Stevens' Dr. Michael M. Zavlanos Receives NSF CAREER Award For Robot Network Research

EurekAlert

Dr. Michael M. Zavlanos, Assistant Professor of Mechanical Engineering at Stevens Institute of Technology, is a recipient of the prestigious National Science Foundation (NSF) CAREER Award. Supporting the career development of high-achieving faculty in the sciences who show promise of becoming leading researchers and teachers, the CAREER award is one of the NSF's most competitive programs. This award also provides funding to support research activity over the course of five years.

The goal of Dr. Zavlanos' proposed research is to develop formal methods for networks of mobile robots that integrate control in the communication (cyber) and physical (robot) domains. This research will offer a more realistic look at networked robot systems as it jointly addresses important control and networking objectives, such as environmental interference, power management and robot dynamics, that so far have been investigated individually. In effect, the algorithms that Dr. Zavlanos and his team develop stand to revolutionize the way we understand and utilize robot communication networks. This research could also be adapted to impact a host of other networked systems, such as biomolecular networks, power networks, transportation networks, and even social networks.

"This award to Dr. Zavlanos is significant in two respects," says Dr. Michael Bruno, Dean of the Charles V. Schaefer, Jr. School of Engineering and Science. "It is an affirmation that his research in mobile robot networks is leading-edge and relevant to important national needs. It is also recognition of Michael's potential as a future leader in this domain, and an investment in the many future achievements that are sure to come."

The merit of Dr. Zavlanos' research agenda stems from the use of optimal wireless network design to develop novel alternatives for mobility control. This novel approach differs from existing methods that are based on proximity relations and graph theory, in that it relies on metrics that are of interest to the performance of the communication between robots or between robots and a fixed infrastructure. Its great advantage is that it employs more realistic models of robot networks and at the same time it offers lower complexity compared to other approaches, ease of distributed implementation via distributed optimization and control, and possible connections with graphs and their spectral properties.

"His integrated approach will make controlling and understanding these systems much easier and greatly enhance their capabilities. The research Michael is conducting could have a tremendous effect not only on networked mobile robotic systems but in the general area of communications systems, to say nothing of a number of other networks," says Dr. Costantin Chassapis, Deputy Dean of the School of Engineering and Science and Department Director of Mechanical

Engineering. "The CAREER award serves as recognition of his potential for significant accomplishments in the future."

Professor Zavlanos' research plan also includes a synergistic educational plan to engage K-12 students and science educators in a multidisciplinary research and learning environment. He will collaborate with existing Stevens programs, such as the Center for Innovation in Engineering and Science Education (CIESE), a recent recipient of the prestigious Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM). He will also work with the Office of Academic Entrepreneurship (OAE) and the New Jersey Alliance for Engineering Education (NJAEE), which is supported by a NSF GK-12 Grant.

Dr. Zavlanos joins four other recent CAREER Awardees at Stevens: Dr. Pinar Akcora, Dr. Stefan Strauf, Dr. Yingying Chen, and Dr. Frank Fisher.

SOURCE [1]

Source URL (retrieved on *04/25/2015 - 9:24am*):
http://www.chem.info/news/2011/02/stevens-dr-michael-m-zavlanos-receives-nsf-career-award-robot-network-research

Links:
[1] http://www.eurekalert.org/pub_releases/2011-02/siot-sdm021411.php