Learning Science and Math in a Virtual World

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COMMUNICATIONS & MARKETING

Georgia Tech is taking the lead on creating a new virtual world to improve science, technology, engineering, and math (STEM) education for all students, especially those with disabilities. The project is part of a National Science Foundation collaborative grant that partners Georgia Tech with the University of Georgia as lead institutions. Georgia Perimeter College and three Georgia public school systems are also critical partners in the project.

Robert Todd and his research team in the Center for Assistive Technology and Environmental Access (CATEA) are creating a virtual island in the popular Second Life world that will be a place for students with any kind of disability to go and get help with STEM subjects. The project, known as the Georgia STEM Accessibility Alliance, or GSAA, will serve Georgia students from high school through graduate studies.

“We’re building a universally designed virtual world to give everyone better access to support in the STEM fields of study,” Todd said. “This island will focus on those students who may have a wide range of issues such as learning disabilities, blindness, motor skill problems, or cognitive issues, and it will allow them to have access to mentors, tutors and other resources to help them succeed in their courses.”

According to Todd, many students with disabilities are often kept out of STEM fields due to a lack of access to resources needed to help them with the subjects. This new virtual world will allow students to have access to these resources 24 hours a day, seven days a week, 365 days a year, from their own home or school computers, free of charge.

Todd noted “the most common type of disability seen in high school and college
Researchers Focus on Automating Sedation in ICUs

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RESEARCH NEWS AND PUBLICATIONS

Researchers at Georgia Tech and the Northeast Georgia Medical Center are one step closer to their goal of automating the management of sedation in hospital intensive care units (ICUs). They have developed control algorithms that use clinical data to accurately determine a patient’s level of sedation and can notify medical staff if there is a change in the level.

“ICU nurses have one of the most task-laden jobs in medicine and typically take care of multiple patients at the same time, so if we can control system technology to automate the task of sedation, patient safety will be enhanced and drug delivery will improve in the ICU,” said James Bailey, the chief medical informatics officer at the Northeast Georgia Medical Center in Gainesville. Ga. Bailey is also a certified anesthesiologist and intensive care specialist.

During a presentation at the IEEE Conference on Decision and Control, the researchers reported on their analysis of more than 15,000 clinical measurements from 366 ICU patients they classified as “agitated” or “not agitated.” Agitation is a measure of the level of patient sedation. The algorithm returned the same results as the assessment by hospital staff 92 percent of the time.

“Manual sedation control can be tedious, imprecise, time-consuming and sometimes of poor quality, depending on the skills and judgment of the ICU nurse,” said Wassim Haddad, a professor in the School of Aerospace Engineering. “Ultimately, we envision an automated system in which the ICU nurse evaluates the ICU patient and enters the patient’s sedation level into a controller, which then adjusts the sedative dosing regimen to maintain sedation at the desired level by continuously collecting and analyzing quantitative clinical data on the patient.”

This project is supported in part by the U.S. Army. On the battlefield, military physicians sometimes face demanding critical care situations, and the use of advanced control technologies is essential for extending the capabilities of the health care system to handle large numbers of injured soldiers.

Allen Tannenbaum, Wassim Haddad and Behnood Gholami are working with Haddad and Bailey on this project. Tannenbaum holds a joint appointment as the Julian Hightower Chair in the School of Electrical and Computer Engineering and the Department of Biomedical Engineering, while Gholami is currently a postdoctoral fellow in the School of Electrical and Computer Engineering.

This research builds on Haddad and Bailey’s previous work automating anesthesia in hospital operating rooms. The adaptive control algorithms developed by Haddad and Bailey control the infusion of anesthetic drug agent in order to maintain a desired constant level of depth of anesthesia during surgery in the operating room. Clinical trial results that will be published in the March issue of the journal IEEE Transactions on Control Systems Technology demonstrate excellent regulation of unconsciousness, allowing for a safe and effective administration of an anesthetic agent.

http://tinyurl.com/4mnty2u

The virtual world is not a stand-alone project. There are plans to connect the GSAA to social networking sites that students are already using, such as Facebook and Twitter. These tools will have many uses, such as allowing students to receive reminders of upcoming sessions as well as alerts when certain tutors are available or upcoming college or job fairs begin.

This five-year, $3 million project will begin with cadets of students from Georgia Tech, the University of Georgia, Georgia Perimeter College and high school students from Gwinnett, Clarke and Greene counties. But the GSAA is being designed as a scalable model, replicable and “sized” to other institutions and geographic needs. Therefore, it has the potential for national impact.

www.catea.gatech.edu

What are Your Plans?

It’s been about six months since the Strategic Plan launched, and we want to know what you are doing to implement the plan in your unit. Whether you are a faculty or staff member, if you would like to share your ideas, send an e-mail to editor@comm.gatech.edu.

Archived issues of The Whistle can be accessed electronically through the Georgia Tech Web page, or directly at www.whistle.gatech.edu.

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Fulbright Offers Variety of Faculty Programs

KAREN ADAMS
FELLOWSHIPS OFFICE

Although the application deadline for most Fulbright programs for faculty members isn’t until Aug. 1, it’s never too early to apply.

