Imaging device may help health care workers detect abuse

Jane Sanders
Research News

For people with impaired mobility and reduced ability to sense injury, the risk is high for pressure ulcers that can develop when they sit or recline in one position too long or wear a poorly-fit prostheses for an extended period.

Health care professionals routinely check patients for early signs of erythema, or skin redness. But visual inspections sometimes fail to detect reddening of the skin and other indicators of tissue damage, especially in people with darkly pigmented skin. If undetected, these at-risk sites can develop pressure ulcers.

Beyond ulcers looms a more serious risk for these patients — that of pressure-induced, deep-tissue injury, which occurs below the skin and is often not diagnosed visually until it has reached a dangerous, advanced stage.

Health care practitioners may be able to reduce their patients’ risk of these complications by supplementing their visual inspections with a low-cost, handheld imaging device that could detect both early-stage pressure ulcers and the more serious deep-tissue injuries. Such a device is the ultimate goal of a Georgia Tech study now in field trials. The work is being funded by a grant from the National Institutes of Health (NIH) in collaboration with the National Institutes of Justice.

“There’s a huge opportunity to intervene if we can see pressure ulcers at a very early stage,” says lead researcher Stephen Spriegl, director of the College of Architecture’s Center for Assistive Technology and Environmental Access (CATEA).

“Detecting them then drives the treatment. If you take the visual indicator away, it adversely impacts care, and for folks with darkly pigmented skin, that’s a problem.”

Pressure ulcers are a common ailment among patients with impaired mobility, including those with spinal cord injury, multiple sclerosis, stroke, amputation and dementia.

Researchers believe a handheld detection device that combines multispectral and acoustic-imaging technologies shows promise. So researchers in the Georgia Tech Research Institute designed a multispectral imaging system for detecting bruising and erythema, while colleagues in the School of Mechanical Engineering developed acoustic technologies for detecting deep-tissue injury.

Determining when and how a bruise occurred is important to the National Institutes of Justice for forensic purposes. NIJ funded the NIH grant because of its interest in the development of a low-cost imaging device to help officials identify elder neglect and abuse.

“One of the markers of neglect in the elderly is pressure ulcers, and bruises are a marker of abuse,” Spriegl explains. “So detecting these problems in the elderly shares some of the same problems we have in detecting erythema in people with dark skin.”

U.S. News rankings continue to hold Tech in high regard

Elizabeth Campbell
Institute Communications and Public Affairs

For the eighth consecutive year and the ninth time in the past decade, U.S. News and World Report has ranked Georgia Tech as one of the top 10 public universities in the nation. In the magazine’s annual undergraduate report, the Institute moved up to the eighth spot among the nation’s top public universities.

Among all national universities, Georgia Tech was ranked 38th, down one slot from last year when Tech jumped up four slots from its 2004 ranking.

“Our desire to excel has consistently placed Georgia Tech among the top national universities over the last decade,” said President Wayne Clough. “This recognition reflects the high quality of our programs, faculty and students. In particular, I’m proud of our undergraduate research programs that lead to student success.”

Tech’s College of Engineering, the nation’s largest, held steady with a sixth-place ranking. The College had four of its programs ranked in the top five among specialty areas: aerospace ranked second, biomedical placed fourth, civil ranked third and industrial engineering ranked first.

“Our engineering programs continue to be recognized as the best,” said Clough. “The consistency of the rankings of the individual engineering programs bodes well for our continued success.”

Georgia Tech’s internships and cooperative education programs were ranked one of 12 “Academic Programs to Look For” under internships and co-ops. Also Tech was selected as one of 35 outstanding examples of undergraduate research opportunities among “Academic Programs to Look For” under undergraduate research/creative projects.

Another notable finding is that Georgia Tech alumni continue to be some of the most generous. The percentage of Tech graduates contributing to the Institute is the highest among any public university ranked in the top 50.

Biomedical engineering undergraduate students Megan Coole and Aime Hobbs share a laugh as they move in to the west campus dormitories. The first classes of fall semester begin this week.
Student support services more centralized

Walk in the door and turn left or right, and one immediately realizes the Library is re-engineering itself. Building on the acclaim for the popular West Commons, the Library opens two new facilities this year to enhance student success, the East Commons and the Resource Center.

