THE WHISTLE

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Homeland security offers new opportunities for Tech research

Sean Selman
Institute Communications and Public Affairs

Longtime contributors to research boosting national defense, scientists at Georgia Tech are responding quickly to the nation's new emphasis on homeland security.

Their most recent effort came at a retreat held Feb. 28 - March 1, where dozens of Georgia Tech's leading scientists met to discuss new or ongoing research efforts that could enhance America's homeland security.

Attendees represented programs throughout the Institute, from sensors and robotics to public policy, architecture and governmental affairs. Their goal was to learn about each other's work and identify important thrust areas for Tech's Homeland Security Initiative, which resides in the Georgia Tech Research Institute's Center for Emergency Response Technology, Information and Policy (CERTIP).

"There was a general raising of consciousness in terms of what Georgia Tech has to offer that might improve homeland security," said Mike Meyer, a professor in the School of Civil and Environmental Engineering. "And, we heard very clearly that the Institute's administration sees this as an important issue with their strong support."

Tech's leading contenders for new or enhanced homeland security research efforts are the areas of biomedicine and biometrics; information technology and cyber security; materials science and decontamination; public policy, education and training; robotics; sensors and surveillance; structures and buildings; and systems engineering and transportation.

"There aren't that many institutions out there, especially on the technological side, that could bring together such a diverse group of researchers as Georgia Tech," Meyer said. "I also think the other strength we have on this issue is that we are very connected to the federal and state governments due to our previous research efforts."

Like many other universities throughout the country, Tech is taking a close look at ways in which the Institute might earn enhanced state and federal funding for homeland security research. In the 18 months since terrorists attacked the United States, federal officials have almost doubled funding for homeland security initiatives and formed a new U.S. Department of Homeland Security (DHS), which represents the largest government reorganization since 1947.

"The Department of Homeland Security is just forming, but it's already clear that there will be a full-service research and development organization as part of it," CERTIP Director Tom Bevan said. At the end of 2001, President Wayne Clough appointed Bevan director for the Institute's homeland defense research.

"There are indications that there is some money this year for homeland security research and development, but the large dollars are going to start appearing next year," Bevan said. "So, we're getting ready to put our best foot forward there."

Bevan said that he's spoken to more than 150 principal investigators on campus, trying to get them mobilized for the new homeland security research front.

"Part of the job is to adapt what they're already doing in terms of research and tie it into homeland security," he said. For example, opportunities exist for Tech's materials researchers to adapt their current work to the reinforcement of cockpit doors on airliners, he said.

"And in GTRI, there are areas where we've been doing a lot of work on defending airplanes from missile attacks, and we should look into applying that to airliners, too," Bevan said. "A lot of the information technology research at Georgia Tech is like that as well."

Beyond research, Georgia Tech already has plans in the works to help state officials better coordinate first responders throughout the state. For example, CERTIP officials are working with William Hitchens Jr., director of the Georgia Office of Homeland Security, on the state's emergency operations plans.

Bevan said that, once in place, the

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STEP fellows stress applied knowledge to high schoolers

David Terraso
Institute Communications and Public Affairs

Each day, millions of high school students across America look up at the equation-covered chalkboards in their math and science classes and think, "When the heck am I ever going to use this stuff?" For many, the answer is never. Thanks to a group of graduate students from Georgia Tech, however, students in six metro Atlanta high schools are learning how to use those classroom lessons to develop a career.

"Many of these kids have no idea of what they want to do when they get out of high school," said Sundiata Jangha, a 27-year-old African-American doctoral student in mechanical engineering at Tech. Jangha is a fellow in Georgia Tech's Student and Teacher Enhancement Partnership (STEP), a National Science Foundation (NSF)-funded program now in its second year.

As a STEP fellow, he spends at least 10 hours a week teaching general chemistry along with accelerated physics and chemistry at the predominately African-American Cedar Grove High School in south DeKalb County. He, along with 11 other fellows, has spent the past year working with teachers in one of six metro Atlanta high schools.

