CHAIR’S MESSAGE

After a busy year, the summer break provided a much needed respite. As we get ready for the new academic year, we welcome our new students—both graduate and undergraduate. I am also pleased to announce that Bruce Maggs, a Professor of Computer Science at CMU, will be spending a year in the Department as a Visiting Professor. His research interests span from theoretical computer science to computer networks and distributed systems.

It is always a pleasure to share the accomplishments of the members of the Department, and there are many. Alex Hartemink won the 2007 David and Janet Vaughn Brooks Award, one of the four Trinity College teaching awards, for his extraordinary teaching skills. Herbert Edelsbrunner received the 2007 Dean’s Award for Excellence in Mentoring. Shivnath Babu received the prestigious CAREER award from NSF for his work on developing innovative data management techniques. Ron Parr was promoted to Associate Professor, with tenure. He also received a $500,000 grant from DARPA to develop techniques for decision making under uncertainty. Alvy Lebeck was promoted to Full Professor. Not only is Alvy an outstanding researcher, he has also served the Department in many capacities. Vince Conitzer received the 2006 Victor Lesser Distinguished Dissertation Award. We just learned that Owen Astrachan was selected as one of the first NSF Computer and Information Science and Engineering Distinguished Education Fellows. Tiffany Chen and Lauren Cohen, two Computer Science undergraduates, were among the twenty winners (nationwide) of the Anita Borg Memorial Scholarship, and undergrad Kshipra Bhawalkar was one of thirty finalists.

After serving the Department for many years, Dee Ramm and Bob Wagner retired this summer. A founding member of the Department, Dee came to Duke as a graduate student in 1964 and became a faculty member in 1970. He was the Associate Chair and the Director of Undergraduate Studies for many years. Bob joined the department in 1978 as an Associate Professor, and he was the Director of Graduate Studies from 1994 to 2002. We owe them a deep gratitude for their numerous contributions.

The Department is the recipient of a GAANN (Graduate Assistance in Areas of National Need) award this year from the US Department of Education. This award will help us in training more students in the area of managing and analyzing large data sets and in promoting diversity in our graduate program.
ALVIN LEBECK PROMOTED TO FULL PROFESSOR

**WE ARE PLEASED** to announce that the Provost has approved the promotion of Alvin Lebeck to the rank of Full Professor. “Duke is a wonderful place for both teaching and research,” states Lebeck, “and I really enjoy the personal interactions with students, undergraduate and graduate, both inside and outside the classroom. I also have a great set of colleagues in both Computer Science and Computer Engineering that I enjoy working with and appreciate deeply. I look forward to all the great things yet to come for the Duke Department of Computer Science.”

Lebeck’s area of expertise is computer architecture, a sub-field in the broader area of computer systems that focuses on constructing the fundamental building blocks of computing and communication infrastructure. He is specifically interested in exploring the interactions at the hardware/software boundary and the effects of technology trends on system design. His past research accomplishments include memory hierarchies, parallel systems, and energy-efficient computing. Over the last few years he has been exploring the impact of emerging nano-technologies on the way computer systems are designed, specifically DNA self-assembled computer systems. The semiconductor industry has identified replacing CMOS (the current technology for fabricating computer chips) as one of its grand challenges. It is this challenge that Lebeck’s current research seeks to overcome.

Department Chair Pankaj Agarwal states, “A superb researcher, a conscientious and well-respected teacher, and a dedicated citizen, Alvy has played a pivotal role in the success of the Department. All of us have benefitted and will continue to benefit from his presence at Duke.”

RONALD PARR PROMOTED TO ASSOCIATE PROFESSOR

Duke University has recognized the contributions of Ronald Parr with a promotion to Associate Professor, with tenure. “I received a lot of support and encouragement from the senior faculty, staff, and students,” Parr said, “This motivated me to work hard, not just because I wanted to succeed, but because I wanted to succeed and build a career at Duke.”

Parr’s research in artificial intelligence includes planning, machine learning, and robotics. His work has both algorithmic and theoretical facets, as well as more applied utility. Although his students prove theorems, some of them also build robotic contraptions held together with duct tape. “Many people think of themselves as either doing theory or building systems,” Parr explains, “but in artificial intelligence, we have to do both. We don’t have a complete theory of intelligence, so we need to experiment and adapt on a continual basis.”

