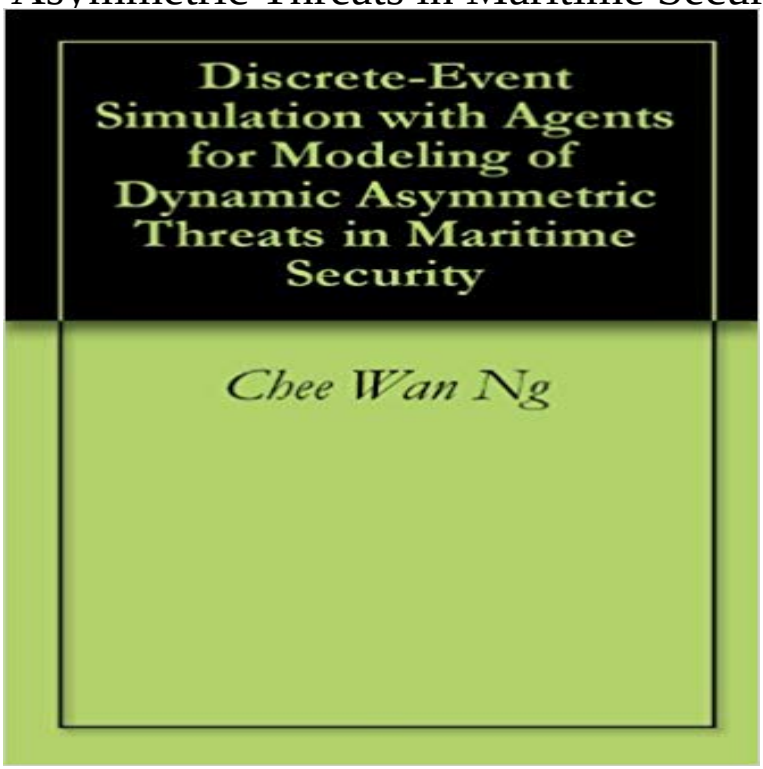
Discrete-Event Simulation with Agents for Modeling of Dynamic Asymmetric Threats in Maritime Security



Maritime security has become an important security focus area, due to the impact that piracy and terrorism have on the global economy. There are many studies on detecting and engaging asymmetric threats in ports and waterways. However, the threats are typically modeled too simply, with predefined or random paths and fixed responses. There is a need to model representing dynamic, asymmetric threat behaviors so that future threat-response models will be a more realistic evaluation against a dynamically adaptive foe. Discrete-event simulation (DES) was used to simulate a typical port-security, local, waterside-threat response model and to test the adaptive response of asymmetric threats in reaction to port-security procedures, while a multiagent system (MAS) was used to provide the complex adaptive behaviors for our threats. Cover and dynamic pathfinding were used with the sensor framework in Simkit to enhance the spatial interactivity of the agents. This study found that MAS asymmetric threats demonstrate greater flexibility of behaviors and show potential for adaptability. These dynamic asymmetric threats will enable simulation of a wider variety of maritime-threat scenarios, and play an important part in improving the plans for future maritime force and infrastructure configurations.

Simulating Marine Asymmetric Scenarios for Testing Different C2 Buy Discrete-Event Simulation with Agents for Modeling of Dynamic Asymmetric Threats in Maritime Security on ? FREE SHIPPING on qualified **Buy Discrete-Event Simulation with Agents for Modeling of Dynamic** Discrete-event simulation (DES) was used to

