THE WHISTLE

International flavor

photo by Nicole Cappetto

Tech kicked off International Education Week last month with an international food festival showcasing the cuisines of Turkey, Bangladesh, Myanmar (Burma), Indonesia, Iran, Brazil and Spain. This fall, Georgia Tech is host to 2,935 international students, more than any university in Georgia.

Industry leaders assess state of technology sector in Georgia

Elizabeth Campell
Institute Communications
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Technology industry leaders examined the strengths, weaknesses and future of the technology industry in Georgia in a forum entitled "Technology Georgia: Fact, Fiction, Future," hosted last month by the DuPree College of Management. The planning team for the forum, conceived originally by Michael Cummins, professor and director of technology and innovation for the College, partnered with the Technology Association of Georgia (TAG) for this program. The event garnered a strong showing from members of the technology business community interested in exploring ways to expand Georgia's vibrant technology sector.

President Wayne Clough initiated the forum with a keynote address

Michael Cummins, professor in the DuPree College of Management.

outlining major milestones over the past 25 years in Georgia. He offered two major points for the audience to be aware of — the wide range of technology industries in Georgia and the global arena under which the Georgia technology sector must now compete.

Simulated simians pick best football teams as well as the experts

Sean Selman
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According to lore, during a debate in 1860, evolutionist and agnostic Thomas Huxley argued that six immortal monkeys working at six infallible typewriters given an unlimited supply of paper and ink one day could bang out the entire works of William Shakespeare.

Tricky? Absolutely. But it helped him defend his point at the time, which was that it didn't take an omniscient and enigmatic God to create man — only time and evolution.

Now an undergraduate researcher in the School of Mathematics — and his two faculty advisers — say that a team of monkeys tossing coins and picking their favorite football teams could come up with the same championship teams as the enigmatic NCAA Division I-A Bowl Championship Series (BCS) ranking system.

They've developed calculations that demonstrate it.

While analyzing the BCS rankings this past summer, Thomas Callaghan, a junior, working alongside Assistant

Professor Peter Mucha and Visiting Assistant Professor Mason Porter, scratched his head and wondered: Could a bunch of monkeys rank the top Division I-A football teams at least as well as the expert coaches, professional sportswriters and complicated algorithms that constitute the BCS system?

It turns out that they can, at least in theory. Callaghan tested the hypothesis using simulated monkeys — the actual, mathematical term is "random walkers" — and a list of the 117 teams playing in Division I-A.

"Each of our virtual monkeys got a single vote to cast for the best team in the nation, making their decision based on only one, simple guideline — they periodically look up the win-loss outcome of a single game played by their favorite team, and they flip a weighted coin to determine whether to change their allegiance to the other team when making their vote," Callaghan said.

The "weighted coin" is the key, Callaghan said. In this hypothesis, the monkey's coin toss is meant to imitate what happens in the real world when there's a better-than-50-percent

photo by Gary Meek

From left, Assistant Professor Peter Mucha, undergraduate Thomas Callaghan and Visiting Assistant Professor Mason Porter.

chance that the winning team — say, "heads" — is the better team. But the "weighted coin toss" also allows the losing team — or "tails," with a less-than-50-percent chance of winning — to still be considered the better team

by voters, thus regarding the game as an upset. The monkey simply casts its vote according to the outcome of the coin toss.

TAG, cont'd from page 1

"We can no longer content ourselves with creating more jobs than Milwaukee or Tampa or San Francisco because with the Internet and mobility of high-tech talent, job creation can occur anywhere," said Clough. "A growing number of technology jobs are moving to places like India, China and the Philippines as these nations develop skilled workforces and build modern network infrastructure."

Cummins shared some data on how Atlanta compares to other high-tech capitols in the United States in such areas as venture capital investments, number of employees in each sector, numbers of patents, research expenditures and so forth. The audience seemed surprised to hear that in terms of employment numbers, the Atlanta Economic Area ranks number one in the United States in one industry cluster — textiles.

"I was a bit surprised that no one really questioned or challenged some of the findings," he said.

Cummins sought to provide panelists and the audience with a factual assessment of Georgia's technology sector and to drive the discussions of the two panels of industry thought leaders. He challenged the audience to think about the state's reputation in high tech, where its focus should be, and which other Georgia cities offered the greatest potential to develop into significant high-tech sectors.

