

PsychSim: Social Simulation

2000 - Current

Project Leader: David Pynadath



Background

ICT's Social Simulation Lab models and simulates human social interaction within AI systems. Research includes both descriptive models for simulating human-like decision-making and prescriptive models for human-machine teaming with autonomous agents.

Objectives

The core of these models is decision-theoretic AI as a foundation for a theory of mind that can be reused across different domains and use cases. Data-driven algorithms provide an automated mechanism for building and validating social simulations. Abstraction and approximation methods allow the models to scale to larger and more complex social decision-making.

Results

The social-simulation architecture, [PsychSim](#), provides an open-source library of these algorithms. It has been used for large-scale simulations of urban populations (e.g., hurricane response, patterns of life, terrorist attacks) and small-scale human-machine teaming (e.g., search-and-rescue). It has also been applied in interactive training games for urban stabilization (UrbanSim), cross-cultural negotiation (BiLAT), foreign language and culture (TacLang), and avoiding risky behavior (SOLVE).

Next Steps

A new investigation into human-machine teaming seeks to build an AI model of teamwork into PsychSim that can give autonomous systems the social skills to be good teammates when working together with people. Another effort will expand the domains of PsychSim's application to cybersecurity, with descriptive models of attackers and prescriptive models of defenses against them.

Published academic research papers are available from <https://ict.usc.edu/research/publications>

(Search engine keyword: USC ICT Publications)

Project Leader: David Pynadath

Established in 1999, the USC Institute for Creative Technologies (ICT) is a Department of Defense (DoD) University Affiliated Research Center (UARC), sponsored by the US Army. Harnessing Hollywood-derived creativity with academic innovation and military-domain expertise, ICT conducts award-winning R&D in Artificial Intelligence (AI), Computer Graphics, Geospatial Sciences, Human Performance, Learning Sciences, Modeling, Simulation & Gaming, Mixed Reality (MxR), Medical VR, Narrative, and Virtual Humans.