CONNECTED

$300,000 GIFT TO BENEFIT COMPUTER SCIENCE ENHANCEMENT ENDOWMENT

Kristopher Tyra, an alumnus of NCSU and founder of HiddenMind Technology Inc., has given the Department of Computer Science a gift of private stock valued at over $300,000. This gift, representing the largest single contribution to the department by an individual, will serve as seed funding for the newly created NCSU Computer Science Enhancement Endowment.

Tyra, who also serves as Chief Technology Officer of HiddenMind Technology, holds a bachelor's degree in computer science from NC State. "The education and life experiences I received at NC State University no doubt contributed to my personal success," said Tyra. "I am extremely excited about this opportunity to not only give something back to the university, but more importantly to help the Computer Science Department support a broad range of programs and activities in its efforts to develop our future technology leaders." In addition to this gift and HiddenMind's continued

support of the department as a founding member of the ePartner's Program, Mr. Tyra has pledged his personal commitment to helping the department grow the enhancement endowment in the future.

Kristopher Tyra, founder of HiddenMind Technology, Inc. (BS, 1986)

Dr. Alan L. Tharp, Head of the Computer Science Department, said the endowment will provide a much-needed funding source, and will help the department achieve its goals of growth and innovation. "We are extremely appreciative of Kristopher Tyra's generosity and ongoing support of NC State and, in

particular, the Department of Computer Science," he said. "Kristopher's gift provides our new endowment a great foundation on which to build. The funding generated from the endowment will be targeted at helping the department attract and retain exceptional faculty, foster leading-edge research, attract outstanding and diverse students, evolve our curriculum, partner with global businesses, and enhance our students' overall educational experience."

Former Gov. James B. Hunt Jr., Tyra's friend and fellow NC State graduate, also praised Tyra. "NC State and the Computer Science Department play a key role in feeding the entrepreneurial world by providing leading-edge research and resources," said Hunt. "Kristopher's gift will help NC State create the raw materials necessary to fuel successful start-ups in the future."

THE UNDERGRADUATE CONNECTION

OPEN HOUSE ATTRACTS FUTURE STUDENTS

On Saturday, October 20, 2001, during the University Open House, the Department of Computer Science held demonstrations on Centennial Campus for approximately 500 potential students. With a focus on attracting the very brightest students into the CSC student population, the event showcased demonstrations on chromostereopsis, the liquid narrative group, and motion capture as well as a networking presentation and a tour of the

A student wears a head-mounted display to interact with the 3-D virtual world.

A parent and potential student are allowed a closer look during the Open House.

new multi-million dollar Centaur Lab facility. The high school students and their parents also had the opportunity to meet and interact with undergraduate, graduate and doctoral students and faculty members.

SENIOR DESIGN CENTER

These Computer Science undergraduates invested an incredible amount of time and energy during the Fall 2001 semester to design and build successful Senior Design Center Projects for the following companies and organizations: Fujitsu Transaction Solutions, Nova Gov, Masterpiece Technology Inc, John Deere, Network Appliance, Nortel, EMC, CapTrust Financial Advisors, Learning Technology Services, EPA, I-Cubed, Propack Data, NCSU CSC ePartners, NCSU Student Owned Computing, and NCSU Libraries Special Collections Department. For more information about the Senior Design Center, please see Dr. Robert Fornaro's Faculty Spotlight on page 9.

COMPUTER SCIENCE STUDENT SCHOLARSHIP RECIPIENTS

Jed Smallwood
UPSILON PI EPSILON

David Meyer and Greg Austin
DUKE ENERGY

Donald Von Cannon
GOODRUM

K. Q. Zhang, Zach Breitenbach, Scott K. Vu, S. M. Suneja, Andrew O'Neill
GTE

Neha Jain, Nicole Lenzen, Justin Pierce, Kristen Wallace, Chris Brezovec
LOCKHEED MARTIN

Charlie Lytle, Sadie Garner
MATRIX

Anjan Kundavaram
MITCHELL

Andrew M. Goldstein
NORTEL NETWORKS

Jeffrey Backus
RICHARD GREENWOOD THOMAS

UNDERGRADUATE RESEARCH AWARD RECIPIENTS

Eric Pelke received an Undergraduate Research Award during the Fall 2001 semester to study intelligent user interface issues for a music database.

Phillipe Loher, a junior in computer science, received one of the highly competitive Undergraduate Research stipends for the Spring 2002 semester. He will be studying speech processing with the grant.

THE GRADUATE CONNECTION

FALL COMMENCEMENT LARGEST EVER

On December 19, 2001, the Fall Departmental Diploma Ceremony took place in Pullen Memorial Baptist Church on Hillsborough Street. Numerous family and friends attended to watch 160 students graduate. This ceremony had the most attendance of any graduation to-date for the department. We wish the best of luck to our recent graduates!

Graduation was a family affair for (from left to right): Maya Vouk; Joyce Hatch, Coordinator of Advising; Alan Vouk; Nikola Vouk (BS, 2001); and Dr. Mladen Vouk, Professor of Computer Science.

INTEREST SOARS FOR GRADUATE PROGRAM

At the beginning of the Spring 2002 semester, the flow of incoming graduate applications reached an all-time high for the department.

Chery Rousseau, Graduate Admissions Specialist, holding the graduate applications she typically receives in one day.

Director of Graduate Programs, **Dr. Ed Davis** attributes the increased interest to our reputation for a high-quality education in Computer Science as well as the attractive qualities of the Raleigh-Durham area including Research Triangle Park. He said, "getting an education is only one of the things individuals want to do in this area, they also want to get a job." Not only are we seeing more applications this year, but the applicants have remarkable qualifications. The department would like to thank the graduate administration for their continuing excellence in handling the new volume of graduate applications.

