News & Notes from Sitterson Hall

Issue Twenty-Five, Fall 1999

Department of Computer Science
The University of North Carolina at Chapel Hill

In This Issue

Chairman's Corner

Fall is hurricane season in North Carolina. In September, Hurricane Floyd swept across the eastern part of our state. The accompanying rain caused widespread flooding, resulting in a great deal of damage. Luckily, the Chapel Hill area was spared. We were not so lucky four years ago, however, when Hurricane Fran visited us at the start of the fall 1995 semester.

I am sorry to report that the UNC-Chapel Hill community lost its chancellor, **Michael Hooker,** 53, to cancer in June. He had been diagnosed in January with non-Hodgkin's lymphoma. During his four years as chancellor, he worked tirelessly on many issues. He was a strong advocate of the increased use of technology in education. Michael was a great friend to this Department and we will miss him.

We are also very sorry to announce that **Gyula Mago,** professor, has retired after 29 years on our faculty. We will miss Gyula and wish him well in his retirement. We will hold a party for him later this fall.

On a happier note, we welcome three new faculty members to our ranks. **Sanjoy Baruah,** associate professor, joined us in July. **Jack Snoeyink,** professor, joined us in August. See below for more about them. **Ketan Mayer-Patel** will join us as an assistant professor in January, after receiving his Ph.D. from the University of California at Berkeley. Look for more about Ketan in our Winter issue.

We also welcome a very large entering class of new graduate students: 45 in all. We welcome back all our returning graduate students and undergraduate students in Mathematical Sciences.

Congratulations to **Siddhartha Chatterjee** who has been promoted to associate professor with tenure, effective 1 January 2000. Congratulations also to **Tim Quigg,** lecturer and associate chair for administration and finance, who is one of four recipients of the 1999 Chancellor's Award for Excellence.

We held a day-long departmental retreat in May to discuss a number of issues: the proposed undergraduate curriculum, the graduate curriculum, research directions, and faculty recruiting. We had many productive discussions and will continue our planning with additional retreats and meetings in the year ahead.

We will announce the recipient of our Alumni Fellowship in our Winter issue. Generous support from our alumni and friends helps make the Alumni Fellowship possible. You have been so generous in the past, and we hope you will continue to support us.

We hope you will visit us if you are in the Chapel Hill area. Or visit us virtually, via our Web pages, for the latest news and information about us.

Stephen F. Weiss

Department Spring Picnic, Carrboro, N.C., April 1999

Chris Weigle (right) informs fellow graduate student Matt Cutts that he'll be the next item on the grill if there are any complaints about the food. (Photo: Claire Stone)

Students play ultimate frisbee. (Photo: Brent Insko)

Welcomes and Farewells

New Faculty Appointments

Sanjoy Baruah, associate professor, Ph.D. 1993, Texas-Austin. *Scheduling theory; real-time and safety-critical system design; computer networks; resource allocation and sharing in distributed computing environments.*

Prior to coming to UNC-Chapel Hill, Sanjoy was an assistant professor in the Computer Science Department at the University of Vermont. He joined Vermont after receiving his Ph.D. in 1993 from the University of Texas at Austin. He did his undergraduate work at the Indian Institute of Technology in Delhi, India, where he was a classmate of **Dinesh Manocha,** associate professor.

Sanjoy's research interests and activities concern feasibility-analysis and fairness issues in shared-resource systems. Currently, he is working to develop new techniques for the formal specification and analysis of real-time safety-critical application systems, and to design strategies for fair bandwidth allocation in computer networks.

Jack S. Snoeyink, visiting professor (effective July 1999; professor effective 1 January 2000), Ph.D. 1990, Stanford. *Computational geometry; geographical information systems; geometric modeling and computation; algorithms and data structures; theory of computation.*

Jack joins us from the University of British Columbia (UBC) where he was an associate professor in the Department of Computer Science. He received his Ph.D. from Stanford University in 1990, then spent a year as a postdoctoral researcher at Utrecht University in the Netherlands, prior to joining UBC in 1991.

His research in computational geometry has two interrelated foci: first, on algorithms and data structures for discrete geometry, and second, on practical applications of geometric computation in Geographic Information Systems (GIS). In the first, his objective is to understand the nature of geometric computation by solving geometric problems that have been abstracted from some application area (GIS, robotics, solid modeling, databases). In the second, he is working to obtain robust implementations of data structures and algorithms that open up new capabilities for GIS.

