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Grant Brings Thrills And Excitement To Computer Science Prof

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Reporters and editors: Wheeler Ruml (pronounced RUMM-el) is available at ruml@cs.unh.edu or 603-862-2683 until Oct. 24, 2009.



At Nellis Air Force Base in Nevada, Wheeler Ruml explores a captured MIG-23 fighter jet.

DURHAM, N.H. – Contrary to popular belief, computer science can be thrilling.

Just ask Wheeler Ruml, assistant professor of computer science at the University of New Hampshire and member of the Defense Advanced Research Projects Agency's (DARPA) prestigious Computer Science Study Panel. As part of the year-long program, Ruml has leapt from a paratrooper training tower, witnessed a mid-air refueling of a B-2 stealth bomber from the belly of a U.S. Air Force refueling plane, and gained top-secret security clearance to meet with U.S. intelligence officials.

And from Oct. 25 to 29, 2009, Ruml – one of just 12 junior faculty from around the country selected for the program – will visit the CIA, the National Security Agency (NSA), the National Geospatial Intelligence Agency (NGA), and the Office of the Director of National Intelligence (ODNI) in Washington, D.C. for the final of the program's four field trips. Other trips took him and the other panel members to the Pentagon, a nuclear submarine and an amphibious assault ship in Norfolk, Va.; Fort Bragg in North Carolina; and Edwards Air Force Base in California.

"The idea of this program is to teach us enough about the Department of Defense that we could make meaningful contributions. What problems do they have? How are things done?" says Ruml.

For Ruml, whose research is in artificial intelligence, the trips have helped him understand the structure of the military and think differently about how his work might be useful to the Department of Defense. Meeting military personnel, for instance, gave him insight into designing user interfaces.

"I didn't have a conception that a lot of the heavy lifting in the military is done by 19-year-old guys who didn't go to college," he says.

In addition to these up-close looks at Department of Defense technology, Ruml received a research grant of \$99,220. Later this fall, he'll have the opportunity to propose a project and compete for an additional \$500,000 over two years.

Ruml's research in artificial intelligence concerns algorithms for what are known as shortest-path problems; he describes his work as "planning and optimization and decision-making, particularly practical methods for doing these things." Mapping software like Google Maps uses shortest-path algorithms to quickly determine the shortest path – literally – from the user's starting point to the destination, but Ruml notes that problems with the same underlying mathematical structure are also at the inner workings of robots, from an airplane's autopilot to the automated vacuum cleaner Roomba.

"If a robot is given a goal, like 'clean up my living room,' what should it do next? That's the kind of problem my group works on," he says.

The University of New Hampshire, founded in 1866, is a world-class public research university with the feel of a New England liberal arts college. A land, sea, and space-grant university, UNH is the state's flagship public institution, enrolling more than 12,200 undergraduate and 2,200 graduate students.

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Photographs available to download:

http://www.unh.edu/news/cj_nr/2009/oct/12ruml_01.jpg

Caption: University of New Hampshire computer scientist Wheeler Ruml (right, with Chris Wyman of the University of Iowa) prepares for his leap from a paratrooper training tower, part of his duties as a member of the Defense Advanced Research Projects Agency's (DARPA) prestigious Computer Science Study Panel.

http://www.unh.edu/news/cj_nr/2009/oct/12ruml_02.jpg

Caption: At Nellis Air Force Base in Nevada, Wheeler Ruml explores a captured MIG-23 fighter jet.

http://www.unh.edu/news/cj_nr/2009/oct/12ruml_03.jpg

Caption: As a member of the Defense Advanced Research Projects Agency's prestigious Computer Science Study Panel, Wheeler Ruml witnessed the refueling a B-2 stealth bomber in midair from the belly of the refueling plane.

All are courtesy of Wheeler Ruml.