

THE *Current*

March 7, 2017

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No Robot Is an Island

Robots have become essential for a world in which more people are trying to do more things with greater efficiency. But it's not enough these days to just have a slew of "mindless" automation, especially in applications where humans are involved.

"Several challenges in sensing, distributed decision-making and connectivity maintenance should be addressed to realize the full potentials of these systems, especially when under resource constraints," said [UC Santa Barbara electrical and computer engineering professor Yasamin Mostofi](#). Robots that can sense and adjust to their circumstances, perform complementary tasks and modify their functions according to real-time data are far more effective in a variety of environments than solitary automatons.

Mostofi should know. Her research lies at the boundaries of communications and robotics in mobile sensor networks, where she creates robots that can work in teams, and, more recently, ask for decision-making assistance from human operators.

For her groundbreaking work in this area Mostofi has received the Antonio Ruberti Young Researcher Prize from the Institute of Electrical and Electronics Engineers (IEEE) Control Systems Society (CSS). In her selection for the honor, Mostofi was cited for her "contributions to the fundamentals of communications and control co-optimization in mobile sensor networks."

“We are tremendously proud of Professor Yasamin Mostofi for receiving the Antonio Ruberti Young Researcher Award from the IEEE,” said UCSB College of Engineering Dean Rod Alferness. “Mobile sensor networks show great promise in a range of applications, perhaps most notably in driverless vehicle technology, but they also come with considerable challenges. Professor Mostofi is on the front lines of finding solutions to bring the technology into broad use that benefits society. We’re delighted that a young researcher of her caliber calls the College of Engineering home.”

“I am honored to have received the Antonio Ruberti Young Researcher Prize from the IEEE Control Systems Society,” said Mostofi.

A member of UCSB’s engineering faculty since 2012, Mostofi, along with her research group, has focused on several multi-disciplinary problems that encompass communications and control/robotics in mobile sensor networks. This wide span of research covers topics such as sensing for robot navigation and data collection purposes; robot-human collaboration; and using wireless signal to image through walls or estimate occupancy in a room.

“We envision that unmanned vehicles will become more and more integrated in our society in the near future, helping us achieve tasks that are otherwise too dangerous or cumbersome for humans,” Mostofi said. “Search-and-rescue, emergency response and surveillance, for instance, are all examples of potential applications where a team of unmanned vehicles can help human operators.”

Constant and reliable contact between robots and operators, especially in harsh or unpredictable environments or under urgent circumstances, is essential. “Thus, a foundational understanding of how the nodes should make their sensing, communication and navigation decisions is important for a successful task accomplishment,” Mostofi said.

In addition to the Ruberti Prize, and among other honors, Mostofi has received the Presidential Early Career Award for Scientists and Engineers (PECASE), the National Science Foundation (NSF) CAREER award and the IEEE 2012 Outstanding Engineer Award for Region 6.

The Ruberti Prize is awarded by CSS to recognize contributions by a researcher under the age of 40 in the broad field of systems and control. The award was established in 2005 to honor Ruberti, whose scientific interests in systems and

control were wide-ranging; he was also an early pioneer of geometric control methods for nonlinear systems.

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.