WE'VE PACKED OUR BAGS

After months of anticipation, the Computer Science Graduate Program has completely moved to new offices on Centennial Campus. The space, which is located in Venture Building III, now houses graduate admissions and administration. Once the new building, earmarked for the Department of Computer Science by the N.C. Bond Referendum, is

Margery Page, Graduate Secretary, prepares for the move to Centennial Campus.

constructed on Centennial Campus, all Computer Science faculty and students will be housed in a central location. Computer Science faculty, staff and students are currently spread out over nine buildings on both Historic Campus and Centennial Campus. The new building is scheduled for completion in early 2005.

Chery Rousseau, Dr. Ed Davis and Margery Page pictured in their new building on Centennial Campus.

MASTER'S OF COMPUTER SCIENCE OFFERS DISTANCE LEARNING

The department has made the Master's of Computer Science degree available to individuals across North Carolina by creating a distance education program.

This outreach program will provide students with an experience that parallels on-campus studies.

Dr. Ed Davis, Director of Computer Science Graduate Programs, notes that the distance learning program will differ only slightly from the on-campus experience. He says, "although the expectations of all our students will be the same, we can't require distance education students to attend seminars and colloquia as expected of our in-house students." The program must be modified to accommodate individuals pursuing the degree from afar. Classes and assignments will be communicated via CDs, VHS tapes, the internet, and other forms of media. For more information about the Master's of Computer Science distance education alternative, please visit: www.csc.ncsu.edu

THE DEPARTMENTAL CONNECTION

NEW FACULTY TEACHING & RESEARCH INTERESTS

Dr. Jon Doyle, Professor and SAS Chair
His research interests center on rationality, representation, and mathematical foundations. His primary interest concerns the structure and interpretation of rational activity, especially development of methods for representing, learning, and using preference information in reasoning, decision making, planning, and negotiation.
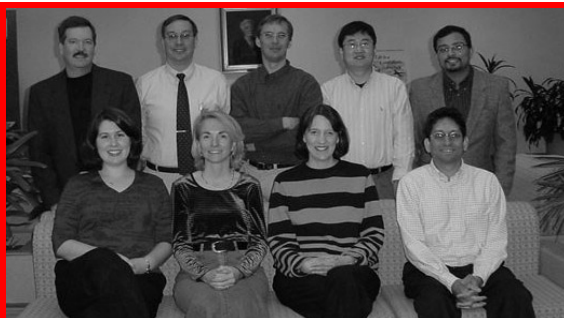
Dr. Frank Mueller, Assistant Professor
His research interests in operating systems include operating system kernel modifications, such as user-specific kernel services. These interests are reflected in his teaching of the graduate operating systems curriculum, where students are exposed to the challenges of implementing user-level threads and modifying portions of the Linux kernel. He also has an active line of research in real-time and embedded systems, including scheduling for processors for dynamic frequency and voltage scaling support, and static timing analysis.

Dr. Peng Ning, Assistant Professor
His research interests include information security, temporal databases and data mining, and secure and reliable e-commerce applications.

Dr. Rudra Dutta, Assistant Professor
His primary research interest is in optical networks, at the networking layer. His interest is currently in two major areas, that of traffic grooming and fault tolerance. He has a secondary interest in performance and management of optical networks, as well as ad-hoc wireless networking. He enjoys teaching introductory as well as advanced graduate level networking courses, and likes to introduce some hands-on problem solving or laboratory work not only for protocol descriptive courses but also in more theoretical networking courses.

From Top Left to Right: Ken Tate, Director of ePartners; Dr. Jon Doyle, Professor and SAS Chair; Dr. Frank Mueller, Assistant Professor; Dr. Peng Ning, Assistant Professor; Dr. Rudra Dutta, Assistant Professor.

From Bottom Left to Right: Jill Koethcke, Associate Director of ePartners; Dr. Laurie Williams, Assistant Professor; Suzanne Balik, Visiting Lecturer; and Ram Athavale, Visiting Lecturer.

Not Pictured: Jason Schwarz, Visiting Lecturer; and Terry Reid, Faculty Secretary

Pictured on Page 9: Ben Tilley, Senior Design Lab Manager

Dr. Laurie Williams, Assistant Professor
Her current research interests include collaborative/pair programming, software development processes (particularly of eCommerce applications), agile software development practices, and software testing. Her areas of interest in teaching include software engineering and eCommerce.

Suzanne Balik, Visiting Lecturer
Her primary teaching interests focus on undergraduate education. She is helping to establish a Women in Computer Science group and will be working on defining the Undergraduate Program Educational Objectives. As outreach, she is helping a local high school teacher prepare students for the AP computer programming exam.

Ram Athavale, Visiting Lecturer
Enjoys focusing on data structures, software engineering and PERL.

Jason Schwarz, Visiting Lecturer
His interests in programming and teaching include embedded systems software design (especially Palm.)

HAPPY HOLIDAYS IN COMPUTER SCIENCE

For the identity of the 800# Gorilla, please see page 13.

The following faculty and staff weren't afraid to have a festive Halloween!

(From Left to Right:): Jonathan O'Briant, Undergraduate Work-Study Student, Angie Barefoot, People Support Specialist, Ana Legeido, Accounting Clerk III, Linda Honeycutt, Administrative Assistant, Margery Page, Graduate Program Secretary, Jill Koethcke, Associate Director of ePartners, Carol Holloman, Accounting Technician II.

Multi-tasking at its best: Dr. David Thuente, Assistant Department Head, coordinates class schedules while simultaneously trimming the tree.

THE FACULTY CONNECTION

BITZER RECOGNIZED BY NATIONAL ACADEMIES

Dr. Donald Bitzer, Alumni Distinguished University Research Professor of Computer Science, has been named a National Associate by the National Academies, a group comprising the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the National Research Council.

The Council of the National Academy of Sciences initiated the "national associates" program to recognize extraordinary contributions to the National Academies through pro bono service to National Research Council and Institute of Medicine programs. Membership in the Associates is for life, recognizing past service and ongoing leadership.

Dr. Bitzer and North Carolina State University Chancellor Marye Anne Fox are two of the seven area recipients of this prestigious award.