Typically, the first reaction is: why start planning now? First, many awards require a letter of invitation, and it’s much easier to work out this requirement now than during the summer. Also, it allows departments adequate time to plan for replacements as well as adequate time for the personal planning involved in moving oneself — and a family — abroad.

The Fulbright programs for faculty members are administered by the Council for International Exchange of Scholars. Some of the program options to consider are:

• The core faculty program, which sends about 800 U.S. faculty members and professionals abroad each year to lecture and conduct research.

• The Fulbright Specialist Program, which is for short-term collaboration (two to six weeks) at higher education institutions in more than 100 countries. The Fulbright funds the international travel costs and an honorarium, and participating host universities cover graduate in-country expenses. These grants do not fund research but do fund seminars, workshops and collaboration on curriculum planning and have a rolling deadline.

• The Fulbright Distinguished Chairs Program, which provides about 40 lecturing and research awards that range from three to 12 months in length. Candidates should be eminent scholars and have a significant publication and teaching record.

• The Fulbright International Education Administrators Program, which funds senior higher education officials and international education professionals for programs in Germany, India, Japan and Korea. Participants learn about the country’s academic infrastructure and culture. The programs in Japan and Korea occur in June, the German program in October and the program in India is in March.

If you have any questions about the programs, contact Amy Henry, the faculty Fulbright contact at Georgia Tech, at amy.henry@gatech.edu or karen.adams@provost.gatech.edu.

www.cies.org
www.fellowships.gatech.edu

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solid plates can deform to create novel three-dimensional structures.

• Shina Tan, an assistant professor in the School of Physics. Tan studies the theory of dilute cold matter, which is millions of times thinner than the air and billions of times colder than an average home freezer. His research may have applications to sensitive detection and precision measurements.

• Christopher Peikert, an assistant professor in the School of Computer Science. Peikert focuses on geometric lattices as a new mathematical foundation for cryptography, the science of developing secret codes and the use of those codes in an encryption system. In principle, quantum computers could break much of the cryptography in wide use today, so there is a strong need for alternative schemes.

www.sloan.org/fellowships

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decade as stewards of the Allen legacy. “Since its founding in 1990, the Ivan Allen College of Liberal Arts has fulfilled that trust by engaging students, scholars and the community through human-centered interdisciplinary teaching and research, and through the awarding of the Ivan Allen Jr. Prize for Progress and Service from 2001-2010,” said Jacqueline J. Rosyster, dean of the college. “With the awarding of the new Social Courage Prize this year, we herald a new era in our efforts to engage the citizens of Atlanta, our state and nation, and the global community in this legacy.”

The Founder’s Day celebration includes three special events:

• March 14: The Allen Prize Symposium

• March 15: Cross-college Research Roundtable

• March 15: Address by the Honorable Sam Nunn, inaugural recipient of the Ivan Allen Jr. Prize for Social Courage

Faculty, staff, and students are invited to attend these events. RSVP at http://tinyurl.com/4pbfr7

A Change of Scenery for North Avenue

At 7:30 a.m. on Feb. 27, the Roosevelt House on North Avenue came crashing down. Until last year, the building served as public housing for senior and disabled citizens. Atlanta — home of the first public housing development — is also the first major city to eliminate all of its large housing projects.
RAMBLIN’ THROUGH TIME

The History Behind ‘Ramlin’ Wreck’

In honor of Tech’s 125th birthday year, we’re partnering with Georgia Tech Alumni Magazine to highlight a piece of Tech History. This issue’s topic: a little tune known as “Ramlin’ Wreck” from Georgia Tech.

The following excerpt is number 53 on the list “125 Pieces of Tech History,” featured in the September/October 2010 issue of Georgia Tech Alumni Magazine:

Frank Roman’s original orchestration of “Ramlin’ Wreck” from Georgia Tech is kept under protective covering in the archives. The song is believed to have been based on “Son of a Gambolier,” with the chorus: “Like every jolly fellow, I takes my whiskey clear, for I’m a ramblin’ refugee, of poverty and the son of a gambolier.”

H.D. Gutner, an 1892 Tech graduate, told the Georgia Tech Alumni in 1948 that his classmate, W.P. “Billy” Walkhall, wrote the song. Regardless, Roman, who ran the barbershop in the YMCA, is credited with the orchestration of the song we sing today.

Participate in the 6th Annual Office Supply Exchange

COMMUNICATIONS & MARKETING

What if there were a way to turn your surplus of pens, file folders and sticky notes into office supplies that your unit actually needs — without spending any extra money?

Thanks to the Sixth Annual Office Supply Exchange, there is. Last year’s event, held during Tech’s Earth Day celebration, resulted in a savings of $18,035 for the Tech community.

To participate in the event, drop off any unwanted supplies (e.g., paper, toner cartridges, binders, etc.) to the Office of Solid Waste Management and Recycling by 404-439-7203 or e-mail rita.brown@nrc.gatech.edu.

FREE for pickup — no delivery! Toshiba 56-inch projection TV. May need new power supply. Owner’s manual included. Contact giorgio.casinovi@ece.gatech.edu for more information.

www.earthday.gatech.edu