Open campus

Tech camps serve as outreach for high school students

ROBERT NESMITH
COMMUNICATIONS & MARKETING

While many Tech students are attending to their coursework during the summer, the Institute has opened its campus to elementary and high school students for several academic camps.

From classes about engineering, robotics, biotechnology, architecture or the investing nuances of Wall Street, high school students from across the state can participate in programs overseen by Tech faculty and staff.

Mike Ryan, program director with Tech’s Center for Education Integrating Science, Mathematics and Computing (CEISMC), says the summer programs are a result of collaborations with departments and colleges from across the state.

While CEISMC is involved in a variety of K-12 outreach initiatives across the state, many on campus and in the community see summer programs as a core dimension of CEISMC,” Ryan said. “In recent years, we have averaged 25 one-to-two week programs per summer, with more than 450 attendees in a variety of topics. While this can put a good bit of pressure on our resources and schedule, we know the demand for programs and the desire of campus faculty to engage in meaningful outreach is significant.

As a part of its mission, CEISMC seeks to help those two forces meet.”

Programs are offered by the schools of Aerospace Engineering, Biology and Civil and Environmental Engineering, as well as the colleges of Architecture, Computing and Management.

Hands-on experience

Hands-On-Tech (HOT) Days @ GT serves as an introduction to electrical and computer engineering, presented by the School of Electrical and Computer Engineering.

Begun in 2006, HOT Days is open to rising high school sophomores and juniors in Georgia Tech programs who have an interest in engineering,” said Conrad, who adds that more than 50 percent of this year’s attendees fall into this category. Students are selected based upon interest and academic merit.

Because of external funding and faculty and staff members donating time to organize and instruct the students, costs are low for the camp. The largest expenses...

NCR relocation

Tech plays key role; collaborations planned

JOHN TOON
RESEARCH NEWS

Tech played a significant role in one of Georgia’s largest economic development successes—the move of Fortune 500 corporation NCR to Georgia. And the company will be looking to Tech as a source of engineering talent and as a partner in the development of future technology innovations.

Flanked by NCR officials, Georgia Gov. Sonny Perdue on June 2 announced that the company would move more than 2,100 jobs to the state by relocating its headquarters to Duluth and by developing a new advanced manufacturing facility in Columbus.

“The opportunity to partner with top-tier academic institutions such as Georgia Tech was one reason among many that we made this decision,” said Bill Nuti, NCR’s chairman and chief executive officer.

Currently based in Dayton, Ohio, NCR is best known for automated teller machines (ATMs), self-service kiosks and other assisted- and self-service...
Research

Replacement metal

Graphene may outperform copper on the nanoscale in integrated circuits

JOHN TOON

RESEARCH NEWS

The unique properties of thin layers of graphene—known as graphene—make the material attractive for a wide range of potential electronic devices. Researchers have now experimentally demonstrated the potential for another graphene application: replacing copper for interconnects in future generations of integrated circuits.

In a paper published in the June 2009 issue of the IEEE journal Electron Device Letters, researchers at Georgia Tech reported detailed analysis of resistivity in graphene nanoribbon interconnects as narrow as 18 nanometers.

The results suggest that graphene could outperform copper for use as on-chip interconnects—tiny wires that are used to connect transistors and other devices on integrated circuits. Use of graphene for these interconnects could help extend the long run of performance improvements for silicon-based integrated circuit technology.

“As you make copper interconnects narrower and narrower, the resistivity increases as the true nanoscale properties of the material become apparent,” said Raghu Murali, a research engineer in the Microelectronics Research Center and the School of Electrical and Computer Engineering. “Our experimental demonstration of graphene nanowire interconnects on the scale of 20 nanometers shows that its performance is comparable to even the most optimistic projections for copper interconnects at that scale. Under real-world conditions, our graphene interconnects probably already outperform copper at this size scale.”

Beyond resistivity improvement, graphene interconnects would offer higher electron mobility, better thermal conductivity, higher mechanical strength and reduced capacitance coupling between adjacent wires.

“Resistivity is normally independent of the dimension—a property inherent to the material,” Murali noted. “But as you get into the nanometer-scale domain, the grain sizes of the copper become important and conductance is affected by scattering at the grain boundaries and at the side walls. These add up to increased resistivity, which nearly doubles as the interconnect sizes shrink to 30 nanometers.”

