S&T Campaign: Human Sciences
Human Behavior
Human Variability

Research Objective

• Determine how affective, cultural, and/or social cues cause behavior and/or physiological changes in people
• Extend limitations of traditional experimental psychological science by using ecologically valid yet controlled virtual humans and environments

Challenges

• Determining how to characterize and represent simultaneous measures of participant non-verbal (facial, vocals) and physiological state
• Real-time analysis of cardiovascular measures in response to events in virtual world

ARL Facilities and Capabilities
Available to Support Collaborative Research

• Cardiovascular Psychophysiology Lab (NICO100C for impedance cardiography; CNAP for continuous blood pressure)
• USC ICT Virtual Human Toolkit
• Tobii 300X eye tracker

Preliminary Findings:

• Virtual humans that show inconsistent facial expressions relative to their behavior in a decision making game cause cardiovascular patterns reflective of a threat motivational state (Khooshabeh et al., 2013; 2015)
• Cultural cue of accent is more potent than virtual human facial appearance at causing changes in decision making (Khooshabeh et al., 2014)

Complementary Expertise / Facilities / Capabilities Sought in Collaboration

• Signal processing expertise to integrate across multi-modal channels
• Sensor development to support ambulatory impedance cardiography and blood pressure
• Proxy measures of blood flow that are highly related to biopsychosocial model measures
• For culture research, access to populations that are not available in USA

References: