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# Tech

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## Researchers equip robot with sniper-detecting capability

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By Mark Jewell, The Associated Press

BOSTON — A Massachusetts company best known for its robotic vacuum cleaners is teaming up with Boston University to develop a robot that can locate the source of sniper gunfire.



REDOWL will help in detecting the position of sniper fire.

By Lawrence Jackson, AP

BU researcher Glenn Thoren said the partnership with Burlington-based iRobot Corp., maker of the Roomba vacuum, aims to protect soldiers in places like Iraq by quickly locating snipers so they can either steer clear or fire back.

"These systems are primarily made for gathering and understanding the nature of the threat," said Thoren, director of Project REDOWL, or Robot Enhanced Detection Outpost with Lasers.

But the mobile robot's use of infrared light and lasers to fix on a target also raises the possibility that robots may eventually be armed to use weapons themselves, either autonomously or under human control.

"The decisions on what to do are in the hands of others," Thoren said. "I would be uncomfortable if it had total autonomy."


The sniper-detecting technology is mounted aboard iRobot's track-wheeled, four-

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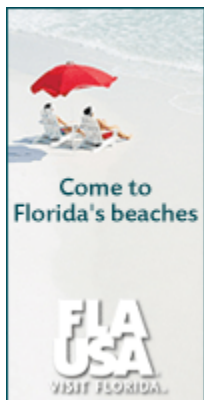
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The sniper-detecting technology is mounted aboard iRobot's track-wheeled, bomb-disarming PackBot, which has already been on thousands of missions in Iraq and Afghanistan, disarming roadside bombs by remote control and searching caves and buildings.

The REDOWL system, funded by the Army and iRobot, pairs optical equipment from Londonderry, N.H.-based Insight Technology Inc. with acoustic sensors from BioMimetic Systems, a start-up firm founded by BU. The devices are built into a book-sized metal box weighing about five pounds that is mounted atop an arm extending from the PackBot.

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The technology was publicly displayed for the first time this week at the Association of the U.S. Army's annual meeting in Washington.

In field tests last month at a firing range, the system was successful 94% of the time in locating the source of more than 150 rounds from 9 mm pistols and M-16 and AK-47 rifles fired from more than 100 meters away, its developers say.

The sensors are designed to ignore background noise and focus on the unique acoustic signature of gunfire, using algorithms to determine the source of shots and differentiate among different types of weapons. After the source is located, the system turns its camera that way, illuminates the source, and uses a laser to determine the range.

Cambridge-based BBN Technologies produces a sniper-detecting system called the Boomerang that is already deployed in Iraq and Kuwait. That system uses acoustic sensors that can be attached to a military vehicle, such as a Humvee.

BBN also hopes to mount the Boomerang to a mobile robot and is teaming up with other firms to give the Boomerang optical capabilities to supplement its acoustic gear, said project manager Dave Schmitt.

While Schmitt said 50 Boomerang systems have been deployed and 50 more are on order, the REDOWL project is at least several months away from deployment.

"The biggest challenge is getting feedback from the users to make sure they have what they need to meet the mission requirements," Thoren said.

He expects sniper-detecting technology will also be useful to police in hostage situations, for example, or for homeland security and border patrols.

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