

UT News

THE UNIVERSITY OF TEXAS AT AUSTIN

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Students to present papers on robotics for nuclear plants

AUSTIN, Texas -- Five graduate students in the robotics program at The University of Texas at Austin will travel to Oak Ridge, Tenn., next week to present papers at a student conference on robotics for nuclear reactors.

The conference is sponsored by the U.S. Department of Energy and the four academic institutions that make up Robotics for Advanced Reactors consortium. In addition to UT Austin, the institutions are the University of Florida, the University of Michigan and the University of Tennessee.

"This is a real first, because all the presenters at the conference are students," says Col. John Borgman, associate director of the robotics program in the Department of Mechanical Engineering. "The DOE is very interested in the education of the next generation of people who will work on these nuclear plants."

Dr. Sabri Tosunoglu, who will accompany the students to Oak Ridge, says the papers to be presented are concerned with the construction of robotic arms, which is UT Austin's focus within the consortium. Each of the member institutions is receiving grant money from the DOE for intensive research into an aspect of robotics in order to provide robots to do maintenance and repair at nuclear plants in the future, and to make future nuclear plants more "robotic friendly."

"There's not a single U.S. nuclear plant under construction right now, so the DOE has been looking at an advanced reactor that is to be cheaper, better and safer," says Borgman. "Where we'll fit into it is in servicing the reactors using robotic devices for cutting pipes, unsticking valves and such. Robots can go where humans can't."

One of the keys to having robotic maintenance in nuclear plants in the future is standardization of plant design, says Tosunoglu. Because virtually every plant in the U.S. is unique, the robots that currently exist for nuclear plant work are each virtually one-of-a-kind machines. Standardization of plants would not only make robotics more feasible for the nuclear industry, it would also make better all-around economic sense, Tosunoglu adds.

"If the plants are standardized, then once you've solved a problem, then you've solved it for every plant," he says.

The UT Austin robotics program under Dr. Delbert Tesar's tutelage thus far has received about \$3.5 million from the DOE for work on robotics for nuclear plants. The Oak Ridge National Laboratory is

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doing overall systems integration of the work performed by the academic institutions, and Borgman says that the research could lead to a robotic-friendly advanced pilot nuclear plant by the late 1990s.

The UT Austin team members attending the conference are Rob Smithson, Mars Chu, Ed Hernandez, Rich Hooper and Joe Geisinger. Smithson will present a paper on "Structural Design of Modular Robots"; Chu, a paper on "Actuator Module Design and Development"; Hooper, on "Intelligent Robot Control"; Hernandez, "Modeling for Modular Robotic Architectures"; and Geisinger, "Actuator Controller Design and Implementation."

The conference will be held Jan. 16-18.

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