Parr recently received a $500,000 grant from DARPA to develop algorithms for collaborative decision-making in conditions of incomplete information. This work builds on his previous work in multiagent planning and planning under uncertainty. Parr’s work in this area was recently recognized by his peers when his paper, “Efficient Solution Algorithms for Factored MDPs,” with coauthors Carlos Guestrin, Daphne Koller and Shobha Venkataraman received the IJCAI-JAIR best paper award for 2007. The award identifies outstanding papers published in the Journal of Artificial Intelligence Research (JAIR) over the preceding five years, based upon both significance of the paper and quality of the presentation.

Some of the ideas in the award-winning paper appeared in Parr’s job talk when he interviewed at Duke in 2000. Parr reflects, “I’m really grateful that some decisions made under uncertainty seven years ago were affirmed this year.”
HERBERT EDELBRUNNER RECEIVES MENTORING AWARD

PROFESSOR HERBERT EDELBRUNNER is a recipient of the 2007 Dean’s Award for Excellence in Mentoring, an award which is sponsored by the Graduate School to honor outstanding examples of mentoring-in-action.

Since joining the Department of Computer Science in 1999, Edelsbrunner has mentored eleven graduate students. Current PhD student Amit Patel agrees that the award is well-deserved, saying that “Herbert guides with amazing intuition and patience.” Edelsbrunner believes there is no perfect advisor or student, and that a critical element of successful mentoring is a good advisor-student match.

In describing his practices, Edelsbrunner says he places strong emphasis on clarity of writing and that he requires his students to write numerous iterations until their papers are clear, short, and to the point with no extra words. His second emphasis is on moving students beyond technical aspects to consider the philosophical component of their research.

PhD student Bei Wang appreciates Edelsbrunner’s mentoring, reflecting that at their meetings, “He sits behind his desk surrounded by his library of books, pointing out my weaknesses and elevating my thoughts with a smile on his face.” Adds PhD student Dmitriy Morozov, “Probably the most remarkable aspect of Herbert’s mentoring is that despite running several research projects and his own multi-national company, he always finds time to meet with me.”

ALEXANDER HARTEMINK RECEIVES TEACHING AWARD

ASSISTANT PROFESSOR ALEXANDER HARTEMINK has won the 2007 David and Janet Vaughn Brooks Award, one of the four Duke University Trinity College teaching awards. Hartemink’s effort to create a welcoming classroom environment—in small classes he makes tea for his students throughout the semester—is one of the reasons why he won the award.

This award recognizes faculty for their ability to encourage intellectual excitement, their openness to students, and their commitment to teaching, among other criteria.

In his nominating letter, Pankaj K. Agarwal, Chair and Professor of Computer Science and Professor of Mathematics, said Hartemink’s broad knowledge allows him to teach students the latest developments in the field. “He’s a great professor and the students like his classes, not because they are easy but because they find the experience stimulating and exhilarating,” Agarwal said.

Hartemink, who has been teaching at Duke for six years, says his style and philosophy are based on “inquiry-based, experiential learning.” That means inspiring students to engage with the material for their own reasons, primarily through relevant, hands-on projects whose solutions the students are eager to find.

VINCENT CONITZER RECEIVES DISTINGUISHED DISSERTATION AWARD

ASSISTANT PROFESSOR VINCENT CONITZER has won the 2006 IFAAMAS (International Foundation of Autonomous Agents and Multi-Agent Systems) Victor Lesser Distinguished Dissertation Award for his PhD thesis “Computational Aspects of Preference Aggregation.” This award, presented annually, recognizes PhD theses of special depth, originality, and impact on the field of agents and multi-agent systems. It was presented to Conitzer at AAMAS 2007.

In his dissertation, Conitzer studies settings in which a number of parties must make a joint decision, in spite of the fact that they may have conflicting preferences over which decision is made. Examples include elections and auctions.

Conitzer received his PhD in Computer Science from Carnegie Mellon University in 2006, and is beginning his second year at Duke.
ASSISTANT PROFESSOR SHIVNATH BABU has been awarded an Early CAREER award from the National Science Foundation (NSF). The award is one of the highest honors given by NSF to outstanding young tenure-track scientists and engineers who show exceptional potential for leadership at the frontiers of knowledge.

As part of the award, NSF will provide $500,000 over the next five years. Babu will use the award to support his Ques research project, which uses innovative data-management techniques to tackle the spiral towards unwieldy systems, high administrative costs, and frustrated users. The increasing complexity, scale, and dynamics of networked computing systems make it hard for users and system administrators to understand and control these systems. Ques treats a computing system as a rich source of data about system configuration and activity. Ques addresses challenges in making systems more manageable by human administrators.