“The Library aspires to be a perfect place for student learning,” says Rich Meyer, dean and director of Libraries. In an effort to more fully meet the needs of students, the Library and Office of Information Technology (OIT) have collaborated on the creation of spaces that provide students with essential accommodations, resources and refreshment.

“We are creating spaces that students can own,” said Crit Stuart, associate director for Public Services at the Library, who has overseen the East Commons project. “This process started four years ago with the development of the West Commons. With the East Commons, the Library and OIT portray the insight of students and faculty for the next great Library space. Future Library programming must originate from their wisdom.”

Lessons learned from these new spaces will inform the programming for the proposed Innovative Learning Resource Center (also known as the Undergraduate Learning Center).

The East Commons has become the place on campus to “see and be seen” while engaged in individual study, productivity and multimedia projects. Students will find expert assistance with information and technology resources, and a comprehensive suite of software applications in a 24-hour setting.

In the East Commons, students and faculty have the opportunity to engage in mutually beneficial enterprise, acquaintance and enlightenment. One can find food and refreshments at Jazzman’s Café, computer workstations for groups of students, a showcase for the exceptional research and creativity of faculty, students and guest lecturers in a presentation venue, and an aesthetic infused with art and exhibits.

“We’re facilitating serendipitous academic encounters,” said Stuart, “opportunities that allow students to meet their professors and peers in a relaxed atmosphere and comfortable space.”

Other partners joined the Library and OIT this spring to launch student support services in the Resource Center located on ground floor West. The Center is comprised of OIT’s walk-in support functions, Success Program’s 17G-1 Tutoring and Undergraduate Academic Advising. The Resource Center provides a one-stop shop for services that were formerly scattered across the campus, and is a proving ground for future projects aimed at centralizing student services. Several of these services are expanding hours into evenings, and eventually weekends, to meet expectations of students, faculty and staff.

“The Library has been proactive about creating a space for students who want to hang out, to get re-energized and refreshed,” said Dana Hartley, director of Undergraduate Academic Advising. “Students are able to get answers that they need from our staff that can help resolve some of their academic advising questions and concerns that may impact their college careers.”

The East Commons opened Aug. 14. A special weeklong dedication and celebration are planned for the week of Sept. 18. The Library is re-engineers Library programming

Senator examines new technologies to reduce oil dependence

U.S. Sen. Saxby Chambliss (R-Ga.) paid Georgia Tech a visit Aug. 8 to get a firsthand look at how Tech is working to create more efficient and affordable biofuels.

Chambliss met with some of Georgia Tech’s top experts in alternative fuels and President Wayne Clough to discuss new technologies designed to produce practical biofuels. In particular, the group discussed Tech’s efforts to create a method for transforming the pulp of the Southern pine — a type of soft wood native to the southern United States — into ethanol.

The process, if properly funded and supported, could replace 15 percent to 20 percent of Georgia’s gasoline consumption, according to Sam Shelton, a lead researcher on the Southern pine project and a member of Tech’s Strategic Energy Institute.

For more information...

Georgia Tech is a unit of the University System of Georgia.

Georgia Tech welcomes its newest faculty members

School of Aerospace Engineering
William Niklowsky

School of Biology
Anne-Marie Haskinson
King Jordan
Lock Rogers
Ingeborg Schmidt-Krey
Emmanuel Tannenbaum

Department of Biomedical Engineering
Thomas Barker
Melissa Kemp

Building Construction Program
Daniel Castro

School of Civil and Environmental Engineering
Jochen Teizer

School of Chemistry and Biochemistry
Wendy Kelly

College of Computing
Jonathan Griffin
Santosh Vempola
Hongyuan Zha

School of Earth and Atmospheric Sciences
Zhigang Peng

School of Electrical and Computer Engineering
Zhigang Peng

School of Materials Science and Engineering
John Walsh

School of Mechanical Engineering
John Walsh

School of Engineering
Daniel Castro

School of Literature, Communication and Culture
Ashley Andrews
Mary Bahman
James McClung
Anne Sinkey
John Wells