Bill Goodhew, vice president of Intelligent Systems Corporation; Mike Cote, CEO of SecureWorks; and Mamundi Subhas, director of portfolio analysis with Neuberger Berman, participate during the morning's panel discussion on factors affecting the state's technology industry.

photo by Nicole Cappello

"The panel seemed to be divided between an activist view that we needed to find a focus for the tech sector and develop plans and policies to drive us toward a clear goal," Cummins said. "The others seemed to take a laissez faire view that things are pretty good and we just need to keep doing what we are doing."

The panels assessed the high-tech sector and debated such factors affecting the industry as lack of venture capital, business culture, need for a major home-grown tech company and synergy.

"Nobody knows exactly what the next big inventions will be, but if we cultivate an environment of innovation — an environment of new ideas and collaboration — we can be the ones who discover them and take competitive advantage of them. We can continue to be the master of innovation, the leader in developing the next generation of tools and products in emerging fields," said Clough.

BCS, cont'd from page 1

This system is far less complex than the labyrinthine BCS system, which looks at much more than a team's win-loss record. The BCS system takes into account such things as the strength of an opposing team, when a game is played in a season, a team's poll averages and the computer rankings assigned to teams by several formulas. Callaghan's Monkey Ranking System looks only at wins and losses.

"We let the monkeys change their minds over and over again, but the total number of votes cast for each football team quickly stabilizes," Mucha said. "We thereby obtain rankings each week of the season and, at the end of the season, by looking at the fraction of monkeys that have voted for each team."

Using this formula, the mathematicians compared the monkey rankings with the real rankings from the past 33 seasons of Division I-A football.

It turns out the monkeys do almost as well as the BCS system in picking the two teams that face off in the national championship. For example, at the end of the 2002 season, the monkeys picked Miami and Ohio State as the top two teams. In 2001, they picked Miami as the top team and, in 2000, they picked Oklahoma.

"Although an individual monkey never settles on an individual team, the collective behavior of all the monkeys after they all vote appears to give you a meaningful ranking of teams," Mucha said. "We're not statisticians. We don't know anything about statistics. We're just doing this as a fun research topic. But I think we've proved our point."

And that is?

"One of the main things that comes up in this is its simplicity," Mucha said. "All our system does is take into account who beats who." Using that data, "we come up with a ranking system that, in the end, is almost comparable to all the other systems used to rank teams today."

The researchers are quick to point out, however, that they haven't come up with the best way to rank Division I-A football teams.

"Saying our system is better than the others — you're not going to win that argument," Mucha said. "This was about trying to make decisions in an environment where you have very little data. It has applications to many settings, especially in helping a student understand how to attack a problem with little data when you're forced to make a decision."

Callaghan is more succinct.

"I believe there should be a play-off system," he said.

This summer research experience was funded by National Science Foundation funds in the three-year, $1.5 million VIGRE program, which aims to increase the number of Americans who pursue careers in the mathematical sciences. The VIGRE program is intended to help stimulate and implement permanent, positive changes in education and training within America's mathematical sciences. Porter's postdoctoral position at the Institute is another component of Georgia Tech's VIGRE award, which encourages research interactions with undergraduates such as Callaghan.

"The projects are intended to involve students in the creative aspects of mathematics in a non-classroom setting, and they're also expected to enhance the development of students' communication skills," Porter said, adding that Callaghan's project did all those things while examining a topic of real interest to scientists and football fans.

"We spent time looking at this football network. But there are networks all over the place," Porter said. "You can look at networks in Congress, or when looking at the power grid and, of course, when you're talking about the Internet. Each of those represents a network of some kind. That's what makes it beautiful for Thomas to pursue this as a research project."

NASA names professor to shuttle safety advisory panel

Independent oversight of the agency's policies and programs

*Larry Bowie
Institute Communications
and Public Affairs*

Augustine Esogbue, a professor in Georgia Tech's School of Industrial and Systems Engineering, is among nine safety, management and engineering experts tapped by NASA to lead its Aerospace Safety Advisory Panel (ASAP). All former members of the panel resigned in September after being criticized by Columbia Shuttle investigators and members of Congress for being ineffective.

The new panel is expected to play an important role in the ongoing safety assessment and review of the space shuttle program as it prepares to return to flight.