As graduate students not long out of high school, said Jangha, "we can connect with the students in ways that the school's teachers can't." Plus

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Campus candids

photo by Nicole Cappello

Traci Kendricks, right, and Dorothy Holt, left, stir their chili during the Georgia Tech Facilities Wild West Chili Cook-off, an annual field day for the employees who keep the campus operating.

"QUOTE— UNQUOTE"

"The fear was that the sheer availability of contraceptives would increase sexual encounters, that it would lead to promiscuity. Some people said that pregnancy was the only brake on human lust."
—Andrea Tone, a professor in the School of History, Technology and Society, in a documentary chronicling the development of an oral contraceptive, on the prevailing attitude of the mid-1900s. (American Experience — PBS)

"I see scooters as practical and environmentally friendly."
—Alison Valk, an assistant in the Library and Information Center, on her decision to purchase a motor scooter. (Atlanta Journal-Constitution)

Commemorating Coach Cremins

photo by Nicole Cappello

Governor Sonny Perdue proclaimed Mar. 8 as "Bobby Cremins Day" throughout the state as a ceremony at Alexander Memorial Coliseum honored the former basketball coach by naming the floor "Cremins Court" and hanging a banner from the rafters in his honor.

Many of his former Yellow Jacket stars — Mark Price, Dennis Scott, Tom Hammonds, Kenny Anderson and Craig Neal — were on hand to celebrate with their former coach. During his 19 seasons, Cremins coached six all-Americans, eight ACC Rookie of the Year honorees and 12 NBA first-round draft picks.

As Tech's winningest basketball coach and the third winningest coach in Atlantic Coast Conference history, Cremins compiled a record of 354-237, claiming three ACC titles, 10 NCAA berths and a trip to the NCAA Final Four in 1990. He retired from coaching following the 1999-2000 season and is now a television analyst.

Institutional study shows how Tech stacks up against its peers

Kathi Wallace
Institute Communications and Public Affairs

New insights on Georgia Tech constituents' perspectives and needs are now available to guide the Institute's communications and outreach strategies. The findings are the result of a recent benchmarking study conducted by Tech's Institute Communications and Public Affairs (ICPA), which conducts these studies every five years.

In collaboration with Knowledge Systems & Research, a market research firm in Syracuse, N.Y., the study asked all constituent groups — business and government leaders, prospective students, alumni, parents, high school teachers and academic peer institutions — to rate Tech on multiple attribute dimensions. On campus, another 1,665 current students, faculty and staff provided important internal ratings for comparison.

The study provided a number of new insights, while reaffirming a number of widely held perspectives. Overall, Georgia Tech is better known and more highly respected than previous studies indicated. Tech is also rated highest on those attributes of highest importance to respondents. These include overall academic quality of the institution, academic quality of specific colleges of interest, and institutional focus. Tech's overall prestige score (8.1 on a 10-point scale) across all constituent groups was good to excellent.

Participants also identified several factors that they feel need further enhancement in the future. These include the degree of cross-disciplinary activity, breadth of majors and courses, academic quality within some specific colleges, campus life (including gender diversity) and student-focused education.

Among the most important recommendations is the concept of a proactive marketing process that would coordinate Tech's multi-faceted communication with external corporate and government constituencies. This approach would feature periodic meetings with those organizations' decision-makers, with priority placed on listening to constituent needs and offering updated reports on the full array of Georgia Tech's capabilities.

The study also assessed Tech's national familiarity levels, competitive positioning, environmental opportunities and challenges, and constituent perspectives on characteristics that will define the technological research university of the 21st century.

Government and academic peer participants perceived Tech as an "up and coming" institution that will need to diligently strive to maintain focus and quality in a time of rapid growth. The Institute's expanding reputation was confirmed as participants cited Tech as a national technology player with increased national influence.

Institute-wide findings are currently being presented to various campus groups, and college-specific findings are available through individual college deans. For more information or to schedule a presentation, contact Bob Harty or Kathi Wallace in Institute Communications and Public Affairs.

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plans will give first responders in each Georgia county access to a database and forms that outline what types of personnel or equipment other counties have or need to respond to a disaster.

