



Medical Diagnosis Training with Virtual Patients and Instructors

Virtual Experiences Research Group

University of Florida

Computer Information Science and Engineering

OVERVIEW

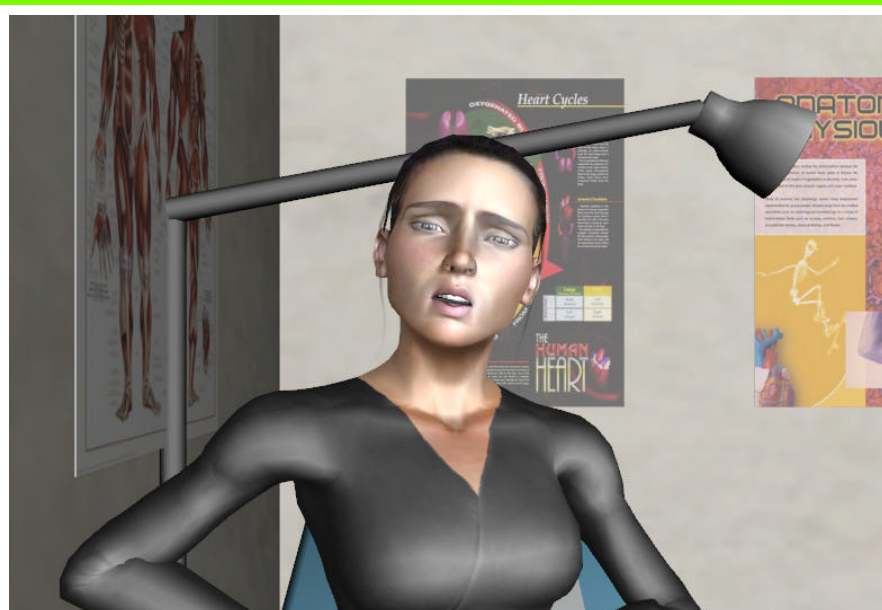
We are exploring using virtual characters to help educate patient-doctor communication skills. Our current system allows medical students to interview DIANA, a virtual patient. Students interact with DIANA naturally using speech and gestures. A virtual instructor, VIC, provides immediate feedback on the student's performance.

CHALLENGE

- Developing virtual characters that:
 - Appear life-size
 - Understand a limited set of natural language
 - Are able to interpret limited movement of the student
- Developing systems that measure verbal and non-verbal interpersonal communication skills.



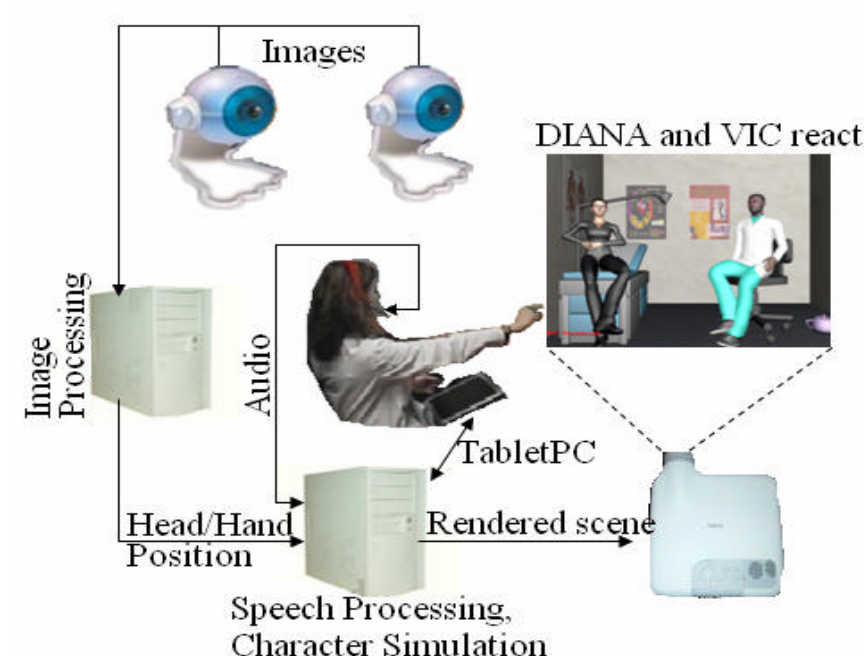
A medical student interviews DIANA. The student points to DIANA and asks if it hurts where he is pointing.



