From airports to ocean: Anti-terror patrol randomizing system begins trials in Boston Harbor

April 14 2011

It began with work on randomizing airport security police patrol routines at Los Angeles International Airport while still maintaining the same level of protection. The example spread across the nation, and is now methodically and unpredictably at work in the waters around Boston.

The new PROTECT system schedules the operations of Coast Guard response vessels in a way that make it impossible for observers to predict their activities, while still maintaining the same degree of surveillance.

After months of study, the PROTECT (Port Resilience Operational / Tactical Enforcement to Combat Terrorism) system began a two-month trial around Boston Harbor April 4, 2011.

The motivation, according to a description posted on the website of TEAMCORE, the University of Southern California research group that designed it, is to make best use of limited resources that "prevent full security coverage at all times, which allows adversaries to observe and exploit patterns in selective patrolling or monitoring, e.g., they can plan actions avoiding existing patrols."

PROTECT follows three airport security patrol randomization systems previously developed by TEAMCORE, a unit in the USC Viterbi School of Engineering Department of Computer Science directed by Professor Milind Tambe.

All of the three use computer applications of [game theory](#) algorithms to create schedules that fulfill the same level of law enforcement presence, but do so in such a way that even the closest observer can't predict when or where an airport patrol team or vehicle -- or in this case, a Coast Guard response vessel -- will show up.

According to Craig Baldwin, a senior analyst for the Coast Guard Research and Development Center, the initial phase of the project began in September 2010, when the USC TEAMCORE group began working with Coast Guard officials to fit the ideas in the system, originally developed for airports, to the demands of patrols by Coast Guard response boats.

"The Coast Guard interest is to improve the deterrence effects of its patrol, by implementing an optimized randomized schedule for its activity," Baldwin said.

The testing involves a force consisting of five to ten response boats, plus one coast guard cutter, deployed in the waters around Boston.

"One measure of our success would be that crews were able to maintain schedules as proscribed," and do so without creating organizational problems," said Baldwin. If the test is a success, he continued, the next step will be to take the model "and further evolve it in other ports."

Baldwin said the experience of development going into testing with Tambe's TEAMCORE group had been highly positive. "It's a pleasure to work with Milind's group, " he said. "They are not only academically astute, but able to understand the mission and fold it into their model."

Tambe was equally pleased by the relationship. "The [Coast Guard](#) has given us the opportunity to take our ideas in a new direction, solving problems that are related, but with much different parameters."

More information: TEAMCORE website:
teamcore.usc.edu/projects/security/

Provided by University of Southern California