

SWOSU Computer Science Student Accepted Into Elite Research Program

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For the second year in a row, Southwestern Oklahoma State University computer science student Dennis Ferron of Dill City has been accepted into an elite research program for undergraduate students.

Ferron will participate this summer in the Research Experiences for Undergraduates (REU) program in Embedded Systems and Machine Learning at the University of Oklahoma.

The National Science Foundation funds a large number of research opportunities for undergraduate students through its REU Sites program. An REU Site consists of a group of 10 or so undergraduates who work in the research programs of the host institution. Each student is associated with a specific research project, where he/she works closely with faculty and other researchers. Students are granted stipends and, in many cases, assistance with housing and travel.

Ferron will be involved with the Embedded Systems and Machine Learning program. Computing systems are embedded throughout the environment—in applications including *smart* appliances, environmental control systems, traffic and weather monitoring systems, and medical monitoring devices. Current techniques for controlling these devices employ fixed algorithms for both sensory processing and taking subsequent action. However, as these devices increase in their complexity, computing power, and sensory capabilities, designing systems that can adapt their behavior to the specific environment in which they are embedded and/or to the specific task in which they are participating becomes critical.

In the REU Site project on *Embedded Machine Learning Systems*, students investigate the use of machine learning techniques to develop these adaptive sensor processing and action decision systems. The application areas of focus include: robot control; assistive, wearable computing systems; and numerical weather analysis and prediction. Students will receive training in a variety of areas, including embedded system design, empirical methods for system evaluation, statistical machine learning techniques (including supervised and reinforcement learning, Bayesian methods, and data mining), sensor processing, control, embedded interfaces, technical writing and oral presentation.

Dr. Warren Moseley, associate professor at SWOSU in the Department of Computer Science and Information Systems, said most of the students in the REU program go on to the best graduate schools and into prominent positions within academia, industry or government.

Eligible students for the program are undergraduates who are currently enrolled in a university or college program, are considering graduate studies and/or a career in the areas of embedded systems and/or applied machine learning, will graduate between the Spring of 2007 and the Spring of 2008 and are citizens or permanent residents of the United States or its possessions.

Due to the advanced nature of the project's topic area, undergraduate students are involved during both the summer and academic year periods for up to two years. During the academic year, students participate in activities on a part-time basis from their home institution (approximately 5 hours per week) under the direction of a local mentor.