"I think we're a little bit ahead of some other universities in our homeland security research efforts, but we need to press our advantage," Bevan said. "I think we're definitely ahead of most in terms of our technological capabilities, but we need to strengthen our political ties."

There also is a strong need for better communication and collaboration, he said, and several of the working groups at the recent retreat recognized that. During that meeting, researchers in several groups at Tech especially identified a need to coordinate their efforts and inventories to enhance research.

"I think the working groups might start meeting monthly, and they're all getting organized. Some already meet on a regular basis," Bevan said. "At this point, we need to ramp up our efforts to make more contacts in Washington, so that we better understand the opportunities that are available and relay those to the appropriate groups at Tech."

Meyer said the real challenge is for researchers to put out proposals and form institutional structures that encourage or support new areas of research.

"We're clearly behind some, such as Texas A& M," Meyer said. "But I'd say we're ahead of many, many others. I'd put us behind some big players, but moving up quickly."

For more information...

Georgia Tech Research Statistics
www.research.gatech.edu/rgs2.htm

Center for Emergency Response Technology, Information and Policy
www.certip.org

Georgia Office of Homeland Security
www.gahomelandsecurity.com

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Institute Communications and Public Affairs
Wardlaw Center
177 North Avenue
Atlanta, Georgia 30332-0181

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they can show the students how to use concepts discussed in class in our research projects. Seeing firsthand how these seemingly dense subjects are used in research and the business world helps students make connections between what they're studying and the real world, he said.

"One of the real strengths of the STEP program is that it helps fill in the gaps of the school's curricula," said Marion Usselman, co-principal investigator of STEP at Tech and research scientist at the Center for Education Integrating Science, Mathematics and Computing (CEISMC). "In addition to helping the teachers with the core subjects, the fellows mentor the students. They show them why those subjects are important and how they can use what they're learning in class to pursue college, graduate school and a career."

Tech's STEP program is jointly administered by the Center for the Enhancement of Teaching and Learning (CETL) and CEISMC. In 2001, Tech's first year in the program, 25 graduate students applied for slots as one of the 12 fellows. This past year, the number of applications rose to 40. For 2003-2004, there are 55 students applying to be STEP fellows.

Tech's current NSF grant ends at the end of spring semester 2004. Donna Llewellyn, principal investigator of STEP at Tech and director of CETL, said they are pursuing a second grant to continue their funding for another five years, giving Tech additional time to find ways to make the program — or some aspects of it — a permanent fixture.

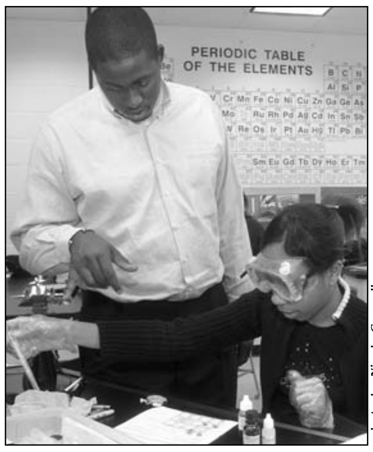

photo by Nicole Cappello

Sundiata Jangha, a doctoral student in mechanical engineering, works part-time at Cedar Grove High School.

CETL's "Celebrating Teaching Day," honoring the teaching fellows and the STEP fellows of 2002, will be held Mar. 26 from 10 a.m. - 2 p.m. in the Library.

Other STEP fellows are profiled at www.gatech.edu/news-room.

Getting students on a college and career path is vital to their success, said Jangha. "I try to get my students to think about what they want to do when they graduate from high school. So many of them have such a broad range of career ideas: fireman, policeman, astronaut. That's great when you're six, but at this point you need to narrow your choices and find out what it takes to get there," he explained.

At 6 feet 4 inches tall, Jangha is an imposing presence in the classroom. Though well-liked by the students, he often asks and expects more of them than they would like to give, said Mike Pastirik, one of Jangha's teachers at Cedar Grove. "But he asks good things and, in the long run, the students step up."