ANTON NAMED CRA DIGITAL GOVERNMENT FELLOW

Congratulations to **Dr. Ana (Annie) I. Anton** for being named a Computing Research Association Digital Government Fellow.

Supported by the National Science Foundation, the Digital Government Fellows program is intended to facilitate communication among academic, industrial and governmental computing research communities. The fellowship is also intended to provide young researchers with a vehicle for building contacts in the three communities.

Anton's research interests include aligning internet privacy and security policies with software requirements and stakeholder values, scenario management, goal-based requirements engineering, and information security and privacy.

SAS INSTITUTE CHAIR IN COMPUTER SCIENCE NAMED

The department is pleased to announce the appointment of **Dr. Jon Doyle** as Professor and holder of the SAS Institute Chair in Computer Science. Dr. Doyle's distinguished career includes research positions at Stanford University and Carnegie Mellon University prior to his most recent position as Principal Research Scientist in the Laboratory of Computer Science at the Massachusetts Institute of Technology.

As the SAS Institute Chair in Computer Science, Dr. Doyle's research will focus on knowledge discovery, distributed reasoning and agent technology, qualitative decision theory, and theories of limited rationality. Under Dr. Doyle's leadership, the Center for Knowledge Discovery will address issues including data mining, data warehousing, and archive-based memory. The Center, when completed as expected in 2002, will be located on NC State's Centennial Campus, an advanced technology community for university, industry and government partners.

Dr. Doyle brings a prestigious and accomplished record to NC State University. He has published over 80 technical papers, is completing two books, and has numerous articles in reprint collections, including translations into Japanese and Russian. An AAAI Fellow and former AAAI Executive Council member, Dr. Doyle helped organize the ACM/CRA Workshop on Strategic Directions in Computing Research and co-edited its report on artificial intelligence. He serves as an Associate Editor of Computational Intelligence, the Journal of Logic, Language and Information, AI Communications, and as a Director of Principles of Knowledge Representation and Reasoning Inc.

Thanks to SAS Institute Inc. of Cary, whose commitment to education and great generosity allows our department to continue a tradition of excellence in research and teaching.
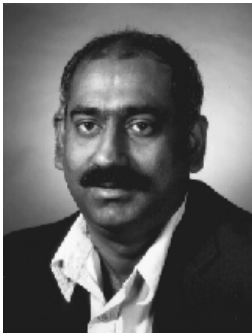
THE FACULTY CONNECTION

FACULTY MEMBERS RECEIVE RESEARCH FUNDS

Dr. Carla Savage
"Enumeration and Structure in Combinatorial Families" funded by the National Security Agency for $19,999. Her project will run from 07/23/2001 through 07/22/2002.

Dr. Purush Iyer
"Automated Analysis of Probabilistic Open Systems" funded by the National Science Foundation for $210,000 for the period 09/15/2001 to 08/31/2003. Rance Cleaveland is a co-PI on the project.

Dr. Mladen Vouk
"Center for Scientific Data Management-Agent Technology Enabling Communication Among Tools & Data" funded by the US Department of Energy for $356,660 for the period from 08/15/2001 to 08/14/2003.

Dr. Robert St. Amant
"Using Cognitive Models to Examine Human-Robot Interfaces: An Exploratory Study" funded by the Space and Naval Warfare Systems Center in San Diego for $65,419 for the period from 05/21/2001 to 05/20/2002. This subcontract is part of a larger award of $199,116 to Penn State University.

Dr. Injong Rhee
Obtained a US Patent No. 6,289,054B1, for "Method and Systems for Dynamic Hybrid Packet Loss Recovery for Video Transmission over Lossy Packet-Based Network"

Dr. Robert Fornaro
"Modeling and Visualization of Sun Exposure Effects on the Human Anatomy" funded for $100,000 by the Environmental Protection Agency. The project will run from 07/01/2002 through 06/01/2004.

Dr. Frank Mueller
"Performance Analysis and Optimization for Scientific Applications" funded for $10,000 by the University's Faculty Research and Professional Development program. This research activity will run from 01/01/2002 1st through 06/30/2002.

"SPAN Shared-Memory Performance Analysis" funded for $76,999 by Lawrence Livermore National Laboratory. The project will run from 1/31/2002 through 1/31/2003.

THE INDUSTRIAL CONNECTION

NC STATE HOSTS DISTINGUISHED LECTURERS

The Triangle Computer Science Distinguished Lecturer Series is a combined effort of the Computer Science Departments at North Carolina State University, Duke University and the University of North Carolina at Chapel Hill to expose area faculty, staff and students to the ideas and innovations of other professionals in the field of Computer Science. The Series is made possible by a grant from the U.S. Army Research Office.

Dr. Matthias Stallman, Dr. Nicholas Pippenger, and Dr. Franc Brglez

Our department recently had the honor of hosting three distinguished visitors.

Dr. Steven Feiner and his son, Maxwell

Dr. Steven Feiner, a Professor of Computer Science at Columbia University, presented a lecture on "Environment Management for Augmented Reality."

Dr. Nicholas Pippenger, a Professor of Computer Science at the University of British Columbia, lectured on the topic of "Computation in the Presence of Noise: Classical and Quantum."

Dr. Anita Jones, Professor of Computer Science at the University of Virginia, lectured on the topic of "Cyber Security-The Weak Link." More information about upcoming lecture series can be accessed at http://www.cs.unc.edu/Events/DistLectures/

Dr. Ana Anton, Dr. Anita Jones, and Dr. Jon Doyle

INDUSTRIAL ADVISORY COUNCIL ASSISTS DEPARTMENT

On October 11, 2001, members of our Industrial Advisory Council (IAC) met on NC State's Centennial Campus to review the goals and strategies of the department and to provide feedback from an industrial perspective.

