

Utilizing Natural Language Dialogue in Video Games

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Agents, our loveable friends

- Reasons for failure (courtesy of Dr. Eric Horvitz, Oct. 2002)
 - Lack of any AI – testers claimed the Bayesian filtering was too hard to test and so it was made dumber.
 - Business Applications are not supposed to be like cartoons
 - Too many interruptions to the user



Returning to Agents: Dialogue in Video Games

- Dialogue system acts as the “script” / storyboard behind the game.
- The world of the video game is a naturally limited domain.
- Adds the ability to have more immersive player to game character (AI Agent) interactions. (Role-Playing, Adventure, Action, Sports).
- Also useful to control other objects or characters in the game while hands are busy. (flight simulators, real-time strategy, etc.)

Interaction methods in virtual worlds with Spoken Dialogue.

- Scott Glashan defines four methods
 - Proxy
 - Divinity
 - Telekinesis
 - Interface Agent

General requirements for believable agents (courtesy of Oz project at CMU – 1995-2002)

- Agents must have believable social behavior.
- Agents must have emotional reactions to their experiences.
- Agents must be able to have dynamic social relationships that affect the agent’s social behavior.
- Agents need to be competent at working towards multiple goals simultaneously.

Requirements for believable agent dialogue

- Agent must be clear at to whether it is talking or listening, whether to another agent or to a human. (Visual Feedback)
- Object Focus must vary accordingly with the scene and task at hand.
- Need proper discourse modeling

Limitations from the past (1995)

- Not yet able to do discourse modeling – cannot ask agent to apply a previous action to another object or undo their previous actions.
- Characters need beliefs, capabilities, choices, and commitments.

Games today

- About one dozen utilize speech recognizers.
 - for simple command and control tasks only.
- Game Developers are not necessarily aware of the limitations of just using a speech recognizer and Text-to-speech engine without a dialogue manager. None currently utilize NLP dialogue.
- Fonix's recognizer part of XBOX XDK
- Scansoft's recognizer is available for the Playstation 2.
- Tom Clancy's Ghost Recon, and Konami's LifeLine have received very favorable reviews.

In 2004, we are not limited

- We can do discourse modeling, with undo features (direct control of FSA), and ask about other objects and characters that are not in focus.
- Behavior modeling for characters can also be done within the dialogue – the dialogue will “define their personalities.”

Challenges for dialogue in Video Games

- To create a more immersive environment, but still have proper and graceful fallback handling in case the speech recognition fails. Can't simply say “I don't know what you are trying to say. Please start over.”
 - Requires context awareness for error recovery.
- Dialogue must be integrated early on in the game design process
- Must keep track of the state of the world (game state) to insure proper context sensitivity, and personalities changing as time progresses in the video game.

Interactive Drama

- Interactive Drama takes drama as the narrative guide.
 - Interactive drama wants player interaction to shape the path and outcome of the story, while maintaining a tight, author given story.
 - We want first person immersion into a story.
- Both the *Character* and *Story* are necessary to provide dramatic experiences.
- Story and Interaction are opposed goals.

Dialogue enables Interactive Drama

- With proper discourse (dialogue) modeling, we can create Player-constructed narratives.
 - How do we need to model dialogues for Interactive Drama?
 - Michael's ABL behavior modeling language is very similar to Ariadne's ADL dialogue modeling language. (for a future talk / technical comparison).
 - The dialogue becomes the story graph.
- Script writing and dialogue design go hand in hand.