Jack is accompanied by three students from UBC. **Hamish Carr** is working with Jack on applications of Morse Theory to algorithms for molecular data, **Martin Isenburg** is working on compression for geometric surface meshes, and **Andrea Mantler** is working on algorithms in computational geometry.

New Staff

Debra Core, secretary, joined us in July. Most recently, she worked at Underwriters Laboratories in Research Triangle Park, N.C. Debra also has prior experience working for UNC-Chapel Hill.

Betty Solorzano, secretary, joined us in August. She is originally from Nicaragua and grew up in Miami, Fla. She has a degree in art education from Florida International University. Betty recently relocated here from Michigan with her husband who is working on his MBA at UNC-Chapel Hill.

Karen Thigpen, receptionist, joined us in June. She recently moved here from Greenville, N.C., with her husband and two children. Karen has a variety of prior secretarial and customer service experience. She majored in journalism at East Carolina and N.C. Central universities.

New Students

Danette Allen, Deepak Bandyopadhyay, Michael Bell, Alex Blate (B.S. MSci. 1999), Thomas Bodenheimer, Chris Brooks, John Carpenter, Parag Chandra, Jason Clark, Timothy Cogger (B.S. MSci. 1997), Scott Cooper, Swaha Das, Susan Fisher, Tom Fletcher, Jack Freelander, Shelby Funk, Ashes Ganguly, David Gotz, Felix Hernandez, Karl Hillesland, Yanlin Hou, Yuquan Jiang, Jason Jordan, Thomas Lassanske, Joo Lee, Huajun Luo, Karim Mardini, Ajith Mascarenhas, Steven Matuszek, Paul McLaurin, James McNeill, Andrew Nashel, David O'Brien, Fisayo Omojokun, Brian Ostasiewski, Sungwook Park, Erin Parker, Chuck Pisula, Leila Plummer, Chris Riley, Michael Rosenthal, Joshua Steinhurst, Liang-Wei Su, Srihari Sukumaran, Bian Wu.

Median credentials for our new students:

Quantitative GRE:	93rd percentile
Verbal GRE:	85th percentile
Analytical GRE:	94th percentile
GPA (undergraduate):	3.7/4.0

Thanks and Farewell To . . .

Andrew Ade, administrative secretary to Henry Fuchs, who left in August to work part time as an administrative services assistant in the Department of Surgery in the School of Medicine at UNC-Chapel Hill, while finishing his dissertation in comparative literature. He had been with us since July 1996.

Sue Forrest, secretary, who left in July to attend UNC-Greensboro where she is completing her teaching certificate in music. She joined us in January 1999 as our receptionist, and was promoted later to be an assistant to several of our faculty.

Jai Glasgow, graphics demos coordinator and secretary, who left in May to move to Pittsburgh, Pa. Currently, she is working with a team to redesign the Web pages for the School of Computer Science at Carnegie Mellon University. She had worked with us since May 1997.

Doug Hoffman (Ph.D. 1996), research assistant professor, who left in June to join Acxiom, Inc., in Conway Ark., as a systems architect. Most recently, he worked with other faculty and staff of the Microelectronic Systems Laboratory on the DISCO project.

Philip Winston, research engineer, who left in April to join SensAble Technologies in Cambridge, Mass. He had worked with us since January 1998.

Dr. Gyula Mago Retires

This fall, **Gyula Mago,** professor, retired after 29 years of service. During his career here, he has been a scholar, an award-winning teacher, and an advisor, a mentor, and a friend to many students.

Originally from Hungary, Gyula received a diploma in engineering in 1962 from the Polytechnical University of Budapest, then joined its faculty as an assistant professor. He joined our Department in 1970, after receiving his Ph.D. in computer science from Cambridge University. His research interests have included computer architecture, parallel computation, and programming languages. He was one of the principal developers of the FFP machine, a small-grain parallel reduction computer that could be programmed easily and flexibly, without unduly sacrificing its performance potential. In addition to his many papers over the years, he was issued a patent, "Cellular Network of Processors" (U.S. Patent No. 4,251,861), in 1981.

