Using Autonomous Agent-Based Systems to Counter Asymmetric Threats from Non-State Sponsored Terror Organizations

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Abstract

Over the next two decades the United States is likely to see an increase in the number of asymmetric threats from non-state sponsored terror organizations (e.g. al-Qaeda). As US and Coalition operations in Afghanistan draw to a close, current tactics used in the War on Terror will inevitably shift from primarily kinetic to non-kinetic. Currently, US forces have a wide variety of tools at their disposal with which to conduct non-kinetic operations but many of these tools are dated and not designed for the high-tech environment of the 21st Century. We propose an autonomous agent-based system to track terrorist behavior the way that financial behavior is tracked. This would allow teams to have an objective currency for trust transactions. These systems would allow another surface for autonomous agents to integrate the social fabric with information gathered in virtual environments. Further, the system would increase illumination of dark networks engaged in illicit covert activity. Participants would be assigned a score similar to FICO scores; when an individual score falls noticeably or falls below a threshold, further observation and investigation would occur. Better decision-making and situational awareness would result for the distribution of resources in monitoring ongoing terrorist threats. We are conducting a feasibility assessment of building such a system. The results will be discussed in terms of the underlying mathematical modeling and artificial intelligence needed to produce such a system and the use and appropriateness of social network analysis with this type of system.

Introduction

In our paper, we will explore the use of autonomous agent-based systems to counter asymmetric threats from non-state sponsored terror organizations. In future work, we are considering an application of this work with autonomous agents to information assurance and to cyber defense for an alliance. Alliances introduce additional complexity to the problem solution when the goal of a system is to provide assurance and at the same time to be able to defend itself against encounters by its adversaries, requiring not only a solution that works, but a consensus among the alliance's partners to address the problem with a proposed solution.

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