The Iowa SANTOS Simulation Environment

SANTOS is a physics-based human modeling and simulation (M&S) platform that uses an avatar, a virtual soldier, to reproduce and validate soldier and squad task and mission performance. By using human simulation in lieu of or to supplement live exercise, this human M&S platform substantially reduces the cost and time associated with performance assessment. The platform employs scientific military data collected from decades of military studies and rigorous mathematical and physics models. Predictive capabilities have been implemented in SANTOS to conduct effective trade off analysis and task/mission contingency planning. Santos is used to provide realistic simulation information to the digital humans in a synthetic training environment.

The unique advantage of being a physics-based M&S platform is that it allows for cause and effect. Asking SANTOS to carry a specific load over an extended time, for example, will lead to fatigue calculations, energy expenditures, and an estimate of hydration levels. Adding more gear and equipment will render a restricted mobility, while adding advanced PPE armor will increase his survivability. Developed with artificial intelligence and deep learning modules, the SANTOS platform employs scientific military data from DoD studies such as NSRDEC, USARIEM, AFC DAC, USMC, etc.), it can address issues in synthetic training, human systems integration, and human performance.