Babu came to Duke in 2005 after earning his PhD in computer science from Stanford. He recently developed a popular freshman seminar designed to teach the history, technology, and ethical issues behind Google to computer science neophytes.
COPSE (Concurrent Opportunistic Sensor Environment)

Wireless Sensor Networks gather and export information about the physical environment to computer systems. They provide this service by forming ad-hoc topologies and aggregating or streaming thousands of local observations to a central location. This model has been most successful in scientific and military settings such as wildlife surveillance, volcano monitoring, and vehicle tracking.

These networks are practical because sensor nodes such as Crossbow motes provide an attractive price-performance ratio. Motes’ low cost makes installations of hundreds or thousands of observation points feasible. The affordability of such large networks allows deployments to cover large geographic areas and creates redundancy for overcoming the high failure rate of individual nodes. Yet despite being relatively inexpensive, motes’ computational and communication technologies are powerful enough to support a wide range of complex applications such as sets of co-located MAC addresses, ESSIDs, BlueTooth devices names, and access points’ signal strength over a large geographic area. This allows users to extend their view of and participation in otherwise out-of-range wireless services and enables applications such as mobile testbeds, network weather maps, mobile social networks, and ad-hoc network bridges.

Though the work on COPSE is in its earliest stages, Cox and his students have already established collaborations with a number of entities at Duke and in industry. Two of his graduate students, Eduardo Cuervo and Peter Gilbert, are working closely with Nokia Research in Palo Alto to develop the underlying virtualization software for Nokia handsets. Once this software is ready, they plan to deploy a small-scale COPSE testbed in the Duke SmartHome in 2008; the testbed will consist of several Nokia devices with our software, handed to SmartHome residents to use as their primary mobile phone. In addition, Cox has been working closely with Duke ECE Professor Ramit Ray Chaudhury to imagine how this testbed can enable the next generation of wireless services.

COPSE takes a peer-to-peer approach to sensor networks by allowing end-users to safely install and run custom code on volunteer co-located devices. The host device multiplexes its computational, communication, storage and power resources among its guest COPSE applications as well as its own applications. A guest application can interact with like-instantiations on other devices, self-propagate to find new volunteer hosts, as well as communicate information about its execution and physical environment back to its owner.

There are two critical differences between COPSE and traditional sensor networks. The first difference is the trust models. A COPSE application is untrusted by the volunteer hardware on which it executes, while in traditional sensor networks the same entity typically owns both the application and the motes on which it executes. Because of this, a COPSE application must have minimal impact on host devices. This requires hardware and software support for correctness, performance, and power isolation between the COPSE and non-COPSE applications sharing a device. Furthermore, since a host device is physically bound to its owner, information about the device’s location can leak information about the device owner’s location. Thus, the interface between a COPSE application and its host devices’ physical environment must be carefully managed; users should not have to worry about uploading an adversary’s tracking software onto their mobile phone. COPSE addresses both concerns through pocket hypervisor virtualization. Pocket hypervisors are identical to desktop hypervisors in most ways, but contain additional mechanisms and policies for providing power isolation and location privacy for host devices.

The second key difference between traditional sensor networks and COPSE is the kind of observations available to nodes and the applications enabled by those observations. Motes use their onboard sensors to export information about the physical conditions of their location such as temperature, pressure and light readings. This makes them useful for monitoring natural phenomena in places that are too remote or dangerous for humans. In contrast, COPSE applications use their host devices’ BlueTooth and WiFi interfaces to observe network phenomena such as sets of co-located MAC addresses, ESSIDs, BlueTooth devices names, and access points’ signal strength over a large geographic area. This allows users to extend their view of and participation in otherwise out-of-range wireless services and enables applications such as mobile testbeds, network weather maps, mobile social networks, and ad-hoc network bridges.
The Department of Computer Science is pleased to be one of eleven computer science departments nationally to be selected to receive a GAANN (Graduate Assistance in Areas of National Need) award this year from the United States Department of Education. This $383,643 award will provide for three PhD fellowships for each of the next three academic years, with an additional 25% cost-share commitment by the Duke Graduate School. In its commitment to graduate training, and in an effort to further develop the diversity of the graduate community, nine faculty collaborated in defining research that they could engage in that would meet an area of national need. Their discussions resulted in a common topic of how to manage and analyze large sets of data that are acquired from sensors. The GAANN award will be used to increase the pool of US citizens and permanent residents applying to the PhD program, with emphasis placed on increasing program diversity. Toward that end the Department’s GAANN oversight committee will be seeking out promising, qualified prospective students.