Esogbue, who also serves as director of the Intelligent Systems & Controls Laboratory, is one of only two members selected to the panel who hold academic appointments. The rest were selected from the military and private industry. The panel was chartered by Congress in 1967, after the fire aboard Apollo 1, to act as an independent body advising NASA on the safety of operations, facilities and personnel.

"The Columbia Accident Investigation Board report clearly indicated we need to get back to basics with our safety assessment," NASA Administrator Sean O'Keefe said in a written statement. "By recommitting ourselves to the original concept for the ASAP, we believe a stronger, more focused advisory panel will benefit the entire agency well beyond our return to flight efforts."

In naming the members, NASA also announced the new panel will begin with a new charter — the original charter from 1967, signed by then-NASA Administrator James E. Webb. According to NASA, the new provisions help assure an independent, long-term oversight of the agency's safety policies and programs. Some of the revisions include:
• The new ASAP will report quarterly instead of annually;
• The term for new members is two years, extendable to a maximum of six years in order to stagger terms of service and ensure a fresh perspective at regular intervals; and
• The new ASAP focuses on NASA's safety and quality systems. ASAP will focus on industrial and systems safety, risk management, trend analysis and the management of these activities.

The new panel will have the opportunity to develop its agenda in concert with the oversight findings of the Columbia Accident Investigation Board, according to NASA.

"By drawing on and tasking the technical support of the NASA Engineering and Safety Center, the panel will have a deep capacity to conduct

comprehensive, independent, external oversight of our safety systems, operations and culture," O'Keefe said. "We welcome the members' active participation in our efforts to emerge from the Columbia tragedy a smarter, stronger and safer agency dedicated to exploration."

Esogbue has been a professor at Georgia Tech since 1972. In 1976, he founded Tech's chapter of the National Society of Black Engineers and currently serves as the chapter's faculty advisor.

As director of the Intelligent Systems and Controls Laboratory, he is currently investigating a hybrid approach to intelligent control via fuzzy sets, neural networks, and reinforcement learning theories, as well as its application to various large-scale, nonlinear and uncertain dynamical systems.

Augustine Esogbue

Nominations requested for annual faculty honors

The Faculty Honors Committee is soliciting nominations of faculty members as candidates for recognition in seven categories.

Given the highly competitive nature of the awards, Linda Thomas-Mobley, chair of the committee, said that her committee welcomes re-nominations, which require submission of previously submitted and updated materials. Other noteworthy items include the addition of one new award category, established to recognize faculty involved in undergraduate research efforts.

The awards, which will be presented at the Faculty/Staff Honors Luncheon on April 7, 2004, include:

• Distinguished Professor Award;
• W. Roane Beard Outstanding Teacher Award and the W. Howard Ector Outstanding Teacher Award;
• Outstanding Service Award;
• Outstanding Continuing Education Award;
• Outstanding Interdisciplinary Activities Award;
• Outstanding Innovative Use of Education Technology Award; and
• Outstanding Undergraduate Research Mentor.
Nominations must be received by January 31, 2004. More information about the categories and nomination requirements may be found at **www.facultyhonors.gatech.edu**.

Correction: A news item in the Nov. 17 issue incorrectly listed the dates for making donations to the Toys for Tots program. The Office of Student Financial Planning and Services will be accepting new and unwrapped toys until Dec. 19.

Wanted: faculty to lead academic integrity seminars
The Office of Student Integrity is looking for a few good faculty members to lead seminars on academic integrity for students who have engaged in less-than-ethical academic behavior. The seminars are held once a week for four weeks throughout the coming semesters. Facilitators will lead the class in discussions and lessons based on a curriculum prepared by the Office of Student Integrity. No take-home work is required. Facilitators will undergo two two-hour training sessions the week of January 5, 2004. For more information contact Ericka McGarity, judicial coordinator, at 385-1562 or ericka.mcgarity@vpss.gatech.edu.

Name change for the Global Learning Center
Georgia Tech's new Global Learning Center at Technology Square recently announced a name change. The new name for the facility is the Global Learning & Conference Center. The word "conference" was added to better reflect the overall scope of the GLCC's business. In addition to hosting Georgia Tech's Distance Learning and Professional Education programs, the GLCC is the most technology-enhanced conference facility in the Southeast with more than 32,000 square feet of meeting space. The GLCC is ideal for hosting academic, corporate or association meetings, as well as business retreats or educational/training events. To book a meeting or find out more about the new Global Learning & Conference Center, visit **www.glcc.gatech.edu**.