Library and Information Services
Robert Fox
Elizabeth Winter

College of Management
Ingrid Fulmer
Robert Thomas

School of Mathematics
Anor Ahmadov
Kenneth Baker
Yuri Bakhtin
Sergiy Borodachov
Serguei Norine
Maria Reznikoff
Abdou Sene
Christine Hetsch
Howard Weiss

School of Mechanical Engineering
Nico Deleucaq
Tequila Harris

School of Materials Science and Engineering
Vladimir Tsukruk

School of Physics
Toan Nguyen

School of Public Policy
Marilyn Brown
Jan Cornelius Schmidt
John Walsh

School of International Affairs
Mark Taylor

Awards & Honors

APPA — the national organization for educational facilities professionals — recently selected Tech’s Building Services Department (Facilities) to receive an “Effective and Innovative Practices Award.” The award recognizes Building Services’ own Customer Achievement Program Award, a quarterly incentive program for custodial service personnel that depends on feedback from the campus community.

Professor Steve Johnson (Materials Science and Engineering) has been promoted to fellow of the American Society for Composites.

Regents’ Professor Ward Winer (School of Mechanical Engineering) has been named an honorary member of the American Society of Mechanical Engineers.

Associate Professor Eric Vigoda (College of Computing) has won the 2006 Delbert Roy Fulkerson Prize, an award for outstanding papers in the area of discrete mathematics, sponsored jointly by the Mathematical Programming Society and the American Mathematical Society.

Regents’ Professor C.P. Wong (Materials Science and Engineering) has received the 2006 IEEE Components, Packaging and Manufacturing Technology Award.

Professor Itzhak Green (School of Mechanical Engineering) is the recipient of the 2006 Machine Design Award from the American Society of Mechanical Engineers.

IN BRIEF:

Regents approve FY 2008 budget

The University System of Georgia Board of Regents have approved a Fiscal Year 2008 Operating and Capital Budget Request totaling $2 billion in state appropriations, along with a Capital Request totaling $285 million in cash and bonds. The budget request reflects an increase of 5.7 percent, or $111 million, over the current state appropriation.

Tuition rates are connected to the level of state funding, with the state appropriating 75 percent of the System’s instructional budget while tuition makes up the remaining 25 percent. Along with the new guaranteed tuition plan, the Regents’ Fiscal Year 2008 budget request also reflects a more conservative approach, with new funds requested only for dollars generated by the University System’s funding formula, a mathematical calculation based upon the number of credit hours students take, and costs for such expenditures as utilities and employee benefits.

The budget request now moves to Gov. Sonny Perdue, who will consider it as he prepares his final budget recommendation to the Georgia General Assembly for the January 2007 legislative session.

Telephone changeover starts

On July 17, the first-phase conversion to the new Georgia Tech telephone system, involving approximately 1,800 phone numbers, took place. The pilot locations were 811 and 845 Marietta Street as well as members of the Housing staff whose offices are in the unoccupied residence halls.

The new telephone switch is in the process of being “certified” by the vendor, BellSouth, and the equipment provider, Nortel. This critical step must be completed before Tech can move forward with a campus-wide implementation.

This ongoing testing may cause some intermittent problems such as dropped calls and fast busy signals when trying to contact individuals working at those locations. Additionally, callers may occasionally encounter a “discontinued not in service” message. The Office of Information Technology recommends the use of e-mail when experiencing such difficulties.

To get the latest information about the Transitioning Telecommunications @ Tech (T3) project, visit www.oit.gatech.edu/campus_initiatives.

New employee registration goes online

New faculty, staff and students to Georgia Tech can now prepare pre-employment documents online. All new employees and those returning to Tech after a break in service can visit the Office of Human Resources’ Web page (www.ohr.gatech.edu) to complete the Employment Eligibility Verification Form (I-9) and other processing documents.

Accessing the above Web site will save new employees time as they follow the simple step-by-step process to complete their documents prior to bringing them to the Office of Human Resources.

Contact Rex Welch (894-4164 or rex.welch@ohr.gatech.edu) with questions about the online documents or the pre-employment process.

WWW.WHISTLE.GATECH.EDU