Susan Rodger Receives NSF and IBM Funding

An innovative and effective way to introduce computer science to middle school and high school students is the Alice programming language. Alice is a programming environment designed to enable novice programmers to create 3-D virtual worlds, including animated movies and games. Students learn how to manipulate 3-D objects (teach a person how to walk, a bunny how to hop, or a pterodactyl how to flap its wings) while learning computer science concepts. Alice has already proven successful with college students, in summer technology camps, and in the Girl Scouts, with middle school students. In February 2007, the National Science Foundation awarded a collaborative grant for $1.3 million to Duke, Saint Joseph’s University, Ithaca College, Colorado School of Mines, and Santa Clara University, to run six regional training sites to train high school and middle school teachers how to integrate Alice into their curricula. Duke will receive an additional $30,000 from IBM to support the training of additional teachers. At Duke, Professor Susan Rodger will lead the Durham regional site in the training of middle school and high school teachers from several North Carolina school districts, including the Durham Public School System, Vance County Schools, Chatham County Schools and Person County Schools. Three weeks of teacher training workshops will be held in the summer of 2008. Teachers will integrate Alice materials into their curriculum in the 2008–09 academic year. Duke undergraduates will participate in developing materials during the summer and aiding teachers during the school year.

Keep in Touch!

Congratulations to the following alumni who have recently received awards or taken new jobs.

Susan Athey (BA, ’91)
Recipient of John Bates Clark Medal in economics

Brian Cook (MS, ’07)
IBM Corporation; Research Triangle Park, NC

Danielle Cusson (MS, ’07)
Goldman Sachs; New York

Angela Dalton (PhD, ’07)
Postdoctoral Research Associate; University of Texas at Austin

Aakur Gupta (PhD, ’07)
Lecturer at Butler University; Indianapolis, IN

Hao He (PhD, ’07)
Google; Sunnyvale, CA

Christopher Jenkins (PhD, ’07)
Assistant Professor at Georgia Gwinnett College; Lawrenceville, GA

Ran Liu (MS, ’07)
Google; Sunnyvale, CA

Adam Silverstein (PhD, ’07)
Postdoc position at Yahoo! Research; Santa Clara, CA

Daichi Wagi (PhD, ’07)
Network Appliance, Inc.; Sunnyvale, CA

Ke Yi (PhD, ’06)
Assistant Professor at Hong Kong University of Science & Technology (HKUST); Hong Kong

If you received a degree from the Department of Computer Science, please fill out our online alumni registration form (www.cs.duke.edu/people/alumni).
GRAD STUDENT PROFILE: DMITRIY MOROZOV

WHILE ATTENDING high school in Russia, Dmitriy Morozov got himself a ticket to the U.S. by winning a fellowship under the Freedom Support Act Future Leaders Exchange Program. In 1998 he moved from Snezhinsk in the southern reaches of the Ural which separates Europe from Asia, to Asheboro, North Carolina, where he finished his last year of high school. He then spent two years at Guilford Technical Community College and transferred to North Carolina State University in Raleigh where he did a double major in Computer Science and Applied Mathematics. Before reaching the legal drinking age, he joined the Department of Computer Science at Duke University in 2003.

At NCState he worked with Larry Norris and Erich Kaltofen in Mathematics. This latter association apparently left a positive impression since Morozov opted to continue his research combining computer science and mathematics under the direction of Professor Herbert Edelsbrunner at Duke. The Austria connection clearly shows itself as a thread in Morozov’s life.

Right from the start, Morozov showed unmistakable signs of creativity and depth and a love for research. A notable early result was a cubic lower bound for the running-time of the persistent homology algorithm. This explains why the efforts of others in proving that this algorithm is faster in the worst case failed in spite of the apparent almost linear behavior observed in practice. Morozov stayed with the topic of persistent homology: a central theme in the emerging discipline of computational topology. He spent the summer of 2005 working at the Lawrence Livermore National Laboratory and this was the year of two breakthrough results for him, the vineyard algorithm that computes topological life-lines in linear time per transposition, and the proof that functions on 2-manifolds can be simplified in a way that strictly preserves high-persistence features. He presented both results at the 2006 Symposium on Computational Geometry in Sedona, Arizona. These achievements are important stepping stones for the challenges of reconstructing stratified spaces from point samples, one of Morozov’s current pet projects.