The research was supported by the Interconnect Focus Center, which is one of the Semiconductor Research Corporation/DARPA Focus Centers, and the Nanoelectronics Research Initiative through the INDEXX Center.

Research Engineer Raghu Murali, left, and graduate student Kevin Brenner are shown with a test station used to study the properties of graphene. A graphene sample (inset).

Mountains to scale

Faculty volunteers sought for pre-semester student retreat

ROBERT NESMITH

COMMUNICATIONS & MARKETING

The President’s Scholarship Program (PSP) is seeking faculty members to assist and attend a weeklong retreat in north Georgia.

In August, 67 incoming freshman students will undertake a three-day retreat at Unicoi State Park, using the time to participate in team-building and leadership exercises, and developing a network among fellow new students. A major benefit of the retreat, according to PSP Associate Director Billiee Pendleton-Parker, is the chance for incoming students to meet and talk with Tech faculty members.

“Many of these scholars had good relationships with their instructors in high school,” Pendleton-Parker said. “Pendleton-Parker said. “We wanted to provide that kind of collegiality [with Tech faculty members] at the retreat.

Faculty members wishing to participate can be from any discipline, Pendleton-Parker said, and they are not required to prepare or deliver a presentation. “It’s very informal and not academic, in that sense,” she said.

Transportation, food and lodging are covered by PSP. (Pendleton-Parker says that faculty members do not need to stay overnight.)

“Faculty add a whole new element to the retreat,” said raising senior and President’s Scholar Jonathan Saechang. “Freshman students may be intimidated by college professors. [This time] allows for faculty and students to interact. I still keep in touch with faculty members I met during the retreat.”

“[PSP] is looking for faculty members with a genuine interest in students,” said rising sophomore and Student Assistant Mike Donohue, who added that he is changing his major from physics to public policy, largely because of retreat attendee and School of Public Policy Associate

Wendy Newstetter, director of Learning Sciences Research in the Coulter Department of Biomedical Engineering, attended the President’s Scholars retreat for three years. “I was able to interact with really amazing students as they started at Tech and help them see that faculty are accessible.”

Professor Richard Barke.

The President’s Scholar retreat is scheduled from Aug. 10-14 at Unicoi State Park. Faculty interested in attending should call Pendleton-Parker at 894-2691 or e-mail billiee.pendletonparker@psp.gatech.edu.

For more information

www.psp.gatech.edu
After spring commencement, the Athletics Association began working on improvements to Bobby Dodd Stadium at Grant Field. While these include restroom upgrades, painting and pressure-washing, some of the work is quite extensive, according to Associate Director of Athletics Wayne Hogan.

The most visible change, he says, will be the new scoreboard system mounted on the Wardlaw Building, at the southern end zone of the stadium.

The major renovations will be that Hogan says spectators can enjoy. “All our entertainment and fan components are being updated,” Hogan said. “We have a new LED video board and the new scoreboard is quite extensive.”

New boards [smaller LED screens with scrolling information] will be installed on suite facades and at the northern and southern ends of the stadium.

New panels will installable advertising and fan entertainment space in the southern end zone, and the Hall of Fame graphics on the stadium’s eastern side will be updated. And, Hogan adds, a new sound system should correct the imbalances from the old system. The previous scoreboard and screen were purchased in 2000.

Several suites are being transformed and renovated, as well. A group of suites on both corners of the stadium’s eastern side are being reworked. Typically the least lucrative suites, the changes should bring improved revenue to the Athletic Association.

“We’re taking the three suites out on the southern end and converting them to office space for Georgia Tech Sports Properties,” Hogan said. A division of International Sports Properties Inc., Georgia Tech Sports Properties works in multimedia marketing, event management, and marketing and promotional support services. The group will move from its Buckhead office to work on-site.

Hogan said, “A group of fans is also coming the three suites in the northeast corner into a super-suite, with an outdoor patio and balcony. ‘It will have a really upscale interior and will hold up to 75 people,’ he says. ‘They are facing forward, and because of the position of the suites, it is difficult to see action on the field.’

Hogan says the new patio area will correct this, with 50 seats angled for a better view of the field.

Additionally, concrete areas of the stadium will be dressed up with gold-and-white piping and other graphics, and the Athletics Association is updating its cameras and video production equipment.

Completion of the video screen installation is slated for July 15, with a completion date of Aug. 1 for the other projects.

