Artificial Intelligent and Interactive Digital Entertainment
www.aiide.org

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Conference Sponsor and Supported by AAAI
(Carl Hamilton & Keri Harvey)
AI and Interactive Digital Entertainment?

- Great environments for AI research
  - Many traditional research problems arise
  - Unique research problems: Interactive drama
- AI is becoming very important in computer games
  - Few concepts from academic AI actually used
  - But more and more academics are going into game industry

“Game AI Programming should not be confused with academic AI programming and research: game programming has little use for developments in this area of study. Although both areas do borrow from each other from time to time, they are usually considered distinct disciplines.” wikipedia/answer.com`
Where does AIIDE fit?

- E3 [70,000]
- GDC [10,000]
- AAAI Spring Symposiums on AI and Interactive Entertainment [60]
- AIIDE [3000]
- AAAI [1,000]
Details

June 1-3, 2005
Marina del Rey, CA
120 Attendees
50/50 Academic/Industry
Proceedings available through AAAI

Committee Chairs
R. Michael Young (General)
Ian Davis (Publicity)
John Laird (Program)
Michael van Lent (Local Arrangements, Demos & Exhibits)

Corporate sponsors
Electronic Arts
Microsoft
Navus
USC Institute for Creative Technology
Soar Technology
Mad Doc Software

Program
44 paper submissions
24 accepted for presentation
6 invited speakers
1 panel on “AI for serious games”
Schedule

• Three Days of Single Track
  • Accepted papers: 30 minutes
  • Invited talks: 60 minutes
  • Demonstrations and Exhibits
  • Evening Banquet and Talk: Bing Gordon

• Topics:
  • Learning for Game Characters
  • Interactive Drama Generation, Direction & Management
  • Natural Language, Speech, & Dialogue for Characters
  • Architectures for Various Game Genres
  • Cooperative Pathfinding
  • Autonomous Camera Control
  • Gameplay Analysis
Cool System Demo: Façade

- [http://www.interactivestory.net/](http://www.interactivestory.net/)
- Michael Mateas, Andrew Stern
Invited Talks

- Doug Church
  - AI challenges in Entertainment and Player Expression
- Will Wright (Maxis)
  - AI : A Design Perspective
- Bing Gordon (EA)
  - The Turing Test for Game AI
- Jonathan Schaeffer (University of Alberta)
  - Interactive Story Writing Using ScriptEase
- Chris Crawford
  - Blending Real Intelligence and Artificial Intelligence
- Damian Isla (Bungie Studios)
  - Spatial Competence
1. Maximize the ratio of internal complexity to perceived intelligence.
2. The player will build an internal model of your system. If you don’t help them build it, they’ll probably build the wrong one.
3. The flow of information about a system has a huge impact on the player’s perception of it’s intelligence.
4. From the player’s point of view there is a fine line between complex behavior and random behavior. Visibility of causal chains usually makes the difference.
5. Mimicking human intelligence and maximizing the intelligence of an artificial system are 2 very different tasks.
6. There are many applications of AI in games that don’t involve Opponents, Avatars or even human-like intelligence.
7. Building a system that collects and reflects natural intelligence is far easier than replicating that intelligence.
8. Building a robust, internal model of the player can have huge potential value.
9. Static data in games represents lost opportunity. We should be attempting to automate the intelligence that created that data when feasible.
The Madden Test (of game AI)

- 1985: “That’s not football!”
- 1990: “I’d fire the coach!”
- 1995: “What are those guys doing?”
- 2000: “Rookie, you’re cut!”
- 2005: “That’s the way I designed it!”
Future Plans

• Second AIIDE Conference
• June 13-16, 2006
• Marina de Rey, CA
• Tutorials
  • For academics: game engines, scripting languages, etc.
  • For industry: AI techniques: planning, architectures, learning,
• More time for networking…
  • No evening sessions
Halo Environment Representation

How do we represent the environment to the AI?
An important constraint: as few restrictions as possible on the form the geometry can take
  • The environment artist’s time (and artistic freedom) is precious
Environment Representation

Halo2: **navigation mesh** constructed from the raw environment geometry

- CSG “stitching in” of static scenery
- Optimization
- “sectors”: convex, polygonal, but not planar
“Hi, My name is SuperBear. What’s your name?”

Text-to-Speech

Infrared

ID42 == “SuperBear”
Query (name)
Doug Church: AI Challenges in Entertainment and Player Expression

- Changing landscape in games space
  - Market, Development, Gaming, Fidelity, Players

- Relevance of AI to games
  - Entertainment, business models, …

- What are the main challenges for AI to have impact?
  - Need better development tools (middleware)
  - Blend AI systems behaviors and “script-like” entertainment elements...
  - Risk: need manageable steps, solid path

- Opportunities:
  - Take gaming big moments back from the movie people, make them interactive
Bing Gordon (EA)
The Turing Test for Game AI

• How important is AI to games right now?
  • Not much – only mentioned ~ 30% in reviews
    • Positive: Challenging Opponent
      – Dynamic adjustments
      – Satisfying mistakes
      – Coordinated attacks/retreats
    • Negative: Too easy/dumb
      – No cover
      – “Money plays”
      – Low awareness
      – “Deer in headlights”

• Proposed Turing Test for AI
  • Judge human vs. AI in game behavior: 80 respondents
  • Pathing, Reaction, Timing, Effectiveness, Orientation, Awareness
Damian Isla
“Dude, where’s my Warthog?”
From Pathfinding to General Spatial Competence

- Environment Representation
- Spatial Feature Extraction
- Beyond Navigation Graphs – reasoning about space
  - What are relevant places: zones – areas – positions
- Object Representation
  - Inherent properties
  - Volume
  - Spatial Features
- Spatial Relations and Groupings
- Multiple Reference Frames
The Halo Approach

- AIs are given a “playground”, within which they are allowed to do whatever they want.
- The designer defines the flow of battle by moving the AI from one playground to another.
- **The designer’s time is precious**
- Relatively little spatial information is explicitly entered by the designers.