Morozov finds that “distinguished faculty, energetic peers, an inspiring mentor, and the cohesiveness of the Department have made it a superb research environment.” Morozov thrives on academic excellence and he finds time to contribute broadly in service, as witnessed by his 2004 Outstanding Teaching Assistantship Award, his 2005 Outstanding Departmental Service Award, and his election to the Executive Board of the Graduate and Professional Student Council at Duke. These are solid foundations for big things to come.

UNDERGRAD ALUMNAE PROFILE: BETH TRUSHKOWSKY AND TIFFANY CHEN

BETH TRUSHKOWSKY AND TIFFANY CHEN both entered Duke in Fall 2003 and were assigned to Professor Jeff Forbes as premajor advisees. They both had varied interests but ended up choosing an academic plan involving computer science because it enabled them to learn through practice.

Trushkowsky excelled in her independent work. Her project was Collaborative indexing and annotation of bibliographic databases (CoBib), which involved the development of a web repository of research papers that provides users within the research community the means to collaboratively index and annotate citations. She presented at ADMI 2007 and led Duke’s team at the Spelman College Computer Science Olympiad in 2005, 2006, and 2007. What Trushkowsky enjoyed most about Computer Science was creating real applications as part of the learning process.

Chen’s research began in the Howard Hughes fellowship program, where she worked in Dr. Fred Nijhout’s Biology lab creating a mathematical model and writing software for experiments dealing with the body’s transport of folate (vitamin B9). Her interest in both biology and computer science led her to an interdepartmental Computer Science/Biology major. Chen liked computer science for the opportunity to be innovative in making something work and then reusing and improving the product in future work.

Trushkowsky and Chen graduated in May 2007 with bachelor degrees in Computer Science. Both students have shown a great deal of potential and will continue their studies at top graduate programs. Trushkowsky will enroll in the PhD program at University of California, Berkeley. She plans to further her work in database systems there. Chen received a $10,000 Google Anita Borg Scholarship, and will work towards a PhD in Biomedical Informatics at Stanford University, applying computing techniques to biological problems. Both Trushkowsky and Chen are students from whom one should expect great things as they continue down their chosen academic paths.
RECENT GRADUATES

PhD DEGREES
Angela Dalton
Advisor: Carla Ellis
Data Fidelity Mechanisms for Enhancing Energy Management in Context-Aware Systems

Hao He
Advisor: Jun Yang
Query Processing and Indexing Techniques on Semi-Structured Data

Christopher Jenkins
Advisor: Carla Ellis
The Weakly Identifying System for Doorway Monitoring

Adam Silberstein
Advisor: Jun Yang
Suppression Methods for Continuous Data Collection in Sensor Networks

Dazhi Wang
Advisor: Kishor Trivedi
Service Reliability: Models, Algorithms and Applications

MS DEGREES
Brian Cook
Advisor: Shivnath Babu
Towards Self-Healing Multitier Web Services

Danielle Cusson
Advisor: Carla Ellis
Currency Allocation Models for ECOSystem

Ran Liu
Advisor: Carlo Tomasi
Measuring Change in Skin Lesions

Anita Lungu
Advisor: Daniel Sorin
Verification-Aware Processor Design

Thileepan Subramaniam
Advisor: Jeff Chase
Improving File Server Benchmarking with a Managed Testbed

UNDERGRADUATE DEGREES
Nicholas Serghios Barbas
Bartlett Proctor Bressler
tiffany Chen
Kevin William Cullen
Marcin Dobosz
Daniel Dimitrios Fridrich
Brandon Kyle Johnson
Judson Shores Killion
Michael Lee Lin
Zachary Vogt Marshall
Christopher Jordan Mavricos
Christopher Meade Morgan
Patrick Paczowski
Symon Warner Perriman
Alexander Marc Putterman
Stephen Richard Reading
Ram Vijay Singh
Benjamin Carter Spain
Daniel Edward Summerhays
Nicholas Gregory Torre
Katherine Elizabeth Trushkowsky
Benjamin Ross Wolf
Yanjia Yao

= Interdepartmental Major Computer Science/Biology
† Graduation with High Distinction
* Graduation with Distinction