Gyula has advised many master's and doctoral degree candidates. His Ph.D. advisees have included **Edoardo S. Biagioni** (1992), **Scott H. Danforth** (1983), **R. Kent Dybvig** (1987),

David R. Kehs (1978), **V. Alexis Koster** (1977), **David J. Middleton** (1986), **Roy P. Pargas** (1982), **William D. Partain** (1989), **Mark Pozefsky** (1977), and **Donald M. Tolle** (1981).

During his time here, Gyula has taught countless students. His talent as a teacher is illustrated by the fact that he has won the Computer Science Students Association's Teaching Award two out of the five years that the award has been given: in 1996-97 and 1998-99. Nominators for the most recent award wrote, "Dr. Mago has put his unique stamp on COMP 206 [the graduate core course on computer architecture], explaining what is important, distinguishing between fact and opinion, giving his own historical perspective, and providing a much needed framework on which to hang the various facts and principles . . . . Within the handouts are tables, diagrams, rules of thumb, and new ways of looking at the material that make the course come alive . . . . But beyond the details and specifics is the big picture. Students come away from Dr. Mago's classes feeling privileged to have known a great teacher and a great human being. Dr. Mago's relentless spirit is what shines through the equations and diagrams . . . ."
(www.cs.unc.edu/Info/Events/News/CSSAAward9899.html)

The Department will hold a retirement party for Gyula later this fall.

Research Highlights

Pfair: New Real-Time Systems Project

This spring, **Jim Anderson,** associate professor, received funding from the National Science Foundation for a new project, "Pfair-Scheduled Real-Time Systems: Extending Theory to Practice." Pfair scheduling is especially useful for realizing timing constraints in systems of multiple processors. It differs from more conventional real-time scheduling paradigms in that tasks are explicitly required to make progress at steady rates. Pfair scheduling was originally conceived by **Sanjoy Baruah,** associate professor, and **Greg Plaxton,** an associate professor at the University of Texas.

Jim and graduate student **Anand Srinivasan** are trying to generalize the Pfair task model so that Pfair scheduling can be applied more easily in systems in which real-time tasks are not strictly periodic. They are working also to extend the current theory of Pfair scheduling to include support for interprocess communication and synchronization, I/O, and fault tolerance. Sanjoy will contribute to these efforts also. Ultimately, the researchers plan to develop an implementation of a Pfair-scheduled real-time operating system that can be used as a testbed for experimentally evaluating the algorithms developed in the project.

Computer-Aided Diagnosis Laboratory Receives Funding

Stephen R. Aylward (Ph.D. 1997), research assistant professor of radiology and adjunct assistant professor of computer science, recently received funding to form the Computer-Aided Diagnosis Laboratory. The new laboratory, which will be located in the Department of

Radiology, is part of the Medical Image Display and Analysis Group. The funding includes a portion of Stephen's salary and funding for four computer science graduate students for three years. Research in the new laboratory will focus on computer-aided diagnosis of breast cancer, using digital mammograms, and of lung disease, using chest radiographs. A significant portion of the funding comes from the National Library of Medicine. Additional funding comes from the Lineberger Comprehensive Cancer Center and the Department of Radiology at UNC-Chapel Hill, and from the Holderness Foundation for Medical Student Research Support.
(www.cs.unc.edu/~aylward/)

Distributed nanoManipulator Demo at Internet 2 Meeting

In April, **Kevin Jeffay,** associate professor, **Russell M. Taylor, II** (Ph.D. 1994), research assistant professor, and graduate students **Michele Clark** (M.S. 1998), and **Tom Hudson** (M.S. 1997) travelled to the Internet2 spring meeting in Washington, D.C., to demonstrate the nanoManipulator system running over Internet2. Meeting participants used the nanoManipulator to manipulate strands of fibrin (an essential protein in the formation of blood clots) in an atomic force microscope located in Phillips Hall on the UNC-Chapel Hill campus. The experiment served to demonstrate a prototype implementation of the differentiated services architecture for Internet2 known as the "Qbone." The differentiated services architecture for the Internet is an attempt to provide quality-of-service assurances for the real-time network flows generated by applications such as the nanoManipulator. The network demonstration was a collaborative effort between our Department, the North Carolina Networking Initiative, and Nortel Networks.
(www.cs.unc.edu/Research/nano)

