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Intelligent Story Architecture for Training (ISAT)

Project Update and Demonstration

Brian Stensrud

27th Soar Workshop
May 23, 2007

Agenda

- Project Overview
- The ISAT Director (Soar component)
- Upcoming Evaluation
- Nuggets/Coal
- Demonstration
- Questions

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Project Team

- ## Soar Technology

  - Cory Dunham (Integration)
  - Lisa Scott Holt (Principal Investigator)
  - Anne Murphy (HCI consultant)
  - Doug Reece (Project Manager)
  - Ann Marie Steichmann (Integration)
  - Brian Stensrud (Principal Investigator)
  - Robert Wray (Scientific consultant)

- ## Michigan State University

  - Brian Magerko (Principal Investigator)
  - Ben Medler (Authoring Tool development)

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Project Overview

- **Goal**
  - Improve effectiveness of game-based training systems by dynamic adaptation of scenario to meet training needs and engagement goals
- **Approach**
  - Introduction of an embedded *director agent* capable of dynamically manipulating the training scenario in support of **satisfying training needs** and **maintaining scenario engagement**
  - Provide the non-programmer trainer an easy-to-use, graphical tool for authoring training content offline
- **Current Domain:** Combat Medic Training
- **Current Simulation:** Tactical Combat Casualty Care (TC3)
  - FPS-style combat medic simulation
  - Developed by Engineering and Computer Simulations (ECS)

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High-level ISAT Architecture

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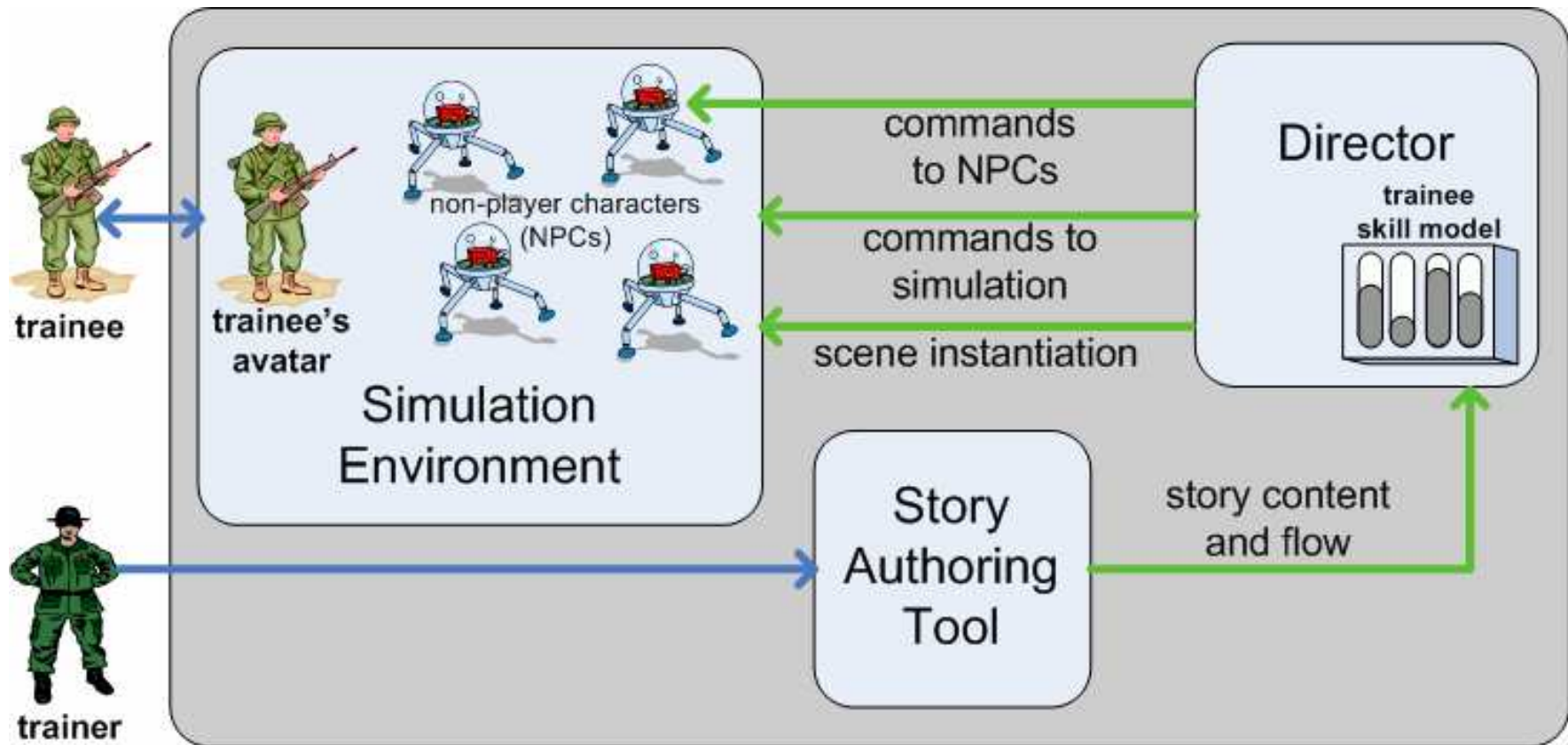
ISAT Director

- Functions
  - Implements scenario plot as authored by the story authoring tool (**story direction**)
  - Monitors the actions of the trainee and maintains numerical scores representing their proficiencies at each of a number of skills (the **skill model**)
  - Executes actions in the world in response to trainee skill error (**skill-based direction**)
    - Influenced by the state of the skill model (**scaffolding/fading**)
  - Executes actions in the world in response to unexpected trainee behavior **(reactive direction)**
  - Directs the content of the training scenario to maximize trainee exposure to relevant training content (**scene selection**)

- Operates by executing commands within simulation
  - Actions for non-player characters (NPCs)
  - Creation of new characters, objects
  - Modification of the environment
  - (anything available)

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Evaluation

- To be conducted in early June

- Goals of evaluation
  - Receive feedback on defining features of the agent, specifically skill-based direction
    - Does the director help the trainee identify that he as made a skill error?
    - Does the trainee know how to respond appropriately to the feedback?
  - Will be performed using MSU medical students

- Pilot study
  - Volunteers?

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Nuggets/Coal

- Working prototype and demonstrator (I hope)
- Concept of an embedded director agent is applicable in a variety of domains
- Significant interest in the technology from potential funding sources
- Upcoming evaluation should provide useful feedback going forward
- Visualization tool (under development) can contribute to AAR, a significant component of training

The version of the TC3 we are working with is not yet a finished product

- Under development: Not yet a full-featured training simulation
- Limited integration with director

Schedule slip

- Dynamic scene instantiation
- Preemptive direction
- Debugging capability

Benefits to training still unclear

- e.g. vs. classic ITS system

Limited attention to engagement

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Demonstration – Preview

- Trainee is the combat medic of an Army squad
- An IED explosion in a marketplace has resulted in several casualties within the squad
- Trainee must navigate the area and perform triage on the existing casualties, and execute correct treatment

- What the Director is doing
  - Executing the plot of the scene (story direction)
  - Responding to trainee skill errors through actions in the environment (typically through voice)
  - Maintaining a skill model of the trainee
  - Responding to trainee 'behavior errors' (reactive direction), as needed, also through actions in the environment

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