Holiday book drive to benefit local women's shelter
The Staff Activities Committee at the Library and Information Center is sponsoring a holiday book drive to benefit My Sister's House, a local women's shelter.

Donations of books, educational materials — especially GED preparation manuals — children's videos, and crafts will be accepted for all ages. The donations are used to provide a library for the residents of the shelter.

The committee also will take donations of women's toiletries, which will be presented in holiday baskets. Collection boxes will be located in the Rotunda of the Library and Information Center from Dec. 1-18. For more information, contact Library Associate Karen Manning at 894-4523.

Bookstore holds annual holiday shopping sale
Barnes and Noble @ Georgia Tech holds its annual campus appreciation sale for faculty, staff and students, offering a 20 percent discount on general merchandise, trade books, school supplies, cafe items, music and DVDs during the week of December 1-5.

To receive the discount, show the cashier a BuzzCard at the time of purchase. For more information, call 894-2515 or visit **www.bkstore.com/gatech**.

C A M P U S   E V E N T S

Arts & Culture

Dec. 5

The Ferst Center for the Arts welcomes the gospel-rooted music of The Blind Boys of Alabama for an 8 p.m. show. Faculty and staff receive a 10-percent discount. For tickets, call 894-9600 or visit **www.ferstcenter.org**.

Dec. 7

The Ferst Center for the Arts welcomes the Moscow Boys Choir for a 2 p.m. show featuring a program celebrating Christmas around the world. For tickets, call 894-9600 or visit **www.ferstcenter.org**.

Brown Bags/Conferences/Lectures

Dec. 3

The School of Psychology's Distinguished Lecture Series welcomes Henry Roediger III, professor and chair of the Department of Psychology at Washington University in St. Louis, on "Aging and False Memory: Exploring Mark Twain's Conjecture," at 3 p.m. in room 250, J.S. Coon Building.

Dec. 3

The Center for Assistive Technologies and Environmental Access hosts a lunchtime discussion on strategies and methods for creating accessible distance education. Lunch will be provided for registered attendees. To register, e-mail barbara.christopher@coa.gatech.edu.

Dec. 4

The GVU Center's Brown Bag Series hosts Michael Best, research affiliate at the MIT Media Lab, on "Spectrum, VoIP and Development: Computers and Communication in International Development," at noon in room 102 of MiRC. For more information, call 894-4488.

Dec. 5

The Seminar in Science and Technology Studies welcomes Miriam Solomon, professor of philosophy at Temple University, on "The Social Epistemology of NIH Consensus Conferences," at 3 p.m. in the Clary Theater.

Dec. 11

The Molecular Design Institute's fall lecture welcomes Chad Mirkin, professor of chemistry at Northwestern University, on "Nanostructures in Biodiagnostics: Will They Make a Difference?" at 4 p.m. in the MaRC auditorium. For more information, e-mail will.rees@chemistry.gatech.edu.

Faculty/Staff Development

Dec. 3

The Office of Sponsored Programs hosts a class on "Intellectual Property and Technology Transfer," from 2 - 4 p.m. in room 119, Centennial Research Building. To register, call 894-6944.

Miscellaneous

Dec. 2

The fall meeting of the Academic Senate combined with a called meeting of the General Faculty will be at 3 p.m. in the Student Center Theater. An agenda is posted at **www.facultysenate.gatech.edu**. For more information, e-mail said.abdelkhalik@me.gatech.edu.

Dec. 3-5

The Holiday Craft Fair will be held from 9:30 a.m. - 3:30 p.m. in the Student Center lobby.

Dec. 4

A Fidelity Investments counselor will be available for confidential financial consultations. To schedule an appointment, call 800-642-7131.

Dec. 8

All faculty and their spouses/guests are invited to the Georgia Tech Faculty Women's Club Holiday Wine and Cheese Party, from 5 - 7 p.m. in the Alumni Faculty House.

Dec. 17-18

A TIAA-CREF consultant will be on campus to conduct free individual counseling sessions. To schedule an appointment, call 800-842-2003 or visit **www.tiaa-cref.org/moc**.

C L A S S I F I E D S