



PEDAGOGICAL AGENTS PANEL

Bill Swartout

USC Institute for Creative Technologies

BACKGROUND

- BASIC Instructional Program (BIP) with Avron Barr
- PI for Ada and Grace, Coach Mike (with Chad Lane, David Traum, Diane Piepol & Jacki Morie)

PERSONAL ASSISTANT FOR LIFE LONG LEARNING (PAL3)

- Project Goal: Create a personal agent that can mentor a sailor (ultimately) throughout his career
- Uses Learning Record to understand context
 - What sailor knows
 - Where he is going and what will be expected
- ONR funded
- Collaboration with Memphis (Art Graesser) and Kurt Van Lehn (ASU)

WHAT'S NOVEL?

- Life Long Learning Model for transition between learning environments
 - Very few current systems use any persistent model at all
 - Of those that do, limited to single task domain over a semester (or so)
 - Even fewer (none?) accompany the learner into the workforce
- Use of embodied, pedagogical agents on a persistent, extended basis
- Address issues in decay of knowledge and skills
 - Largely uncharted waters for tutoring systems



THINKING ABOUT TODAY

IMPROVING PEDAGOGICAL AGENTS

- Three encouraging trends
 - Richard Mayer's principles: methodical exploration of space of capabilities
 - Noah Schroeder's meta analysis
 - Michelle Perry & James Lester: improvements suggested by studying how people interact

CONTEXT

- Critical in understanding results of studies (but often implicit)
 - Richard Mayer's Image Principle vs. Embodiment Principle
 - Failure to understand context can lead to over-generalization
- Often not dealing with monotonic space
 - Example: Uncanny Valley
- Published papers could be improved to provide more context for meta analysis

NEXT STEPS

- Wizard of Oz experiments
- Exploit studies of master teachers
- Related to Samantha's talk: Don't just think of pedagogical agents as approximate substitutes, instead ask how they can do better than people: example SimSensei

SIMSENSEI

- Virtual “Intake Nurse” for PTSD and Depression
 - Computer vision
 - Voice tracking
 - Speech recognition



SimSensei video removed

SIMSENSEI: SUBJECT TESTING

- Non-verbal communication (gestures, head nods, etc) build rapport, encourage conversation
- Because SimSensei is computer-based, subjects do not fear judgment
- Potentially creates a “sweet spot”
- How could this idea be exploited in learning systems to combat
 - Gender bias
 - Math phobia
 - Poor self image
 - Etc