The IAC, comprised of key business leaders representing numerous business and technology sectors, focused their attention during this year's session on what is required to be a "Top 10 Public Department of Computer Science." The Council developed several recommenda-

tions including building a shared definition and vision of success among students, faculty, alumni, and the corporate community. Another hot topic was the need to place a stronger focus on packaging and communicating our current successes and capabilities. The Council also recognized the necessity of continuing to strengthen key programs designed to bring in the highest quality faculty & students. Another emerging issue was our efforts to educate alumni on giving options and the need to direct gifts to the department.

Council members and Computer Science faculty enjoyed a lecture from Provost Stuart L. Cooper concerning the department's goals.

We greatly appreciate the time, effort, and spirit contributed by these leaders to help shape the future direction of our department.

Council member Bill Weiss, Chairman and CEO of the Promar Group, and Ken Tate, Director of ePartners

INDUSTRIAL ADVISORY COUNCIL WELCOMES NEW MEMBER

Welcome to **Wayne Clark** of Cisco Systems, our newest addition to the Industrial Advisory Council.

Wayne is currently the architect for intelligent-networking services for Cisco Systems. Prior to this current assignment, he was the engineering founder of Cisco's IBM Networking Business which focused on the transformation of traditional IBM corporate enterprise networks into multiprotocol internetworks.

Wayne helped identify the RTP area as an ideal location for Cisco's east coast headquarters. He was a part of the original team that established local large-scale operations for the company.

Prior to Cisco Systems, Wayne held similar positions at 3Com Corporation, Novell, and Ungermann-Bass.

He has a BS in Computer Science from Ohio State University and a MS in Computer Engineering from Santa Clara University. He has been very active in entrepreneurism in both Research Triangle Park and Silicon Valley.

THE FACULTY CONNECTION

FACULTY SPOTLIGHT: DR. DOUGLAS REEVES

Dr. Douglas Reeves enjoys the flexibility and freedom provided by academia that allows him to follow the flow of technology. Emerging issues and topics that interest him are fair game for teaching and learning in a field that can change in an instant. He believes that in computer science, staying technically current is critical to continued success and employability.

Computer science is a relatively young field; not so long ago, people came into the field from a variety of backgrounds. Reeves earned a BA in Biology from Indiana University. His adviser mentioned that he should learn about computers, because they seemed like an important new technology. As a result, he took a few computing courses as a senior, and discovered he had some aptitude for it and enjoyed it. After his graduation in 1975, the economy was in a recession, and he found job opportunities in Biology limited and unappealing. During his job search, he noticed the great number of jobs available in programming and computer science, and he decided to turn his interest into a career.

As with many new graduates, Reeves wanted a break from school, and went to work as a programmer for about 6 years in his hometown of Louisville, Kentucky. After the first couple of years, he found himself dissatisfied and wanting more from a career.

He decided to attend graduate school part-time at the University of Louisville while he worked full-time. Before finishing his Master's degree, he had already decided that while working in industry was rewarding, that he really enjoyed academia and wanted to be a professor.

At this point in his life, Reeves got married, quit his job, moved to Pennsylvania State University and began pursuing a PhD full-time. Once he began his studies at Penn State, he

needed guidance because he hadn't yet developed a specialty. Reeves' advisor in Computer Science, Prof. Mary Jane Irwin, introduced him to Very Large Scale Integration (VLSI) Design, which was, at the time, an exciting new topic. Computer scientists were interested in how to design these devices efficiently and correctly.

For his thesis he worked on methods of formally proving that an integrated circuit correctly implements a specification. Simulation is the approach which was (and is still) most commonly used. With simulation, you may finish the job quickly, but may also overlook errors because you can't test every input combination. Reeves wanted to find an approach that would test a circuit completely and find every possible flaw, while still remaining timely.

After earning his PhD in 1987, Dr. Reeves' interests were still in academia. Soon after graduation, he was hired as an assistant professor at NC State. He is a joint appointment between Computer Science and Electrical and Computer Engineering because his area of focus is on the boundary of these two disciplines.

Reeves has been an NC State professor for 14.5 years and has experienced a progression of interests since his arrival. He no longer works with CAD Tools or VLSI design as he did during the beginning of his career as a professor. Since then he has migrated into other fields such as networking and Quality of Service. Also, he has been affiliated with the Multimedia lab since its inception at NC State eight years ago. Reeves helped acquire some equipment and then designed a course in Multimedia Computing and Networking geared toward both undergraduates and graduates.

Dr. Reeves (center) consults with PhD candidates: Kehang Wu (left); and Qinglin Jiang (right)

At the undergraduate level, Reeves teaches assembly language programming and computer organization, which are primarily hardware topics. Reeves believes that a computer scientist should be somewhat well-rounded and he justifies this argument by stating that "if you were going to be a race-car driver, it would be helpful if you knew basically how the car worked, because you'll probably have to work with the mechanic to solve problems." This analogy parallels computers because if you want the best performance, it is helpful to know their design, organization and function.

Most recently, Reeves has focused his interests on researching and teaching Internet protocols and security issues. Security has high visibility because of concerns about the vulnerability of computers, data, and networks. This relatively young area hosts a variety of research and business opportunities. This new focus is a good example of the flexibility in exploring emerging topics that Reeves enjoys as a University professor.

Reeves recently celebrated his 20th wedding anniversary with his wife, Ellen. The couple has two daughters, Alison and Rosemary. The Reeves are very happy with the quality of life afforded by the Raleigh-Durham area. Reeves' hobbies include reading, gardening, and the outdoors.

THE FACULTY CONNECTION

FACULTY SPOTLIGHT: DR. ROBERT FORNARO

When Dr. Robert Fornaro began his career at NC State in 1969, the Computer Science department was strictly an undergraduate program. For many years, the Department worked diligently to build a graduate research and teaching program. These efforts were rewarded in 1990 when the Computer Science Department was authorized to grant PhD degrees. Dr. Fornaro has taught operating systems to both graduate and undergraduate students and also has conducted research in the area of real-time computer systems. Today he serves as Director of Undergraduate Programs and also as Director of the Senior Design Center.