These renovations and improvements have been in the works for a while, Hogan says. “The video and sound improvements are from one source, costing roughly $4.5 million,” he said. “Increased revenue from corporate advertising and the $1 million we received from a multiyear contract with Coca-Cola helped jump-start this.”

“We are currently in the process of scheduling,” he says. “In July, a great [football] schedule this year,” Hogan said. “We play Georgia, Clemson and Virginia Tech—all marquee games.”

In addition to the stadium, construction continues for the Zelnak Practice Facility for Tech’s basketball teams, which is slated to be finished Oct. 15. The new facility will not only offer an additional court for practice, but will provide a weight room and meeting room.

LEFT: A rendering shows how the new video screen and advertising spaces will be situated in the southern end zone of Bobby Dodd Stadium. BELOW: Construction crews work on the video screen.

NCR's connections to Georgia Tech have been in the works for a while, according to senior Vice Provost for Research and Innovation Mark Allen.

“The decision to consolidate in Georgia and build a techology-focused corporate headquarters campus is really aligned with our business strategy to drive growth, improve our innovation output, increase productivity and continually upgrade our focus on the customer,” Nuti said in the June 2 announcement.

NCR will join 13 other Fortune 500 companies and 29 other Fortune 1,000 companies already headquartered in Georgia. “Georgia Tech is committed to supporting innovation through university-industry collaborations, and we believe there are many opportunities for us to work with NCR,” said Mark Allen, Senior Vice Provost for Research and Innovation.

For a more comprehensive listing of events updated daily, visit www.gatech.edu/calendar.

REAL ESTATE/ROOMATES
For rent: Large 1BR/1BA, 830 sf. Midtown condo, located at elegant 800 Peachtree. Light, gym, game room, theater, pool. Covered, secure parking. E-mail monti@gatech.edu for more info or pics. 404-539-2746.

For sale: 2005 Chevrolet Avalanche. Black, fully loaded, asking $13,000. Call Asha Gaddad at 678-777-8179 or e-mail ashagaddad@gmail.com.

For rent: Large 1BR/1BA, 830 sf. Midtown condo, located at elegant 800 Peachtree. Light, gym, game room, theater, pool. Covered, secure parking. E-mail monti@gatech.edu for more info or pics. 404-539-2746.

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Training that’s off the wall

The Atlanta Fire Department practiced rooftop rescue training at the abandoned Burge Apartments on North Avenue on June 9.

CAMS, continued from page 1

are incurred in hiring one graduate level and several undergraduate teaching assistants and providing lunch for attendees.

“We change the agenda every year, which allows different faculty members to participate,” Conrad said. “As a result, faculty members tend to become more involved in outreach.”

An added benefit for camp attendees is the interaction with undergraduate student teaching assistants. “Working with these undergraduates, they learn about ECE and college campus life,” Conrad said. “Kids learn a lot from the TAs—their experience is that they can relate.”

And since the program has been on the books now for three years, Conrad says this year’s incoming freshmen will be compared with those who have attended the camp since 2006 to see how much, if any, recruitment can be attributed to the camp. Each camp ends with a session from Undergraduate Outreach.

During the year, the ECE Outreach office provides full-day tours for high school students and resources for high school physics teachers.

More than meets the eye

The Microelectronics Research Center (MiRC), in conjunction with the National Nanotechnology Infrastructure Network, offers two sessions of Nanotechnology Explorations. High school students may have an opportunity to become involved in research. “I think it’s important that students realize it’s not just SAT scores that matter,” she said. “Schools are looking for those who are involved in other activities, those who are more well-rounded.”

During the five-day camp, students learn about the unique properties at the nanoscale, energy research and nanotechnology, sensors and nanotechnology, tools of nanotechnology and societal issues related to nanotechnology. But Palmer, who has overseen the camp for the past two years, says she wants to take the camp further this year.

“A concern I have is that only students who can make it to the Tech campus can attend,” she said. “We wanted to try and get our camp to other schools.” Through a RESA grant (Regional Educational Service Agency), Palmer will be instructing teachers from three different schools Georgia schools to conduct their own nanotechnology camps later in the summer. “It’s a nice way for some of the top students to have extra STEM [science, technology, engineering and mathematics] exposure.”

During the year, MiRC conducts both student tours and teacher workshops, and Palmer spends time touring state high schools. “We try to help teachers realize they can teach nanotechnology in what they already teach.”

