

=====
Norm Badler

Title:

Simulating human behaviors: instructions, models, and parameterized actions

Abstract:

Recently there has been considerable maturation in understanding how to use computer graphics technology to portray 3D virtual human agents. Unlike the off-line, animator-intensive methods used in the special effects industry, such real-time agents are expected to exist and interact with us "live." They can be represent other people or function in a virtual environment as autonomous helpers, teammates, or adversaries enabling novel interactive educational and training applications. Real people and virtual humans should be able to interact and communicate non-verbally, intentionally or not, through facial expressions, eye gaze, and gesture. We study such issues, including consistent parameterizations for gesture and facial actions using movement observation principles and visual attention and perception models. We developed a Parameterized Action Representation (PAR) that embodies certain semantics of human action and allows an agent to act, plan, and reason about its actions or actions of others. PAR is also designed for instructing future behaviors for autonomous agents and aggregates, and for controlling animation parameters that can individualize embodied agents. Group behaviors are additionally conditioned on agent roles and interpersonal communications. We also design instruction presentation and execution systems to facilitate virtual task training. We just started new projects to author instructions by direct performance.

=====