As an undergraduate at St. Vincent College in Latrobe, PA in the early 60's, Fornaro began his studies in Engineering, but he wasn't satisfied with the subject matter because he felt it was too "cookbook." When asked to describe this, Fornaro stated, "the curriculum was too confining for me…it seemed that no one knew the reasons behind why they were doing something, they just went ahead and did it." Fornaro's curiosity lead him out of Engineering into Mathematics. He became fascinated by the logic behind a newly emerging technology, the computer. His Senior Design project allowed him to explore the logic and design of computers.

After graduating, Fornaro pursued a Master's degree in Mathematics at Penn State. His interest in computers, however, continued to move him to additional study. Fornaro's introduction to programming was self-taught and unrelated to course work. During summers as a graduate student, Fornaro worked as a Systems Analyst and Programmer for the Management Science Branch of the U.S. Air Force at the Pentagon. He built, verified, and applied Air Force personnel and resource management models based on computer simulations and projections.

As Fornaro was finishing his Master's degree, Penn State started a Computer Science PhD degree program. Fornaro jumped at the opportunity, immediately entered the new program, and was the second person to graduate from Penn State with a PhD in Computer Science! After completing this degree, he accepted a faculty position in the NC State Computer Science Department. Fornaro explains his choice of NC State by stating that he saw great potential in the fledgling computer science program: "It was the Fall of 1969 and there were so many opportunities in the Research Triangle Park. The University and the area were poised to explode in computer science and technology."

Having received major grants from the National Science Foundation, the US Air Force, and the National Security Agency during his time at NC State, Fornaro has had the opportunity to work with a large number of graduate students on various research projects. He also spent a number of years collaborating with Dr. Thomas Dow (Mechanical Engineering) in the early development of NC State's Precision Engineering Center, which remains a unique multidisciplinary research program.

In the early 90's, Drs. Tharp and Fornaro formed the Senior Design Center. The Center's mission is to educate students by providing a real industrial software development problem and by teaching and integrating the principles of software engineering, teamwork, and professional communication (i.e., writing and speaking).

Ben Tilley, Senior Design Center Lab Manager, and Dr. Robert Fornaro review a student project

Local industries have supported the Center since its inception in 1994 when 11 computer science seniors participated in design projects. Since that time, Dr. Fornaro has worked with approximately 40 different companies to provide student teams with software development projects, to offer technical support via personnel and equipment, and to provide financial assistance to the operation of the Center. This semester, 78 students participate in 19 unique project teams directed by Dr. Fornaro and his staff. The operation of the Center has become more like a business than a classroom, and Fornaro is always amazed at how our student teams are able to focus their energies: "As far as dealing with things that students come up with, no two days are the same. Seeing what these students can do is just phenomenal!" Fornaro enjoys facilitating and contributing to an environment where students can become successful, creative learners who are able to think beyond the recipe!

In his spare time, Fornaro and his wife, Patricia (a Wake County middle-school mathematics teacher), operate a horse farm in North Raleigh. Dr. Fornaro also enjoys flying his twin-engine aircraft to visit his daughters, Mrs. Jennifer Ebbs, a National Board Certified teacher in Charlotte and Dr. Rebecca Fornaro, a staff pharmacist at a major hospital in Atlanta.

THE ALUMNI CONNECTION

ALUMNI SPOTLIGHT: DR. RAIF ONVURAL

Even if you are not a smoker, you have probably heard that the price of cigarettes has gone up dramatically over the years. But $25M for a pack of smokes is outrageous! Yet alumnus, Dr. Raif Onvural, jokingly says that is what his investors claimed a single cigarette almost cost them. Of course, this is only part of Raif's incredible journey.

Raif left his homeland of Turkey in 1982 on scholarship to pursue a PhD in the United States. After receiving his Master's degree at Syracuse in 1985, he found himself at NC State for his PhD studies. "I came to the states for lots of reasons, not all of them academic," jokes Raif. "I was a normal curious ambitious young man in pursuit of fun and adventure," he adds, "but I grew up fast."

Once at NC State, he took on a teaching assistant's role for his PhD Advisor, Dr. Harry Perros. "I don't think I was really cut out to be a TA," Raif said. "Part of my job was to grade student output, and I had forgotten to grade 25-30 submissions for about a month. When Dr. Perros pressured me to get the work done one day, I went away and graded them all in about ten minutes! Of course, this quickly led to Dr. Perros reassigning me to a research assistant's role, which I was much better suited for."

Dr. Perros continued to have a profound influence on Raif and his development. He recalls a time when he was really struggling with his thesis and Dr. Perros stepped in make a strange recommendation. "He basically told me to go back to Turkey for a while until I could get focused," Raif said. "I think he felt I needed some of my mom's cooking." The advice seemed to work and after a brief trip back home, Raif returned to finish his studies earning his PhD in Operations Research in 1987.

He always planned to go back home to Turkey after graduation, but Raif also had dreams of success that led him to explore opportunities here in the US. "I worked for Dr. Perros for a while at the University, before deciding to move into a corporate environment." For two years, he worked as a Performance Analyst, modeling software architecture for Bell Northern Research, the research arm of Nortel Networks. He left BNR to lead a Systems Architecture team at IBM, but left after six years to take on the challenge of launching Allied Telesyn's Raleigh operations.

It was not long before another opportunity presented itself. Raif and four other colleagues acted on their dreams and launched Orologic, Inc., with a business proposition founded on the belief that the major technology players would eventually evolve their business models to outsource their need for design and manufacture of highly specialized digital semiconductor chips. "We were ahead of the curve," Raif recalls. "At first we were basically a garage operation with limited funding. We launched the business with about $200K in venture capital funding, and none of us received a salary for about a year. Not many people gave us a chance for survival." Their doubters could not have been more wrong. Their plan slowly began to come together, and they hired their first full-time employee in July of 1998. This was followed by a few more additions to their staff over the next few months. "That was significant for us," said Raif.