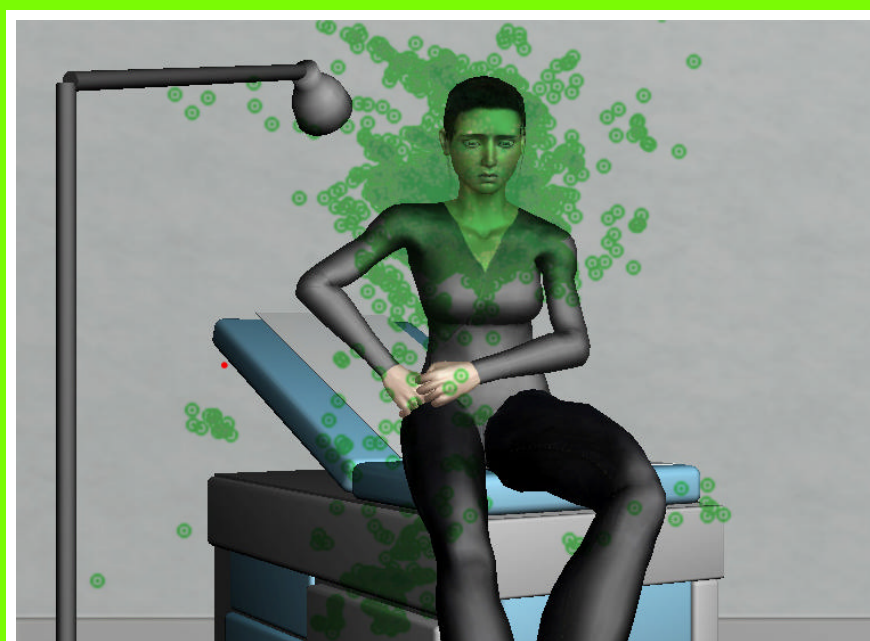
DIANA, the virtual patient, complains of acute abdominal pain.

APPROACH

Our system uses data projectors to present life-sized virtual characters to the medical student. The student speaks to DIANA through a microphone. Speech is matched to appropriate responses created by teaching faculty at the University of Florida, Shands Hospitals. Hand tracking allows the user to interact with the virtual characters using natural gestures such as pointing and hand shaking. Head tracking allows rendering from the perspective of the user, as well as approximate measurement of head and gaze behavior.



System Overview: The system uses COTS components and has a total cost of less than \$10000.



Head tracking data shows where the medical student is looking during the interview.

Research Sponsors

University of Florida, CISE Department
Medical College of Georgia
College of Medicine Chapman Education Center

University of Florida CISE Team Members

Benjamin Lok, *Ph.D. Assistant Professor*
Kyle Johnsen, *Ph.D. Student*
Andrew Raji, *Ph.D. Student*
Robert Dickerson, *Undergraduate Student*

Other Team Members

University of Florida, College of Medicine
D. Scott Lind, *MD*
Amy Stevens, *MD*
Marc S. Cohen, *MD*
Margaret Duerson, *Ph.D.*
Juan Cendan, *MD*
Jonathan Hernandez, *Medical Student*

University of Florida, College of Education
Richard Ferdig, *Ph.D., Assistant Professor*
Meredith DiPietro, *Ph.D. Student*
Sebastian Foti, *Ph.D.(UF Foundation)*

Medical College of Georgia
Peggy Wagner, *MD*
Ruth Fincher, *MD*

University of North Carolina at Charlotte
Min Shin, *Ph.D. Assistant Professor*
Jonathan Jackson, *MS*

This project uses Haptik, Inc. characters
University of Florida Patent Pending