# *Inventing Virtual Tutors and Clinicians*

*Ronald Cole (President, Boulder Language Technologies Professor, Adam Mickiewicz University, Poznań, Poland)*

This workshop provides the scientific rationale and describes the language and character animation technologies my colleagues and I have developed for use in computer programs that immerse people in multimedia environments with lifelike computer characters to help them learn. The lifelike computer characters we have developed produce accurate visual speech and facial expressions, and are programmed to behave like sensitive and effective tutors and clinician.

The workshop will focus on the theory and research that led to development of five different virtual tutoring and therapy programs. Two of these programs were designed to help children learn. Foundations to Literacy was designed to help kindergarten and first grade children learn to read. My Science Tutor was designed to help third, fourth and fifth grade students improve their understanding of concepts encountered in classroom science investigations. Three virtual therapy programs were designed to help adults with neurological disorders improve their speech and language skills. LSVT VT was designed to help individuals with Parkinson disease improve the intelligibility of their speech. AphasiaScripts and Sentactics were designed to help individuals with aphasia regain their speech production and comprehension skills. In each case, the virtual tutoring and speech therapy programs produced immersive learning experiences and significant learning gains. Clinical trials with the speech therapy systems produced treatment effects similar to those obtained with human clinicians.

The workshop will attempt to:

- Provide the scientific rationale and potential real word benefits of virtual tutoring and therapy systems.
- Describe how human language and character animation technologies are used in the different systems.
- Describe each system, provide a demonstration of the system, and discuss evaluation outcomes.