UNDERGRADUATE AWARDS
Alex Vasilos Memorial Award

Outstanding Undergraduate Teaching Assistant Award
Benjamin Ross Wolf

Tiffany Chen
Katherine Elizabeth Trushkowsky

Undergraduate Senior Thesis Projects:
Graduation with High Distinction

Daniel Dimitrios Fridrich
Katherine Elizabeth Trushkowsky
Graduation with Distinction

Tyler Johnson Brock
Tiffany Chen
Patrick Paczowski
FROM APPLICATION TO ORIENTATION

THE PROCESS begins with a campus visit or an email inquiry about the graduate programs in CS at Duke, often starting six months or more in advance of an application for admission being submitted. By the time the application is received, the interested student has already given considerable thought to selecting Duke CS as a place to pursue one’s dreams of graduate study, and most often has had several communications with faculty, current graduate students, or administrative staff in an effort to see how future research interest matches up with the work being done here.

Last December we received 187 applications, and after weeks of reading, evaluating, and discussion by the admissions committee, our efforts resulted in twenty-eight offers of admission being made. Realizing that many factors play into one’s decision to accept admission, the Department hosted a graduate visit weekend on March 30-April 2 where those admitted had an opportunity for one-on-one dialogue with faculty, where they learned about the research opportunities available to them, and where they could engage with current students and get the necessary background information that would help them fully learn about Duke CS and how they would fit into our scholarly community.

During the visit weekend our guests enjoyed a cookout at the home of one of the graduate students, toured the campus and the Durham area, and enjoyed a North Carolina BBQ.

We are pleased to welcome fourteen new PhD and two new MS students into the Department. Three of these students have been honored with prestigious fellowships. Harish Chandran is the recipient of a nanoscience fellowship for 2007-2008 from the Graduate Certificate Program in Nanoscience. Brittany Fasy has been recognized with both a $1,000 scholarship as one of thirty finalists in the Google Anita Borg Memorial Scholarship and a Duke GAANN fellowship. Lirong Xia has been awarded a four-year James B. Duke Fellowship from the Graduate School.

WELCOME NEW COMPUTER SCIENCE STUDENTS

PhD
Nedyalko Borisov
Sofia University
Databases

Harish Chandran
Anna University
Algorithms and DNA Computing

Brittany Fasy
Saint Joseph’s University
Theory

Zhiqiang Gu
Tsinghua University
Artificial Intelligence, Robotics

Herodotos Herodotou
University of Maryland—Baltimore County
Databases

Joshua Letchford
University of Southern California
Theory

Harold Lim
University of Southern California
Computer Vision, Robotics

Justin Manweiler
College of William & Mary
Networks, Distributed Systems

Amre Shakimov
Karaganda State University
Distributed Systems & Storage

Risi Thonangi
I.I.T.—Hyderabad
Databases, Data Mining

Vamsidhar Thummala
I.I.T.—Hyderabad
Databases, Information Retrieval

Lirong Xia
Tsinghua University
Artificial Intelligence

Jie Xiao
Huazhong University of Science & Technology
Systems

Ying Zheng
Fudan University
Databases

MS
Kareem Dana
Duke University
Databases, Social Networking

UNDERGRADUATE
Grant Bond
Matthew Colabrese
Brulay Fol
Julia Foran
Jonathan Jou
Boyoun Jung
Sejin Lim
William Linton
Jonathan Matthew
Ayanga Okpkokworuk
John Pena
Michael Tunick
Albert Waldron
Congyi Wu

Students and admitted students at the spring graduate admissions visit
STUDENTS

UNDERGRADS RECEIVE GOOGLE SCHOLARSHIPS

TWO DUKE undergraduate students are among twenty winners of a $10,000 Anita Borg Memorial Scholarship:
- Tiffany Chen, interdepartmental major in Biology and Computer Science
- Lauren Cohen, double major in ECE and Computer Science

In addition, among thirty finalists receiving a $1,000 scholarship is:
- Kshipra Bhawalkar, double major in Mathematics and Computer Science

Congratulations!