"It was a sign that we were beginning to turn the corner." Orologic really turned the corner in a big way in October of 1998 at the InterOp '98 tradeshow. "Ten of us piled into rented vans for the trip down to Atlanta and we worked all night long getting ready for the show to open. We were putting the finishing touches on our demo as the show opened at 8:00 am!" Their big break came when a Cisco executive approached them about a project. This was followed by major deals with Alcatel and other high tech players.

Not long after that, Raif found himself in negotiations with AMCC over the purchase of Orologic. "At one point, we became hopelessly stuck at the negotiating table, $50M apart on a deal," said Raif. "Finally, AMCC's VP of Business Development and I decided to take a walk outside and discuss it one-on-one over a cigarette. We returned with a deal in which we basically met in the middle." Raif felt good about the deal as he had negotiated the deal upwards by $25M. His business partners took a different approach telling him that he had just smoked a $25M cigarette! One of his prized possessions is a framed pack of smokes in his office with the inscription "In case of negotiations, do not break glass."

In an interesting twist of fate, the deal with AMCC fell through at the last minute, but Raif and his colleagues realized they had a business model that other companies would be interested in. In 2000, they sold Orologic to Vitesse Semiconductor Corporation for approximately $450M. The hard work paid off for Raif and his partners, as 18 of the 22 Orologic employees became instant millionaires. Almost all of them, including Raif, continue to work at Vitesse today. Raif, now the VP of the Multiservice Solutions Group at Vitesse offers this simple advice to his fellow alumni, "Follow your dreams. If you believe in yourself, don't give up."

THE ALUMNI CONNECTION

ALUMNI SPOTLIGHT: EDWARD WHITEHORNE

When Ed Whitehorne (BS, 1972) was an undergraduate in Computer Science, the department was quite different than it is today. His work and education allowed him to witness first-hand, the rapid evolution of computing technology.

Whitehorne knew what he wanted to do from an early age and set his course to accomplish it. At age 9 or 10, he knew he was interested in computers. Whitehorne was born in Richmond, VA and at age 5, moved to High Point, NC where he lived with his family until traveling to NC State to pursue a degree in computer science.

Whitehorne recalls that he was in one of the first classes to graduate in Computer Science. At the time, Computer Science was a part of the College of Physical and Mathematical Sciences (PAMS). Within the department, most of the faculty were young and not much older than many of the students and research was focused on the undergraduate students because the department did not have a graduate program. Many students and faculty were interested in natural language processing and artificial intelligence, which were hot topics in the industry. Whitehorne also remembers that the department's only interactive terminal was limited to one teletype running at 110 baud that could be found in the basement of Dabney Hall. Whitehorne thought he had "died and gone to heaven" when the department acquired an IBM 27-41 selectric typewriter terminal that ran at 300 baud.

During his senior year, Whitehorne was president of the ACM. At the time, he was having difficulty recruiting officers and he remembers asking a fellow Computer Science student named Debbie Hall (BS, 1972) to serve as an officer. The two began dating and a true Computer Science romance blossomed. The two married a month after graduation and several of the faculty attended the ceremony, including Dr. Alan L. Tharp who is now Department Head.

Whitehorne earned a Master's Degree in Computer Science from Duke University in 1973 and then returned to NC State to pursue a PhD program in Operations Research. He continued to work for the U.S. Forest Service in the Biometric Group until 1978. He left to head up the IT group at Family Health International (FHI), a non-profit organization that does HIV research and supports family planning and healthcare in the third world. In the early 80's before the advent of the PC, FHI developed software for clinical trials that ran on Texas Instruments mini-computers. These computers were placed around the world to aid in the collection and analysis of statistical and epidemiological data integral to FHI's research. This data was stored and transported on 8-inch floppy disks. Today, Whitehorne serves on the Board of Directors of Family Health International.

In 1986, Whitehorne was one of the founders of a company spun off from FHI called Clinical Research International. Whitehorne stayed with this company until he retired for the first time in 1992. His short-lived retirement allowed him to spend more time with his family, a period in his life which he cherishes greatly. After only one and one-half years of retirement, Whitehorne was lured back into the workforce by an exciting managerial challenge. He became President and CEO of Clinical Trials Support Services, a company experiencing difficulty in their market, and brought them out of their financial and operational hardship.

Whitehorne then retired again and added the role of investor to his resume. Soon after he started investing in private companies, Whitehorne joined forces with four partners with similar interests. These five men formed CI Partners, an organization designed to mentor early stage start-up companies by investing their intellectual capital as well as their financial resources.

Whitehorne enjoys the opportunity to work with young minds and emerging technology. Since becoming an investor, many graduates of NC State Computer Science have crossed his path. He serves on the Board of Directors for ChannelAdvisor, a company founded by Scot Wingo (MS, 1992) and was an early investor in Ganymede a company founded by Tim Huntley (BS, 1989) and Steve Joyce (BS, 1983) as well as LIPSinc, a company which has its roots in the Department of Computer Science. Looking back on his educational experiences and career choices, Whitehorne notes that "a degree in Computer Science teaches you how to think, teaches you how to approach solving problems, and can make it easier for you to work in a variety of other domains."

Because Computer Science is such an ever-changing field and there is always something moving forward, Whitehorne recognizes the need to stay up-to-date on emerging technology. Since he is no longer a hands-on person, Whitehorne finds that what keeps him current in the field is staying involved with technology companies, board meetings, and young technologists.

Ed and Deborah Whitehorne reside in Apex and have two children: a 20 year old son currently studying Mechanical Engineering at NC State, and a 16 year old daughter who is a junior at Apex High School.

THE ePARTNERS CONNECTION

ePARTNERS WELCOMES NEW MEMBERS

During a time of economic uncertainty that has weighed heavily upon the tech sector, the NC State Department of Computer Science is pleased to welcome a thriving new ePartner, **Telesyn Networks**, to our list of departmental supporters. We are also delighted to welcome back our loyal ePartners and Super ePartners for another year of membership.