Boeing, Air Force Interested in UNC Technology

In July, **David Himmel** and **David Princehouse** of Boeing Corp. met with members of the Tracker project and experimented with using the HiBall tracking system to track a pneumatic hand drill. Boeing is particularly interested in using the HiBall technology both to guide and to monitor hand drilling because its new 777 jet aircraft contains approximately one-half-million hand-drilled holes. These holes must be drilled to very tight tolerances, both in terms of the hole position and the angle of drilling. Currently, there are on the order of five thousand "problem holes" that result in very expensive additional work. Boeing is also interested in using some of the projector-based visualization technologies that are being pioneered in UNC's Office of the Future project. Boeing sees the potential to improve aircraft assembly by projecting the instructions for drilling and wiring directly onto the air frame.

Also in July, **Lt. Col. Milt Miller,** a technical projects director at the U.S. Air Force Research Laboratory's (AFRL) Warfighter Training Research Division in Mesa, Az., visited with members of the Tracker project to discuss the HiBall tracking system. Miller is investigating head tracking systems--such as the HiBall--that are fast, accurate, and robust in order to improve the training simulators in a night-vision simulation system for Air Force pilots. Increasingly, pilots are using night-vision "goggles" to aid in dusk or night flight, which requires special training. Miller was also interested in both the projector-based visualization technologies of the Office of the Future Project and the extremely realistic scene modeling work of the Image-Based Rendering Group.
(www.cs.unc.edu/~tracker)

1999-2000 Distinguished Lecturer Series

The Triangle Computer Science Distinguished Lecturer Series, sponsored by the U.S. Army Research Office, is now in its fifth year. Speakers for the 1999-2000 series are **Tony DeRose** of Pixar Animation Studios, **Barbara Liskov** of the Massachusetts Institute of Technology, **Vladimir Roklin** of Yale University, **Carlo Sequin** of the University of California at Berkeley, **Jude Shavlik** of the University of Wisconsin, **Kang Shin** of the University of Michigan, **Burton Smith** of Tera Computer Company, **Jeff Ullman** of Stanford University, and **Steven Zucker** of Yale University. For more information, visit **www.cs.unc.edu/Info/Events/DistLectures/.**

Recent Conferences

Interactive 3D Graphics Symposium
Several faculty and students attended the ACM Symposium on Interactive 3D Graphics from 26 to 28 April in Atlanta, Ga. Our researchers presented six papers **(see "Recent Publications").** **Frederick P. Brooks, Jr.,** Kenan professor, served as a member of the Interactive Graphics Advisory Board and of the Education Panel, "Teaching 3D Graphics." **Gary Bishop** (Ph.D. 1984), associate professor, was on the program committee.

ACM Symposia on Solid Modeling and Computational Geometry
Ming Lin, assistant professor, **Dinesh Manocha,** associate professor, and graduate students **Tim Culver, Gentaro Hirota** (M.S. 1996), and **John Keyser** attended the Fifth ACM Symposium on Solid Modeling and Applications, held in Ann Arbor, Mich., from 9 to 11 June. Tim and Gentaro presented papers **(see "Recent Publications").** Ming was one of the symposium's organizers and also served as its financial chair. Dinesh was a member of the program committee and also chaired a paper session on surface modeling.

Tim Culver, John Keyser, Dinesh Manocha, and graduate student **Mark Foskey** also attended the 15th Annual ACM Symposium on Computational Geometry, held in Miami Beach, Fla., from 13 to 16 June. John presented a paper co-authored with Tim Culver, Dinesh Manocha and **Shankar Krishnan** (Ph.D. 1997). UNC-Chapel Hill researchers also published two videos in the video proceedings **(see "Recent Publications").** **Jack Snoeyink,** professor, served on the program committee and co-authored several papers.

