

College of Engineering Awards More Interdisciplinary Scholarships

Projects focusing on sign language and treating ovarian cancer are funded.

Tampa, Fla. (May 16, 2011) – Two proposals to the “Spring 2011 College of Engineering Interdisciplinary Scholarship Program” have been selected for funding.

Computer Science and Engineering Professor Sudeep Sarkar and Special Education Associate Professor Barbara Loeding of USF Polytechnic are developing a technology that will provide individualized feedback during sign language instruction to augment the classroom learning of sign language.



The group is utilizing research that takes advantage of recent research developments in computer recognition of sign language to produce an intelligent sign language tutor that will be able to provide instructions to beginning signers.

The technology, called iSIMON (intelligent Sign language MONitor), will rely on cameras (stereo) to sense sign attempts made by students and provide constructive feedback along with a video demonstration of how a sign should be made. In this way, learners may be assisted to correct, at least the egregious errors, before the next session with their instructor. The tutoring system will inform them about how they just made their signs and what they should do to make the sign more accurate.

The proposed project will leverage and expand interdisciplinary research in sign language recognition. The proposed research is also expected to create a new personalized learning system design that can have commercialization potential. Personalized learning is one of the fourteen engineering grand challenges problems for the next century, as judged by the National Academy of Engineering.

The second project focuses on the treatment of ovarian cancer and gliomas and was proposed by Principal Investigators, Associate Professor of Chemical Engineering Norma Alcantar and Dr. Marzenna Wiranowska faculty member in USF's College of Medicine. Experiments to test drug release, selectivity, biocompatibility, and efficacy of the delivery system to ovarian and glioma cancer cells is the main aim of this project as well as enabling new collaborations between the College of Engineering and the College of Medicine faculty.

The researchers have developed a model chemotherapy drug delivery system comprising non-ionic surfactant vesicles (niosomes) packaged within a biodegradable, temperature sensitive chitosan network. This smart packaging, or package-within-a package system, provides three advantages. First, the release characteristics can be dually controlled through composition of the niosome and structure of the chitosan network. Second, the double packaging isolates the chemotherapy drug and reduces toxicity. Third, the packaging is a liquid, which gels at body temperature offering a versatile method to directly inject a precursor solution into a tumor cavity.

This proposed project promotes interdisciplinary research and originality, and graduate student training and creativity as outlined by Goals 1 and 2 of USF's strategy plan. In addition, the treatment of ovarian cancer and gliomas will have a direct impact on enhancing the sustainability of communities as defined by Goal 3.

The University of South Florida is a high-impact, global research university dedicated to student success. USF is classified by the Carnegie Foundation for the Advancement of Teaching in the top tier of research universities, a distinction attained by only 2.2 percent of all universities. It is ranked 44th in total research expenditures and 34th in federal research expenditures for public universities by the National Science Foundation. The USF System has an annual budget of \$1.5 billion, an annual economic impact of \$3.7 billion, and serves 47,000 students in Tampa, St. Petersburg, Sarasota-Manatee and Lakeland.

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