"Toward intelligent animated virtual tutoring systems: Monitoring of Student Comprehension through Facial Expression Classification."
Ruth Agada, Doctoral Candidate, Computer Science Bowie State University

Tuesday, Oct. 27, 2014 @ 3:30 – 4:45 PM, CSB - Room 210

Ruth Agada is a doctoral candidate of the Department of Computer Science at The Bowie State University, advised by Dr. Jie Yan. Her research interests include computer vision and machine learning the areas of facial expression recognition, multi-view face detection, tracking and recognition, 3D character animation, animated agents for tutoring applications, and hand gesture recognition and animation synthesis. Currently, she has been investigating a holistic features in facial expression data for valence classification. She earned her Bachelors in Computer Science from Bowie State University in 2009 and is currently working on her Doctorate in Science.

Abstract:

This thesis explores methods for detecting emotional facial expressions occurring in a tutor-tutee setting -- the expressions made by the tutee to nonverbally communicate understanding. Three issues were evaluated in the analyses: the comprehension level of the user after interacting with the system, the user's perception of their learning experiences as a result of the embedded animated agent and the affective visualization of the different learning states. Preliminary results show that the condition in which the agent is fully expressive shows a marked increase in the level of comprehension because as we speculated the user is more invested in the software when the agent fully articulates emotion through head movement and facial expression. By examining the variability in facial expressions for similarity in their valence looks at how to classify expressions based on their between class similarities. The novelty in this system is in the engine of the affective model. In recent years examining local features has gained traction for spontaneous expression detection. The local binary pattern is one such technique. In this dissertation a Gaussian distributed adaptive local binary pattern threshold on the statistical relevance of the intensity values in the region of interest to express variability in facial expressions.

Contact Dr. Soo-Yeon Ji (sji@bowiestate.edu) if you have any question.