Telesyn believes in making a commitment to the area they work in and having an impact on the quality of talent they employ. "How well you do as a nation depends on the caliber of its people," says David Dowse, President of Telesyn. Through this affiliation with the ePartners Program, Dowse believes that they are helping the country by increasing the quality of education and the level of the talent base. Telesyn is a fast-growing company started in 2001. They produce highly reliable data networking equipment for broadband access networks. The company is part of a multinational corporation, Allied Telesis, which has been in business since 1897 and is growing at a rate of 30% per year.

The concept of leveraging university partnerships and making use of related resources is not new to this organization. The Allied Telesyn Group currently partners and funds several university departments around the world. The group has associations with a number of outstanding professors and institutions around the world which include: Professor Nakamura in ASIC tools at the University of Hyoto in Japan; Professor Pier Luca Montessoro in Networking Protocol at the University of Udine in Italy; the Communication Networking Department at the University in Auckland in New Zealand; and Dr. Shigeki Goto in Computer Science at the University of Waseda in Tokyo.

Telesyn Networks is a global company that produces Internet-related hardware and software, including gigabit Ethernet layer 2 and layer 3 switches, routers, firewalls, and optical media converters. Allied Telesyn has Product Development labs in Tokyo, Christchurch New Zealand, Milan, Sunnyvale CA, and now in Raleigh. When fully operational in early 2002, Allied Telesyn Networks will consist of over 100 hardware, software, and test professionals with extensive lab facilities.

Telesyn's Raleigh headquarters are strategically located on NC State's new Centennial Campus. This close proximity will only serve to strengthen the relationship between Telesyn and the Department of Computer Science.

Ken Tate, Director of ePartners, Jill Koethcke, Associate Director of ePartners, Jim Holland, Vice-President of Operation Systems at Telesyn, and Dr. Alan L. Tharp, Department Head of Computer Science

HOT OFF THE PRESS...

The department is delighted to announce the addition a new Super ePartner, **Progress Energy**. We would also like to welcome **Computer Service Partners** to the ePartners Program.
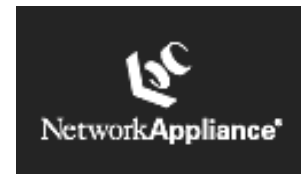
Look for more information about these two new ePartners in the next issue of <u>Connected</u>.

SUPER ePARTNERS

ePARTNERS

THE ePARTNERS CONNECTION

CAREER CONNECTION SPARKS STUDENT INTEREST

The department would like to recognize **Network Appliance**, **EMC**, **John Deere** and **SAS** for participating in our 2nd annual ePartners Career Connection Event held on September 24, 2001. Well over 300 Computer Science students enjoyed the opportunity to interact with ePartners representatives during a time of uncertainty in the job market. ePartners and students are already looking forward to next Fall's Career Connection.

WHAT IS ePARTNERS?

ePartners is a program designed to build relationships between the global business community and the NC State Department of Computer Science. In recognition of their financial support, our corporate partners enjoy an extensive portfolio of benefits including:

- Access to exclusive recruiting tools, events, & assistance
- Faculty engagement opportunities designed to maintain & improve continuing education & research in the field of computer science

- Branding, marketing, & image exposure to build relationships & corporate awareness across 4,000+ students, faculty and alumni
- Opportunities to provide industry specific input & feedback to help shape the department's strategic plans and curriculum evolution
- Access to NC State & departmental news & communications
- Priority naming rights for all CSC facility additions & expansions
- Major event sponsorship opportunities (Super ePartners)
- Senior Design Center projects (Super ePartners)

CISCO SPONSORS ACM REGIONAL PROGRAMMING CONTEST TEAM

Thanks to **Cisco Systems** for sponsoring two teams who competed in the ACM Mid-Atlantic Regional Programming Contest on Saturday, November 10, 2001. Over 120 teams representing colleges and universities from the mid-Atlantic region participated in the grueling day-long competition. Student teams were presented with a comprehensive packet of eight specific problems to solve which varied in scope and difficulty. To no one's surprise, both our NC State teams placed high in the overall standings, finishing in the top 25th percentile. Computer Science Instructor and ACM Advisor, **Carol Miller**, said "the annual competition places strong emphasis on problem solving and will likely lead to curriculum changes in the future, possibly the addition of a new problem solving course." We congratulate our students for their successes in competition, and we again extend our appreciation to ePartner, Cisco Systems, for their support and sponsorship.

The 800# Gorilla pictured on page 4 is the Department Head of Computer Science (monkeying around).

ePARTNERS STUDENT/ALUMNI RESUME DATABASE

Our ePartners enjoy the exclusive opportunity to contact, interview and hire NC State students and alumni with computer science expertise and experience via the ePartners Resume Database and online job postings.

A Senior Design Center Team is working with our ePartners office to launch additional enhancements and functionality to the ePartners web site. Users of the resume database will notice a new, more user-friendly interface, and greater flexibility in terms of entering, accessing, and managing data. Additional search functionality has been added allowing our ePartners to complete more powerful and targeted candidate inquiries.

Over the course of the semester, this Senior Design team will help us launch additional site enhancements including the IT Knowledge Repository, an ePartners Users Forum (online bulletin board), a faculty engagement form, and a complete set of site administration tools.

Alumni interested in taking advantage of the database should contact Jill Koethcke at koethcke@csc.ncsu.edu to receive account log-in and password information.

The ePartners Resume Database is available at http://epartners.ncsu.edu

THE ePARTNERS CONNECTION

http://epartners.ncsu.edu

NEW LEADERSHIP FOR THE ePARTNERS PROGRAM

The department is pleased to introduce **Ken Tate**, the Director of the ePartners Program and **Jill Koethcke**, the Associate Director. These two individuals have joined forces to lead the development of corporate and alumni relations within the department.