"Being an outsider, I'm allowed to be harder on the students academically than the teachers," said Jangha. "I'm an excuse buster. I tell the students, 'If you're not performing, excuses don't matter.'"

Doing more than the minimum, Jangha says, is one ethic he's trying to instill in his students. "High school kids are minimalists. They do as little as possible. If the assignment is to do numbers one, three, five and seven, they do one, three, five and seven. I try to teach them the benefits of doing the even-numbered problems. It never occurs to them that doing problem number two could help them understand number three."

Not surprisingly, Jangha said he hopes to be a college professor some day. Through his participation in STEP, he's hoping to gain a better understanding of his future students, both on a cultural level as well as what the high schools are teaching them.

Zoom, zoom

photo by David Terraso

The School of Mechanical Engineering invited representatives of the General Motors Corporation to visit campus last week and show off some of the ideas yet to crack its assembly lines. The V12-powered Cadillac Cien — Spanish for 100 — was one such model, a monument to the brand's 2002 centennial anniversary, with features such as rearview cameras, LCD screens and voice activation.

Inspired by the F-22 Stealth fighter aircraft, the two-seater also has electronically controlled air inlets and outlets integrated into the body, which help to cool the rear-mounted engine. Inside, a digital instrument display relays all of the vehicle's functions to the driver, while a thermal imaging display projected on the windscreen helps the driver "see" beyond the range of the vehicle's headlamps.

IN BRIEF:

3 receive research instrumentation funding

The Department of Defense (DoD) recently announced plans to award $27 million to academic institutions to support the purchase of research instrumentation, made under the Defense University Research Instrumentation Program (DURIP).

Three Tech professors were among the 125 winning proposers: Electrical and Computer Engineering Assistant Professor William Doolittle, Aerospace Engineering Associate Professor Dimitri Mavris and Mechanical Engineering Associate Professor Richard Neu were granted awards by the Army Research Office, Office of Naval Research and the Air Force Office of Scientific Research, respectively.

DURIP supports the purchase of state-of-the-art equipment that augments current university capabilities or develops new university capabilities to perform cutting-edge defense research.

DoD research offices requested proposals from university investigators working in areas such as information technology, remote sensing, propulsion, electronics and electro-optics, advanced materials, and ocean science and engineering. Collectively, the research offices received 949 proposals, requesting $242 million in support for research equipment.

Suddath Symposium to look at cancer

Many of the state's leading cancer researchers will gather at Georgia Tech from March 27-29 to discuss their recent findings in developing new strategies for cancer detection and control.

The three-day symposium, sponsored by Georgia Tech and the Georgia Cancer Coalition, will bring together top researchers in the field from Georgia Tech, Emory University, the University of Georgia, the Medical College of Georgia and the National Cancer Institute, in addition to other speakers from the biotech industry and cancer-related organizations.

The 11th Annual Suddath Symposium and the Second Annual Georgia Cancer Coalition Symposium will be held at the Georgia Centers for Advanced Telecommunications Technology (GCATT). All symposium sessions are open and free to the Tech community and cancer researchers at any of the Georgia academic institutions, but pre-registration is requested by Mar. 24.

"This is a unique gathering of investigators who represent essentially the entire spectrum of cancer research," said symposium chair Alfred Merrill, the Smithgall Institute Chair in Molecular Cell Biology and chair of the Georgia Tech Cancer Research Council. "Major advances are born at the junctions between fields, and Georgia is fortunate to be able to bring together this wealth of talent from its universities and the broader scientific community."

To register for the symposium, visit www.ibb.gatech.edu.

Galloway's expertise sought abroad

College of Architecture Dean Thomas Galloway recently led a Visiting Committee to review the proposed Master of Science in Urban Planning Program at the American University of Sharjah in the United Arab Emirates. Joining Galloway were Tridib Banerjee of the University of Southern California and Richard Brail of Rutgers University. The visit was organized by the Commission for Academic Accreditation of the Ministry of Higher Education and Scientific Research of the United Arab Emirates.