence

Damian Isla, Bungie Studios

3:00 – 3:15 PM

Break

3:15 – 3:45 PM

Session Chair: Michael Young

Increasing Replayability with Deliberative and Reactive Planning

Michael van Lent, Mark O. Riedl, Paul Carpenter, Ryan McAlinden, and Paul Brobst, University of Southern California / Institute for Creative Technologies

3:45 – 4:15 PM

A Goal-Based Architecture for Opposing Player AI

Kevin Dill, Blue Fang Games; Denis Papp, TimeGate Studios, Inc.

4:15 – 4:30 PM

Break (Coffee Service)

4:30 – 5:00 PM

Session Chair: John Laird

nuWar: A Prototype Sketch-Based Strategy Game

Greg Dunham, Ken Forbus, and Jeffrey Usher, Northwestern University

5:00 – 5:30 PM

Negative Behavior Space in the Design of Interactive Agents

Bill Tomlinson, University of California, Irvine

Exhibits & Demonstrations

Exhibit Program

The exhibits will be in the Sierra room on the lobby level of the Marriott, Wednesday, June 1 – Friday, June 3 during the following hours:

Wednesday, June 1	1:00 PM – 8:00 PM
Thursday, June 2	10:00 AM – 6:00 PM
Friday, June 3	9:00 AM – 12:00 PM

Exhibitors

TABLE #1

BGT BioGraphic Technologies
3981 St. Laurent, Suite M1
Montreal, QC Canada H2W 1YJ
514-844-5255
Contact: Paul Kruszewski, pkruszewski@biographictech.com

TABLE #2

Morgan Kaufmann Publishers
500 Sansome Street, Suite 400
San Francisco, CA 94111
415-392-2665
Contact: Brian Grimm, b.grimm@elsevier.com

AIIDE-05 Demonstrations

The Demonstrations will be held in the Sierra room on the lobby level of the Marriott, Wednesday, June 1 and Thursday, June 2 during the following hours:

Wednesday, June 1	4:15 – 8:00 PM
Thursday, June 2	1:00 – 4:30 PM

The AIIDE-05 Demonstrations showcase advanced AI techniques and technologies in the context of interactive digital entertainment applications. These demonstrations give researchers an opportunity to show their research to both peers and commercial developers. This year's demonstrations include advanced scripting tools, herd movement, real-time and evolutionary learning, a language training tool, multiple interactive drama systems, and a logic-based action language. System builders will be on hand to present their work, and audience interaction with the systems is encouraged as much as possible.

TABLE #D1

Adding Smart Opponents to a First-Person Shooter Video Game through Evolutionary Design
Simon D. Levy, Lee University and C. Adam Overholtzer, Washington University

We demonstrate a first-person shooter video game made more fun and challenging by replacing hard-wired opponent behavior with behaviors evolved via an evolutionary algorithm. This approach yields a level of play more fine-tuned to individual skills than one using pre-programmed levels or more opponents.

TABLE #D2

Controlling Unreal Tournament 2004 Bots with the Logic-based Action Language GOLOG
Stefan Jacobs, Alexander Ferrein, and Gerhard Lakemeyer, RWTH Aachen

The demonstration shows an application of the logic-based action language Golog to control game bots for the interactive computer game Unreal Tournament 2004 as an alternative to the state of the art state machine approach. We show that although the perception is restricted in contrast to the omniscient Unreal bots our Golog bots are competitive in this domain.

Demonstrations

Table #D3

The Interactive Drama *Façade*

Michael Mateas, Georgia Institute of Technology and grandtextauto.org, and Andrew Stern, InteractiveStory.net and grandtextauto.org

Façade is an artificial intelligence-based art/research experiment in electronic narrative—moving beyond traditional branching narrative to create a fully-realized, one-act interactive drama. During an evening get-together that quickly turns ugly, you, the player, using your own name and gender, become entangled in the high-conflict dissolution of your friends' marriage.

Table #D4

Real-time Learning in the NERO Video Game

Kenneth O. Stanley, Thomas D'Silva, Ryan Cornelius, Aliza Gold, and Risto Miikkulainen, The University of Texas at Austin

NeuroEvolving Robotic Operatives (NERO) is a new genre of video game made possible by a novel machine learning technology called real-time NeuroEvolution of Augmenting Topologies (rtNEAT). rtNEAT evolves increasingly complex neural networks in real time, as the game is being played, allowing agents to learn through interacting with the player.

Table #D5

Real-time Simulation of Herds Moving over Terrain

Joel Gompert, University of Nebraska-Lincoln

We present a method for animating herds of animals to follow terrain surfaces in real time. This method involves making modifications to Reynold's boids algorithm. They produce naturally behaving herds that follow the terrain, swerving around hills and attempting to reduce energy expenditure.