STUDENT PUBLICATIONS/PRESENTATIONS

Allister Bernard
- Cell Cycle, Feb 6(4) 2007, A Probabilistic Model for Cell Cycle Distributions in Synchrony Experiments
- Keystone Symposia on Systems Biology, Steamboat Springs, CO, Deconvolution Yields a High-resolution View of Global Gene Expression during the Cell Cycle (poster)
- Cold Spring Harbor Laboratory meeting on Systems Biology: Global Regulation of Gene Expression, Cold Spring Harbor, NY, Deconvolution Yields a High-resolution View of Global Gene Expression during the Cell Cycle (poster)

Allister Bernard and David Vaughn
- Keystone Symposia on Systems Biology, Steamboat Springs, CO, PROCTOR: An Algorithm for Reconstructing the Internal Interaction Topology of Protein Complexes (poster)
- 11th Annual International Conference on Research in Computational Molecular Biology (RECOMB 2007), San Francisco, CA, Reconstructing the Topology of Protein Complexes
- Emilia Buneci
  - Teragrid ’07, Madison, WI, Qualitative Performance Characteristics of Large-Scale Scientific Workflows Executing on the Teragrid (winner of best poster award)

Badrish Chandramouli
- International Conference on Data Engineering (ICDE ’07), Istanbul, Turkey, On Synchronizing and Resuming Data Flows
- ACM International Conference of Management of Data (SIGMOD ’07), Beijing, China, Query Suspend and Resume
- Raluca Gordon
  - Keystone Symposia: Systems Biology and Regulatory Networks, Steamboat Springs, CO, Informative Positional Priors Improve de novo Motif Discovery
  - 11th Annual International Conference on Research in Computational Molecular Biology (RECOMB 2007), San Francisco, CA, Informative Positional Priors Improve de novo Motif Discovery

Mingyu Guo
- ACM Conference on Electronic Commerce (EC ’07), San Diego, CA, Worst-Case Optimal Redistribution of VCG Payments

Hao He
- ACM International Conference of Management of Data (SIGMOD ’07), Beijing, China, Blinks: Ranked Keyword Searches on Graphs

Urmia Majumder and Sudheer Sahu
- 13th International Meeting on DNA Computing (DNA13), Memphis, TN, Activatable Tiles: Compact, Robust, Programmable Assembly and Other Applications

Urmia Majumder
- FNANO: Foundations of Nanoscience 2007, Snowbird, UT, Activatable DNA tiles for Compact Error-resilient Directional Assembly

Albert Meixner
- 13th International Symposium on High-Performance Computer Architecture (HPCA-13), Phoenix, AZ, Error Detection Via Online Checking of Cache Coherence with Token Coherence Signatures
- Computing Frontiers 2007, Ischia, Italy, Unified Processor Core Storage

Leelavasti Narlikar
- Systems Biology: Global Regulation of Gene Expression, Cold Spring Harbor, NY, Informative Positional Priors Improve de novo Motif Discovery
- 11th Annual International Conference on Research in Computational Molecular Biology (RECOMB 2007), San Francisco, CA, Nucleosome Occupancy Information Improves de novo Motif Discovery

Constantin Pistol
- International Symposium on Computer Architecture (ISCA ’07), San Diego, CA, Energy Transfer Logic on DNA Nanostructures: Enabling Molecular-Scale Amorphous Computing

Sudheer Sahu
- 13th Meeting on DNA Computing (DNA13), Memphis, TN, Autonomous Programmable DNA Nanorobotic Devices Using DNAzymes

Piyush Shivam
- ACM International Conference of Management of Data (SIGMOD ’07), Beijing, China, Automated and On-demand Provisioning of Virtual Machines for Database Applications

Adam Silberstein
- International Conference on Data Engineering (ICDE ’07), Istanbul, Turkey, Many-to-Many Aggregation for Sensor Networks

Chittaranjan Tripathy and Jianyang Zeng
- 2007 Protein Structure Initiative (PSI) “Bottlenecks” Workshop, Bethesda, MD, Automated Structure Determination from Sparse NMR Data

Aydan Yumerefendi
- USENIX Symposium on Networked Systems Design and Implementation (NSDI ’07), Tightlip: Keeping Applications from Spilling the Beans
- 5th USENIX Conference on File and Storage Technologies (FAST ’07), San Jose, CA, Strang Accountability for Network Storage
- 1st Workshop on System-level Virtualization for High Performance Computing (HPCVIRT’07), Lisbon, Portugal, Harnessing Virtual Machine Resource Control for Job Management
- ACM International Conference of Management of Data (SIGMOD ’07), Beijing, China, Automated and On-demand Provisioning of Virtual Machines for Database Applications
EVENTS ON MAY 15TH

the Pratt School of Engineering and the Department of Computer Science welcomed industry partners to the annual spring inDuke Frontiers 2007, a free event designed to help spur research collaborations between Duke’s engineering and science faculty and industry.