ACM SIGGRAPH '99
A number of faculty, staff, students, and alumni attended SIGGRAPH '99 in Los Angeles, Calif., from 8 to 13 August. UNC-Chapel Hill researchers presented five papers **(see "Recent Publications").** Alumni **Marc Olano** (Ph.D. 1998) and **Greg Turk** (Ph.D. 1992) also had accepted papers. **Steven Molnar** (Ph.D. 1991), adjunct assistant professor, and **Leonard McMillan** (Ph.D. 1997) chaired paper sessions. Course presenters included faculty members **Frederick P. Brooks, Jr., Ming Lin, Dinesh Manocha** and **Russell M. Taylor II** (Ph.D. 1994); current student **Andrew Wilson,** and alumni **Daniel Aliaga** (Ph.D. 1999), **Michael Capps** (M.S. 1996), **Andrew Glassner** (Ph.D. 1988), **Victoria Interrante** (Ph.D. 1996), **Subodh Kumar** (Ph.D. 1996), **Marc Levoy** (Ph.D. 1989), **Peter Litwinowicz** (M.S. 1987), **Leonard McMillan** (Ph.D. 1997), **Penny Rheingans** (Ph.D. 1993), and **Hansong Zhang** (Ph.D. 1998). **Nick**

England, research professor **Henry Fuchs,** Federico Gil professor, **Victoria Interrante,** and **Steven Molnar** each participated in panels.

Approximately 120 people attended the annual Graphics Reunion party at the Hyatt Regency in Los Angeles on 12 August.

New Contracts and Grants

James Anderson, associate professor. "Pfair-Scheduled Real-Time Systems: Extending Theory to Practice," National Science Foundation (NSF).

Stephen R. Aylward (Ph.D. 1997), adjunct assistant professor, "Visible Human Toolkit," National Library of Medicine.

Gary Bishop (Ph.D. 1984), associate professor. "CMOS Smart Sensors for Tracking in Natural Environments," National Aeronautics and Space Administration.

Prasun Dewan, associate professor. "Supporting Reuse, Composition, and Automation in a Collaboration Infrastructure," NSF.

Henry Fuchs, Federico Gil professor. "Automatically Reconfigurable Arrays of Projectors for Wide-Area Display," Lawrence Livermore National Laboratories/University of California.

Ming Lin, assistant professor. "Interactive Haptic Simulation for Engineering Design," NSF.

Ming Lin. "Robot Algorithms for Haptic Interaction," NSF.

Dinesh Manocha, associate professor. "Accurate Boundary Evaluation and Interactive Display of Large Solid Models," U.S. Army Research Office.

Dinesh Manocha. "Interactive Display of Complex Datasets," Lawrence Livermore National Laboratories/University of California.

Dinesh Manocha. "Real-Time Walkthroughs of Serious Synthetic Environments," NSF.

Stephen M. Pizer, Kenan professor. "M-reps: Deformable Solid Modeling for Graphics and Simulation, Using Medially Defined Multifigural Objects," NSF.

David Plaisted, professor. "Instance-Based Theorem Proving with Semantics and Equality," NSF.

David Stotts, associate professor, "UCAR Visiting Scientist Program," UCAR (indirect NOAA/Environmental Protection Agency).

Recent Publications

Aliaga, D., J. Cohen, A. Wilson, E. Baker, H. Zhang, C. Erikson, K. Hoff, T. Hudson, W. Stuerzlinger, R. Bastos, M. Whitton, F. Brooks, and D. Manocha. "MMR: An Interactive Massive Model Rendering System Using Geometric and Image-Based Acceleration," *Proc. ACM Symposium on Interactive 3D Graphics,* Atlanta, Ga., 26-28 April 1999, 199-206.

Aliaga, D., and A. Lastra. "Automatic Image Placement to Provide a Guaranteed Frame Rate," *Computer Graphics: Proc. SIGGRAPH '99,* Los Angeles, Calif., 8-13 August 1999, 307-316.

Anderson J., and M. Moir. "Wait-Free Synchronization in Multiprogrammed Systems: Integrating Priority-Based and Quantum-Based Scheduling," *Proc. 18th Annual ACM Symposium on Principles of Distributed Computing,* May 1999, 123-132.

Bastos, R., K. Hoff, W. Wynn, and A. Lastra. "Increased Photorealism for Interactive Architectural Walkthroughs," *Proc. ACM Symposium on Interactive 3D Graphics,* Atlanta, Ga., 26-28 April 1999, 183-190.

Bullitt, E., S. Aylward, A. Liu, J. Stone, S. Mukherji, C. Coffey, G. Gerig, and S. M. Pizer. "3D Graph Description of the Intracerebral Vasculature from Segmented MRA and Tests of Accuracy by Comparison with X-Ray Angiograms," *Proc. Information Processing in Medical Imaging Conference,* Budapest, Hungary, June, 1999.

