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Distributed Simulation Project Summaries

HLA Gateway and Gateway Continuation

DS is developing the HLA Gateway, a stand-alone software system that translates DIS PDUs to-and-from HLA RTI service calls, using data defined in the Real-time Platform Reference Federation Object Model (RPR FOM).

The HLA Gateway performs the translation with an average latency of 1-2 milliseconds. It has been distributed to over 40 users. Current work on the Gateway includes the following tasks: (1) produce releases of the Gateway to track new versions of the RTI and the RPR FOM; (2) expand the set of DIS PDUs supported by the Gateway; (3) port the Gateway to additional hardware/OS platforms; (4) improve the stability and performance of the Gateway and (5) provide technical support to Gateway users.

Project sponsor: STRICOM

Combat Trauma Patient Simulator

In cooperation with Medical Education Technologies Incorporated (METI), IST is developing and integrating an end-to-end simulation of military casualty handling. Casualties enter the CTPS system after being generated by MILES laser weapons simulation, are transferred to a software patient simulator (JMSL) that holds casualties and simulates their state and then transferred again to the METI Human Patient Simulator (HPS). The HPS provides a mannequin-based

physiological and pharmacological simulation of the patient and allows medical caregivers to treat the patient in a hands-on manner. The components are linked using HLA.

Project sponsor: DoD Live Fire Test Office,
managed by STRICOM

CACIRI Learning Agents

DS is working with the UCF School of Computer Science on a “College and Center/Institute Research Initiative” project. Erol Gelenbe (Computer Science) is testing three automated agent learning algorithms in the context of a simple gridded terrain and has shown both measurable learning and the ability to tune the agents’ performance for various goals by changing parameters to the algorithms.

The three algorithms are (1) stochastic finite state machines; (2) neural nets and (3) reinforcement learning. DS will experimentally integrate one of the three learning algorithms into ModSAF and determine if the learning, and the resulting improvement in performance by the automated agents, can be replicated in that context.

Project sponsor: UCF Office of Sponsored
Research, via the School of Computer
Science

Mission: ■ Be a focal point for the expanding modeling and simulation community ■ Develop and conduct M&S research and related services ■ Identify M&S directions and trends ■ Facilitate moving M&S into new areas ■ Be a research and development access point to industry for technology transfer ■ Create and participate in partnerships ■ Provide an environment conducive for student and faculty participation in M&S research and development ■ Provide continuing education services.

Recently Completed Projects

Integrated Eagle/ModSAF

DS designed and developed algorithms and software to link a constructive aggregate level simulation (Eagle) with a virtual entity level simulation (ModSAF). The two systems are linked by a software module called the SIU (Simulation Interface Unit) that performs aggregation and disaggregation functions.

The current phase of the long-term Integrated Eagle/ModSAF (IEM) long-term project consisted of three tasks: (1) change the SIU to work with ModSAF version 5.0; (2) develop an algorithm to smoothly resolve time-space-position discrepancies for pseudo-disaggregated vehicles; (3) add the capability for pseudo-disaggregated entities to follow roads in entity-level simulation and (4) randomly perturb the locations of pseudo-disaggregated entities to produce more realistic formations.

Project sponsor: TRAC, managed by STRICOM

CFOR & OneSAF

DS reviewed the SAIC automated army ground command entity (AGCE) system, with respect to the automated command entity requirements for OneSAF, as stated in the OneSAF Operational Requirements Document. After completing the review, DS enhanced AGCE software to eliminate shortcomings and in support of including it in the OneSAF baseline. DS is also working

to integrate the AGCE into successive versions of ModSAF in preparation for using it in the OneSAF Testbed Baseline.

Project sponsor: STRICOM

Software Development for C3SIM

IST added new simulation capabilities to C3SIM, a battlefield simulation/playback utility. C3SIM serves as the base of an Army Research Institute (ARI) project in the area of simulating battlefield commanders' performance under conditions of physical and psychological stress.

Project sponsor: ARI

UK DERA Consulting

DS was a consultant to the UK Defense Evaluation Research Agency on issues in the area of linking aggregate and disaggregate simulations. The findings are documented in a series of technical reports.

Project sponsor: UK DERA

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