Table #D6

ScriptEase—A Demonstration of Ambient Behavior Generation for Computer Role-Playing Games

Maria Cutumisu, Matthew McNaughton, Duane Szafron, Thomas Roy, Curtis Onuczko, Jonathan Schaeffer, Mike Carbonaro, University of Alberta, Edmonton, Canada

ScriptEase is a visual tool that enables game designers to easily create interactive stories for computer role-playing games without using a scripting language. This demonstration illustrates how ScriptEase ambient behavior patterns can generate complex non-repetitive cooperative as well as individual ambient behaviors for NPCs in the Neverwinter Nights game.

Table #D7

The Tactical Language Training System

W. Lewis Johnson, Hannes Vilhjalmsson, and Prasan Samtani, USC/Information Sciences Institute

The Tactical Language Training System (TLTS) provides rapid training in a foreign language and culture through AI-enhanced story-driven gaming, task-oriented spoken language instruction and intelligent tutoring. Trainees learn skills necessary to carry out a civil affairs mission, where they must enter a town, establish contact with local people, meet the local leader and arrange for postwar reconstruction. Trainees carry out the mission by speaking with AI characters in a simulated world, using a microphone and dialing gestures with the mouse.

Table #D8

The Trial The Trail, Act 3: A Virtual Reality Drama Using Intelligent Agents

Stuart C. Shapiro, Josephine Anstey, David E. Pape, Trupti Devdas Nayak, Michael Kandefer, and Orkan Telhan, University at Buffalo, The State University of New York

The Trial The Trail is an interactive, immersive VR drama. Imagine Tarkovsky's Stalker, crossed with Alice Through the Looking Glass, crossed with Monty Python and the Holy Grail. You will embark on a journey through this warped yet familiar landscape, guided by Patofil and Filopat, two intelligent agents.

General Information

Banking

An ATM machine is located in the business center located on the lobby level of the Marriott. It is available 24 hours.

Wells Fargo Bank is located across the street from the Marriott on Washington Boulevard. It is open 8:00 AM – 5:00 PM, Monday through Friday.

Business Centers

The following business centers are available in the area:

Marriott Business Center
Lobby Level
Open 24 hours

Kinko's/FedEx
4350 Lincoln Blvd
Marina del Rey, CA 90292-6302
310-827-2297
Fax: 310-827-9187
E-mail: usa1015@fedexkinkos.com

Internet Access

AAAI has negotiated a discounted rate of $5.95 per 24-hour period for high-speed internet access in the guest rooms. Please inquire at the hotel front desk to take advantage of this offer.

Shipping

The Marriott provides shipping services either through FedEx, UPS, or DHL. The hotel has envelopes and boxes available at the security department. A credit card is required for those who do not have an account with the aforementioned couriers.

Kinkos/FedEx
4350 Lincoln Blvd
Marina del Rey, CA 90292-6302
310-827-2297
Fax: 310-827-9187
E-mail: usa1015@fedexkinkos.com

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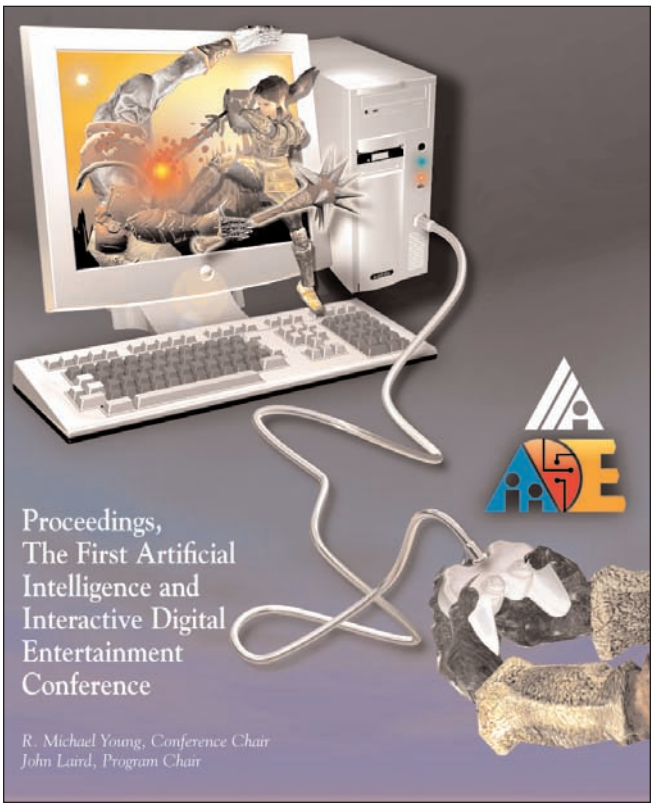

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$30.00 (special onsite rate for AAAI members)

(plus California sales tax)

(post conference price is $45.00)

HURRY! Offer expires at close of AIIDE-05 registration.