Ken, a 1983 NC State graduate of Business Management, returned to his alma mater after a 19 year career at Nortel Networks. While at Nortel, Ken held a number of leadership roles, most recently as the Director of ePerformance & Marketing Solutions for the Knowledge Services group where he led a global team in developing and deploying user-centered eLearning technology solutions to speed the learner's time to proficiency and leading the transition from "bricks to clicks." Ken brings to his new role a passion for NC State coupled with a strong background in marketing, communications, and customer and client relations.

Jill received her undergraduate degree from NC State in May 2001, graduating cum laude with a major in Communication and a minor in Journalism. Her educational and professional background focuses heavily on public and media relations. In her new role, Jill supports both the ePartners Program and the Senior Design Center. She provides much needed support by driving communications initiatives, planning and coordinating ePartners related activities, and collaborating with Ken to expand the ePartners program in terms of benefits, participants, and financial support. Jill brings exceptional skills, ideas, excitement and energy to her new role.

Please consider Ken and Jill your new alumni and corporate contacts for the Department of Computer Science at NC State.

Ken Tate
Director of ePartners
Department of Computer Science
NC State University
231-B Withers Hall/Box 8206
(919) 513-4292
(919) 515-7896

Companies interested in more information about sponsoring a Senior Design Center Project or membership in the ePartners Program should contact either Ken or Jill.

Jill Koethcke
Associate Director of ePartners
Department of Computer Science
NC State University
226-A Withers Hall/Box 8206
(919) 513-2985
(919) 515-7896

HOW DO ePARTNERS SUPPORT THE DEPARTMENT?

The unrestricted funding provided by our ePartners helps supplement state funding allowing for continued growth in emerging areas of technology while providing the highest quality education for our students. ePartners funding and active involvement helps the Department of Computer Science to:

- Attract & retain outstanding faculty and exceptional new students

- Develop, launch & evolve new programs & curriculum innovations
- Procure essential lab & research equipment
- Modernize instructional technologies
- Deliver targeted communication to our students, alumni, faculty & corporate contacts
- Sponsor major departmental activities & events
- Support student & staff travel & development needs

- Educate & enlighten Computer Science student organizations
- Sponsor Senior Design Center Projects
- Develop strategic plans that reflect changing market & industry dynamics
- Support facility renovations & expansions & much more

THE ePARTNERS CONNECTION

THANK YOU FOR GETTING CONNECTED

In addition to our Super ePartner and ePartner Companies (listed on page 12), the following alumni, friends and corporate sponsors have provided their generous support to the Department of Computer Science from July 2001 to February 2002.

Sallie Everette (BS, 1982)
Kristopher Tyra (BS, 1986)
Charles K. Wallis (BS, 1984)
Dr. Ana Anton, Assistant Professor of Computer Science

Thank You!

Dell USA	**Propack Data**
Masterpiece Technology	**Integrated Industrial Information**
Fujitsu Transaction Solutions	**NBC 17 WNCN**
Tangram Enterprise Solutions	**Duke Energy**

ASK ePARTNERS

Dear ePartners Program,

I would like to support the Department of Computer Science, but some time has passed since I was a student at NC State. Please tell me where my financial support is most needed within the department. Also, what is involved in the donation process?

Sincerely,

An Alumnus of Computer Science

Dear Alumnus of Computer Science,

Thank you for your interest in supporting the Department of Computer Science! It is alumni like you that help the department in its continuous effort to provide a competitive and high-quality educational environment.

As I'm sure you are aware, the field of Computer Science is a constantly changing environment and it requires leading-edge teaching, research, and resources for us to stay at the forefront of new technology.

Your gift will supplement the state budget and help improve and maintain programs and initiatives within the department.

Although there is no strict "process" for contributing to the Department of Computer Science, you have a variety of options. We would be happy to speak with you about the intent you may have regarding your gift, the tax benefits of giving and a variety of other opportunities for supporting the department.

Areas within the department that need your support are:

The Computer Science Enhancement Fund:
This fund satisfies the immediate needs of the department .

The Computer Science Enhancement Endowment:
This endowment will provide support for the department's future including long-term needs.

The Computer Science Enhancement Fund and Endowment both provide support within the department for: new faculty/student recruitment; equipment needs for emerging technology; and student travel expenses for conferences/competitions. This funding will also supply furniture, equipment and educational material needed for the new Computer Science building scheduled for completion on Centennial Campus in 2005.

The Senior Design Center Operational Endowment:
Since 1994, the Senior Design Center has provided Computer Science students the opportunity to use their technical and communication skills to complete team-oriented projects for real-world companies. This endowment helps to assure the continued operation of the Senior Design Center by providing funds for equipment and faculty/staff support.

Please make your check payable to: **NC State Engineering Foundation**, Inc. Be sure to make note of the specific fund or endowment you wish to support within Computer Science. Mail your contribution to: The ePartners Program, Dept. of Computer Science, NC State University, Campus Box 8206, Raleigh, NC 27695-8206

Please do not hesitate to contact either one of us with your questions or ideas! We greatly appreciate your support.

Best Regards,

Ken Tate, Director of ePartners
Jill Koethcke, Associate Director of ePartners

NC STATE UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE

THE ALUMNI CONNECTION

WHERE ARE YOU, ALUMNI?

The Department of Computer Science would like to hear from you. Please take a few moments to tell us where you've been and where you're going. We'll happily include an update about your successes in upcoming issues of *Connected*.

In your update, please include your…..

Name:
Date of Graduation:
Degree Earned:
Occupation/Place of Business:
Location:

Personal Information (if applicable):
News You'd Like To Share with other alumni, faculty and students:

Information may be sent to Jill Koethcke at koethcke@csc.ncsu.edu.

ACM/AITP WELCOMES MARSHALL BRAIN

Marshall Brain, a 1995 alumnus of the department and founder and CEO of HowStuffWorks.com visited the department on January 17, 2002 to speak with students in ACM/AITP about his experiences turning a unique idea into a successful business.

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