“The expertise and passion that Tech faculty and students have for their subject is tremendous, and summer programs present opportunities for students, parents and teachers from across Georgia and the nation to know what leaders in STEM research and education look like,” Ryan said.

And while the Tech community and facilities obviously stand out, it is the very idea that Tech provides a place and a context to inspire the next scientist or engineer which makes it great.”

High school summer camps

Wall Street on West Peachtree
July 22-26, College of Management

Engineering the Future
July 30-31, School of Aerospace Engineering

Bio @ Tech: Advanced Biology
June 1-19; July 13-31, School of Biology

Hands-On-Tech — HOT Days @ GT
June 8-12; June 15-19, ECE

NanoTours Explorations
July 22-26; July 13-17, MiRC

CSI: GT
July 1-10, supported by the School of Architecture and Biochemistry and the Department of Biomedical Engineering.

Career Discovery in Architecture
June 8-19, College of Architecture

Summer I.C.E. Scribbler @ Tech
June 15-19, College of Computing

Summer I.C.E. NXT @ Tech
July 20-24, College of Computing

Life on the Edge: Astrobiology
July 6-10, Schools of Chemistry and Biochemistry, and School of Biology

For more information, visit www.cisamc.gatech.edu

FLU, continued from page 1

Infectious persons living on campus and unable to return home will be housed in a more isolated setting while sick, to prevent spreading the flu to other members of the student body. Housing staff will conduct daily check-ins with the student. If any emergency or further medical care is warranted, Health Services or other emergency medical providers will be contacted and the Institute will inform the proper authorities.

Housing will provide a “room supply kit” for isolated students consisting of cooking utensils, food supplies, cleaning supplies, linens and masks for both the student and visitors.

Any faculty and staff member exhibiting flu-like symptoms is encouraged to check with his or her health care provider. If infected with either influenza A or H1N1, he or she is strongly advised to stay home for seven days after symptoms begin or until symptoms subside for 24 hours, whichever is longer.

According to the Centers for Disease Control and Prevention (CDC), H1N1 is of concern for several reasons. Experts have said the existing flu vaccine is not effective, it is likely to become the dominant strain in the coming flu season and a significant portion of the population is susceptible to H1N1.

Check the Stamps Health Services Web site for a link to the CDC for information regarding symptoms and care for H1N1 infection.

For more information

www.health.gatech.edu

www.cdc.gov/swineflu/

CLASSIFIEDS

FURNITURE/APPLIANCES

Bedroom set: headboard, dresser/mirror, night stand, chest. Modern style, medium wood tone, exc. cond. $500 OBO. Also, dinette: $90; entertainment system: $500; and rug: $75. For more information, e-mail tina.alexandrakis@gatech.edu.

Queen size bed frame for sale, solid wood, easy to assemble, with mattress. Asking $400. Call 678-390-0135 for more info.

1 black couch and 1 black couch chair: $200 OBO for both. Will sell separately. Both are 10 years old, in fair condition. Furniture needs to be sold quickly. E-mail Tal. Lakhan at talismolecule@gmail.com for pics and pick up info.

Queen-sized bed in excellent condition, mattress, box spring and frame. $140. Also, 7-ft. sofa, brown, exc. condition. $50. E-mail masako.kanno@modlangs.gatech.edu.

Dining room set. Solid, wood construction; mahogany stained. Table is 74” x 40” x 30”. Buffet is 46” x 18” x 33”; 6 chairs with padded seats and back, no rips, tears or stains. Custom designed to fit into a condo, left or townhouse. $999. For pics or info, e-mail gary.samuels@blueoseph.edu.

2-piece (couch/love seat) family room seating group. Forest green, very nice, thick cushions, good condition, very comfortable. $150 OBO. Priced for quick sale. E-mail Angela at angela.boyd@gatech.edu or call at 404-407-7005.

MISCELLANEOUS

Ten used large Igloo doghouses for sale. Will hold 100-lb dogs easily. New ones cost more than $125. Will sell these used ones for $25 each. For pics and info, e-mail kay.kinard@coe.gatech.edu.

Check out more ads at www.whistle.gatech.edu. Ads appear and are published for three issues in the order in which they are received. E-mail submissions to editor@comm.gatech.edu.

www.whistle.gatech.edu

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