Chang, C.-F., G. Bishop, and A. Lastra. "LDI Tree: A Hierarchical Representation for Image-Based Rendering," *Computer Graphics: Proc SIGGRAPH '99,* Los Angeles, Calif., 8-13 August 1999, 291-297.

Culver, T., J. Keyser, and D. Manocha. "Accurate Computation of the Medial Axis of a Polyhedron," *Proc. Fifth ACM Symposium on Solid Modeling and Applications,* Ann Arbor, Mich., 9-11 June 1999, 179-190.

Erikson, C., and D. Manocha. "GAPS: General and Automatic Polygonal Simplification," *Proc. ACM Symposium on Interactive 3D Graphics,* Atlanta, Ga., 26-28 April 1999, 79-88.

Gregory, A., A. State, M. C. Lin, D. Manocha, and M. A. Livingston. "Feature-Based Surface Decomposition for Polyhedral Morphing," video review in *Proc. 15th Annual ACM Symposium on Computational Geometry,* Miami Beach, Fla., 13-16 June 1999, 415-416.

Guthold, M., W. G. Matthews, A. Negishi, R. M. Taylor II, D. A. Erie, F. P. Brooks, Jr., and R. Superfine. "Quantitative Manipulation of DNA and Viruses with the nanoManipulator Scanning Force Microscope," *Surface and Interface Analysis,* Vol. 27, 1999, 437-443.

Hirota, G., R. Maheshwari and M. Lin. "Fast Volume-Preserving Free-Form Deformation Using Multi-Level Optimization," *Proc. Fifth ACM Symposium on Solid Modeling and Applications,* Ann Arbor, Mich., 9-11 June 1999, 234-245.

Hoff III, K. E., T. Culver, J. Keyser, M. Lin, and D. Manocha. "Fast Computation of Generalized Voronoi Diagrams Using Graphics Hardware," *Computer Graphics: Proc. SIGGRAPH '99,* Los Angeles, Calif., 8-13 August 1999, 277-285.

Keyser, J., T. Culver, D. Manocha, and S. Krishnan. "MAPC: A Library for Efficient and Exact Manipulation of Algebraic Points and Curves," *Proc. 15th Annual ACM Symposium on Computational Geometry,* Miami Beach, Fla., 13-16 June 1999, 360-369.

Oliveira, M. M., and G. Bishop. "Image-Based Objects," *Proc. ACM Symposium on Interactive 3D Graphics,* Atlanta, Ga., 26-28 April 1999, 191-198.

Plaisted, D. "Theorem Proving," *Wiley Encyclopedia of Electrical and Electronics Engineering,* Vol. 21, 1999, 662-682.

Rademacher, P. "View-Dependent Geometry," *Computer Graphics: Proc. SIGGRAPH '99,* Los Angeles, Calif., 8-13 August 1999, 439-446.

Raskar, R., and M. Cohen. "Image Precision Silhouette Edges," *Proc. ACM Symposium on Interactive 3D Graphics,* Atlanta, Ga., 26-28 April 1999, 135-140.

Tan, T.-S., K.-F. Chong, and K.-L. Low. "Computing Bounding Volume Hierarchies Using Model Simplification," *Proc. ACM Symposium on Interactive 3D Graphics,* Atlanta, Ga., 26-28 April 1999, 63-69.

Usoh, M., K. Arthur, M. C. Whitton, R. Bastos, A. Steed, M. Slater, and F. P. Brooks, Jr. "Walking > Walking-in-Place > Flying, in Virtual Environments," *Computer Graphics: Proc. SIGGRAPH '99,* Los Angeles, Calif., 8-13 August 1999, 359-364.

Wilson, A. "Representation and Interactive Manipulation of Massive CAD Databases," *Proc. NSF Workshop on Integrated Spatial Databases,* Portland, Maine, June 1999.

Wilson, A., E. Larsen, D. Manocha, and M. Lin. "Graph Partitioning and Ordering for Interactive Proximity Queries," video review in *Proc. 15th Annual ACM Symposium on Computational Geometry,* Miami Beach, Fla., 13-16 June 1999, 429-430.