The morning keynote session featured presentations by Eric Stahre, MICT Engineering General Manager, GE Healthcare; John Hardin, Deputy Director & Chief Policy Analyst, Office of Science and Technology, NC Dept of Commerce; and Bill Hamilton, VP of Merchandising, The Home Depot. In addition, a panel of industry representatives from The Home Depot, OBG, Qualcomm and IBM discussed selecting an education/research partner and highlighted the importance of the relationship between industry and university research.

During the lunch break, a poster session featured the research of twenty-eight engineering and computer science graduate students, with prizes awarded for the best posters.

The afternoon session consisted of parallel tracks: an Early Stage Research track and a Commercialization track. Duke Faculty, graduate students, a patent attorney, and a venture capitalist presented exciting material about early stage research and the commercialization process steps.

The day wrapped up with a tour of the Duke Immersive Virtual Environment (DiVE) facility and an opportunity to meet the Home Depot Smart Home team and review their research project activity and the progress on the house.

FRONTIERS 2007

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During the lunch break, a poster session featured the research of twenty-eight engineering and computer science graduate students, with prizes awarded for the best posters.

The afternoon session consisted of parallel tracks: an Early Stage Research track and a Commercialization track. Duke Faculty, graduate students, a patent attorney, and a venture capitalist presented exciting material about early stage research and the commercialization process steps.

The day wrapped up with a tour of the Duke Immersive Virtual Environment (DiVE) facility and an opportunity to meet the Home Depot Smart Home team and review their research project activity and the progress on the house.

HONORARY DEGREE AWARDED TO COMPUTER SCIENTIST

DUKE UNIVERSITY awarded an honorary degree during its May 13 commencement ceremony to computer scientist Anita Jones.

Jones, who received a Doctor of Science degree at the ceremony, is a professor in the University of Virginia’s Department of Computer Science and a member of the National Academy of Engineers. Among her scholarly interests—which unite information technology and public policy—are distributed systems, computer simulation, intrusion detection, survivable information systems, and federal support for science and engineering.

As valedictorian of her high school class, Jones felt the lure of the burgeoning computer science revolution. “It was a whole new area then, and it was going to change the world,” she recalls. In the early 1960s, at Rice University—which did not yet have a computer science department—she majored in mathematics. Later, she earned a PhD in computer science from Carnegie Mellon University, becoming one of the first female PhDs in the field. Her thesis was on the importance of security for computer networks. From 1993-97, she managed the science and technology program for the U.S. Department of Defense and oversaw the department’s many research laboratories and the Defense Advanced Research Projects Agency, a major incubator of innovative technology.

ROBOCUPJUNIOR COMPETITION HELD AT DUKE

THE ROBOCUPJUNIOR (RCJ) regional competition was held at Duke on March 24. Students from several Durham Public Schools participated.

In the RCJ program, students learn and apply the scientific, mathematical, and technological fundamentals behind the construction of robots and the design of control algorithms. Science and robotics-related research demonstrations at Duke supplement weekly after-school meetings with student mentors from Duke.

The March 24th regional competition focused on robotic rescue and dance events. Chewning Middle School won both events and qualified for the RoboCupJunior World Finals in Atlanta, GA, in July.

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The Department has now approved a minor in Computational Economics that we anticipate will be approved by the University early in the fall semester. The Computational Economics minor will build on our gateway course, Computational Modeling, developed by Professor Carlo Tomasi. Students will also take a new course, Computational Economics, developed by Professor Vince Conitzer. This new course will help students apply computational and algorithmic techniques and analysis to economic problems. For example, using concepts from game theory can help in developing and analyzing auction-bidding techniques or programs that play poker.

We anticipate that these new minors will meet the needs of some students majoring in other disciplines. At the same time we are developing concentrations in computer science for our majors. We are working on developing major concentrations in software design, algorithmic and theoretical computer science, and in technology and policy. We are in the planning stages of these concentrations, but hope to have concrete programs in place for students declaring their majors in 2007 and 2008.

It is an exciting time to study computer science, especially as the need for interdisciplinary expertise is recognized by students, the university, and the marketplace. We are working to help the Department and Duke maintain a leadership role in developing appropriate courses, programs, and curricula to support existing and emerging areas.