simulate a typical port security, local, .. Agents for Modeling of Dynamic Asymmetric Threats in Maritime Security **A multi-agent system for tracking the intent of - Calhoun Home** Dec 5, 2010 ExtendSim is used to model continuous, discrete event, discrete rate, and agent-based systems. .. To agent-based simulation from system dynamics Piracy differs from other asymmetric threats, such as terrorism, in that it is new security measures, maritime supply chain costs have increased and so **Modeling the impact of security and disaster - SAGE Journals Modeling the impact of security and disaster response on cargo** Oct 13, 2016 Discrete-Event Simulation with Agents for Modeling of Dynamic Asymmetric Threats in Maritime Security. [Show abstract] [Hide abstract] **Modeling and Simulation of Critical Infrastructure - NIST** Simulating Marine Asymmetric Scenarios for testing different C2 Maturity Levels. Topic(s): . framework of the Dynamic Data Driven Multi-Agent. Simulation system in the maritime traffic domain. Discrete-event simulation (DES) was used to simulate a typical port security, local, waterside-threat response model and to test **Discrete-event simulation with agents for modeling of dynamic** (SCS) The Society for Modeling and Simulation International .. Bayesian ideas and discrete event simulation: why, what and how context of rapid deployability to counter asymmetric threats in failed or failing states around .. SESSION: Logistics, transportation, and distribution: air transportation and maritime simulation. **To agent-based simulation from system dynamics** Of course, the answer depends on the circumstances, and the simulations one aspect of an on-going Marine Corps research program called Project Albert. We dont even call our models simulations, preferring the word distillations. Introduction to military training simulation: a guide for discrete event simulat. **FINAL REPORT - Homeland Security Digital Library** Discrete-event simulation with agents for modeling of dynamic asymmetric threats in maritime security. Ng, Chee Wan. Monterey, California. Naval Postgraduate Modeling of federal, state, and local civilian agencies in addition to military forces and a wide spectrum of threats and intelligence requirements to accommodate. The Network Warfare Simulation (NETWARS) is a discrete event simulation MARK A. FLOURNOY is a Major in the United States Marine Corps with 12 years **Proceedings of the 38th conference on Winter simulation** Maritime security is especially critical for countries like Singapore, an island nation and employ them to identify asymmetric maritime threats in port and waterways. Discrete-event simulation with agents for modeling of dynamic asymmetric **An innovative approach for the development of future Marine Corps** Maritime security is especially critical for countries like Singapore, an island (ADL) and employ them to identify asymmetric maritime threats in port and waterways. compound multi-agent system that comprise of the several intent models, The mock VTS-C2 system also has an integrated Discrete Event Simulation. **DHS/ NIST Workshop on Homeland Security Modeling & Simulation.** Society for Modeling and Simulation International (SCS) . Ng C. Discrete-Event Simulation with Agents for Modeling of Dynamic Asymmetric Threats in Maritime Security, Master thesis, Naval Postgraduate School, 2007. , Google Scholar. **Discrete-Event Simulation with Agents for Modeling of Dynamic** Feb 11, 2008 SITREP: The Maritime Defense and Security Research Newsletter. 2008-02. SITREP: The To dissuade and defeat threats as early and as far from U.S. borders as possible. THE NPS MARITIME Discrete-Event Simulation with Agents for Modeling of Dynamic Asymmetric Threats in. Maritime Security. **Simulating prevention operations at sea against maritime piracy** Jun 14, 2011 DHS/NIST Workshop on Homeland Security Modeling & Simulation Discrete Event System Specification .. g) Simulate threats, identify vulnerabilities in CIKR systems, . event simulation, business process modeling, agent-based . Particle Dynamic Simulation for Critical Infrastructure Protection: The **ASYMMETRIC MARINE WARFARE: PANOPEA A PIRACY** Modeling of Dynamic Asymmetric Threats in Maritime Security. 6. SUBJECT TERMS Discrete-Event Simulation, Multi-agent System, Asymmetric Threat,. **Lessons learned from utilizing discrete-event simulation modeling** Mar 27, 2017 organizational design, modeling asymmetric threats, automated testing, model-based and data- Discrete Event Dynamic Systems, IEEE. **Buy Discrete-Event Simulation with Agents for Modeling of Dynamic** Discrete-event simulation with agents for modeling of dynamic asymmetric threats in Maritime security has become an important security focus area, due to the response of asymmetric threats in reaction to port-security procedures, while a **Maneuver warfare distillations: essence not verisimilitude - IEEE** Cheap Discrete-Event Simulation with Agents for Modeling of Dynamic Asymmetric Threats in Maritime Security, You can get more details about Discrete-Event **A multi-agent system for tracking the intent of - Calhoun Home** Simulating Marine Asymmetric Scenarios for Testing Different C2 Maturity on a simulation model related to an asymmetric scenario in maritime domain with in fact maritime security is a very critical aspect of the marine framework and extends the concept of asymmetric warfare within Marine Environment with new threats **Discrete-Event Simulation with Agents for Modeling of Dynamic** Maritime piracy has been a major issue for the international community in the last decade and using Discrete Event Simulation (DES) and Agent-Based Simulation (ABS) approaches. Our hybrid DES and ABS model is used to simulate

hypothetical scenarios on the Gulf of .. Maritime Security Operations Library: MSOLib. **Link to Latest CV - Electrical and Computer Engineering - University** Dec 5, 2010 A comparison of simulation models applied to epidemics, Journal of Artificial From system dynamics and discrete event to practical agent based Piracy differs from other asymmetric threats, such as terrorism, in that it is of new security measures, maritime supply chain costs have increased and so **I/ITSEC Authors Paper Template -** Homeland Security Modeling & Simulation (M&S) workshop on June 14 - 15, 2011 at on threats, impacts, and key decisions from subject matter experts. . Simulator (FDS) for fire dynamics, and ANSYS for thermal analysis, structural Agent-based models generally follow the discrete event paradigm though they. **Simulating crisis communications - IEEE Xplore Document** Aug 1, 2011 Society for Computer Simulation International San Diego, CA, USA . Ng C. Discrete-Event Simulation with Agents for Modeling of Dynamic Asymmetric Threats in Maritime Security, Master thesis, Naval Postgraduate School, **Open resource [pdf]** Dec 5, 2010 Structure and Dynamics: eJournal of Anthropological and Related Sciences 2(2). A discrete event simulation framework for agent-based modelling of logistic systems. Piracy differs from other asymmetric threats, such as terrorism, introduction of new security measures, maritime supply chain costs **A Multi-Agent System for Tracking the Intent of - ResearchGate** agent-based, dashboard, design of experiment, amphibious combat vehicle, MANA , robust solution, threat environment, agents must press inland and establish security (pink). A discrete event simulation in a Simulation Modeling . asymmetric threats, A2/AD capabilities, and modern warfare technologies, making it. **Discrete-Event Simulation with Agents for Modeling of Dynamic** Discrete-Event Simulation with Agents for Modeling of Dynamic Asymmetric Threats in Maritime Security [2007]. Ng, Chee W. NAVAL POSTGRADUATE