NDEP
NATIONAL DEFENSE EDUCATION PROGRAM
BUILDING AMERICAN STRENGTH IN SCIENCE AND ENGINEERING

Sgt. Star
A Virtual Human Interacts with People

Los Angeles, CA (Institute for Creative Technologies –Army)–The Army has developed one of the most advanced virtual humans in the world, Sergeant Star. He is a life-size virtual soldier that engages in real-time conversation and gives information about the Army. The goal is to provide people with an immersive interactive experience so they forget that they are interacting with a virtual character.

"When someone meets Sgt. Star, our goal is really to have them drop their disbelief."

Diane Piepol, project director

Framework	Standards	
Middle School	STL - 2.M ➤	Technological systems include input, output, and feedback.
	STL - 8.F ➤	There is no perfect design.
	STL - 17.H ➤	Communication systems transfer information from machine to human and human to machine.
	STL - 17. J ➤	Messages are designed.

Content Illustrated

➤ Models are used to communicate and interact with humans.

Content

Technology
➤ Conversational exchanges between Sgt. Star and a person are in real time. A database for questions and responses allows the virtual human to have real, immersive conversations.
➤ Sgt. Star answers around 145,000 questions per month. He is correct about 95 percent of the time.
➤ Sgt. Star is rear-projected through a TranScreen. The projection is life-size and looks a lot like a hologram. Sgt. Star appears to breathe and look you in the eye.
➤ The Sgt. Star system can travel across the country in vans.
➤ Sgt. Star is based on reference captures of a real person and applied to texture maps to create a realistic 3-D projection.

Engineering
➤ Designers decide whether to build virtual characters completely from scratch or model them from real people.
➤ To create a character, the designers take high-resolution 3-D reference captures of the head and body of the person being modeled. The person is also photographed so that a texture map can be applied to the character. The images are turned into a computer character using geometry.
➤ A collection of realistic movements and animations are created and stored in a database where they can be applied to the character. This allows the character to move, talk, and act realistically.

Math
➤ Graphical information is turned into a geometric map.

Guiding Questions

➤ What qualities does Sgt. Star need to have to convince you that he is a real person?

Suggested Activities

To think about as you watch:

➤ Discuss the kinds of questions you'd like to ask Sgt. Star.

➤ Discuss what other virtual humans you think should be made and why.

Keywords

animation, database, enhanced night vision goggles, hologram, immersive, rear screen projection, reference capture, texture map, TranScreen, virtual human

➤ *Sgt. Star* can be found online at www.ndep.us/Sgt-Star. Visit www.ndep.us/LabTV for a list of process skills modeled in webisodes.