Innovative Serious Games for Extended Marine Domain devoted to Protect Critical Infrastructures

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ABSTRACT

The paper proposes an approach related to design and develop of advanced Serious Games (SG) for training and education applied to the extended maritime framework (underwater, sea surface, coast, air, space and cyberspace) for dual use including defense and protection of critical infrastructures; the author proposes an innovative integration within SGs of Intelligent Agents (IAs) to create challenging scenario. In fact the innovative IAs are able to: interact with real players, replace some of them with computer-controlled entities, react dynamically as the training session progress and give the possibility to analyze the behavior of the virtual crew with an high level of accuracy.

In the last years Simulation Team, DIME University have developed different SG that allow to simulate training operations on safety and security in a realistic environment (i.e. Sibilla for homeland security); several cases where developed for marine domain such as RAMSES (“ReliAble ship Management and Security Enhancement by Simulation based on Serious Games”) and MOIRE (Maritime cOmmonplace ImmeRsive Environments).

Currently the authors are developing a collaboration to create new tools in the context of maritime applications aiming at designing and developing a training solution based on SG for flexible collaborative operations.

The authors are currently testing scenarios when traditional assets such as boats, vessels, helicopters as well as vans and people are interacting dynamically with Autonomous Systems in the Extended Maritime Framework. In the current scenario UAV (Unmanned Aerial Vehicles) are present both with fixed and rotary wing; these element are simulated as well as UGV (Unmanned Ground Vehicles) and AUV (Autonomous Underwater Vehicle). Obviously the use of IAs is fundamental to direct these elements and to populate the scenario with active entities. The paper aims to present an example of development of a new generation SG able to improve training effectiveness in complex operations management that required multi-users coordinated capabilities.

The final paper will include description of the operational modes applied to port protection from asymmetric threats and experimental results obtained.
References in this Area


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