Wilson, A., E. Larsen, D. Manocha, and M. Lin. "Partitioning and Handling Massive Models for Interactive Collision Detection," *Computer Graphics Forum: Proc. Eurographics '99,* 18(3) Milan, Italy, September 1999. 319-329. (Best Student Paper Award, Second Best Overall Paper Award)

New Patent

Kompella, V., F. D. Smith, J. P. Gray, and K. Jeffay. "User Controlled Adaptive Flow Control for Packet Networks," U.S. Patent No. 5892754, April 1999.

Alumni News

MS/PhD Alumni

Daniel G. Aliaga (Ph.D. 1999) and **Leigh Atkinson,** former receptionist for the Department, became engaged in May. Daniel now works at Lucent Technologies Bell Laboratories in New Jersey. *(aliaga@research.bell-labs.com)*

Ron Azuma (Ph.D. 1995) gave an invited talk, "Hybrid Tracking for Outdoor Augmented Reality," at the Fifth Eurographics Workshop on Virtual Environments, held from 31 May to 1 June 1999 in Vienna, Austria. *(azuma@HRL.com)*

Mike Carr (M.S. 1991) and his wife Susie have moved to Seattle, Wash., where Susie is studying Naturopathic Medicine at Bastyr University. Mike is a technical program manager at Amazon.com and is focusing on improving development productivity. He recently wrote a paper, "Managing Software Maintenance with Metrics," which he will present at the International Conference on Practical Software Quality Techniques and at the IEEE Sixth International Symposium on Software Metrics. *(mwc@amazon.com)*

Jacob D. Furst (Ph.D. 1999) is now an assistant professor in the School of Computer Science, Telecommunications, and Information Systems at DePaul University in Chicago, Ill. *(jfurst@cti.depaul.edu)*

Victoria Interrante (Ph.D. 1996), an assistant professor at the University of Minnesota, has received a Faculty Early Career Development Award from the National Science Foundation. *(interran@cs.umn.edu)*

Alexis Koster (Ph.D. 1977) has a recent paper co-authored with his son Kenneth, who just graduated from Stanford University: "www.stats101.com: A Case Study in Information Business on the Internet," *Proc. Biennial Conference of the Association for Information and Management,* Cergy, France, May 1999. *(akoster@mail.sdsu.edu)*

Marc Levoy (Ph.D. 1989), an associate professor at Stanford University, spent the 1998-99 academic year in Florence and Rome, Italy, working with 30 faculty, staff, and students from Stanford and from the University of Washington to produce three-dimensional, digital models of 10 of Michelangelo's statues, including the David. While he was there, he also scanned the 1,163 fragments of the Forma Urbis Romae--a giant marble map of ancient Rome--with the hope of "solving the jigsaw puzzle." An in-depth article on Marc's work appeared in the 23 April issue of *The Chronicle of Higher Education.* For more information and for a list of other articles about the project, see **http://graphics.stanford.edu/projects/mich.** *(levoy@cs.stanford.edu)*

Peter Litwinowicz (M.S. 1987) presented a section of the Non-Photorealistic Rendering course at SIGGRAPH '99. The work he did at Mass Illusions, on post-production computer graphics effects for the movie "What Dreams May Come," won a 1999 Oscar for Best Visual Effects. Currently, Pete is with RE:Vision Effects, Inc., which recently released its first product, Video Gogh. See **www.revisionfx.com** for details. *(pete@revisionfx.com)*

Bill Mark (Ph.D. 1999) joined Stanford University's Computer Graphics Laboratory as a research associate, after receiving his Ph.D. in May. He is the project manager for Stanford's Immersive Television Project. *(billmark@graphics.stanford.edu)*

Ryutarou Ohbuchi (Ph.D. 1994) joined Yamanashi University in Kofu, Japan, in April, as an associate professor of computer science. *(ohbuchi@acm.org)*

Injong Rhee (Ph.D. 1994), an assistant professor at N.C. State University, has received a Faculty Early Career Development Award from the National Science Foundation. He will use the funding to support his research in multimedia networking. In particular, he is investigating packet loss recovery techniques for video transmission over wireless mobile networks via the Internet. *(rhee@csc.ncsu.edu)*

David G. Stahl (M.S. 1993) has accepted a one year full-time teaching position as a visiting instructor at Dickinson College in Carlisle, Pa. He is using Java and Javascript to teach courses in introductory programming and computer graphics. Details are available at **www.dickinson.edu/~stahl.** *(stahl@dickinson.edu)*

James R. Stanfield (M.S. 1975) was recently honored by the Great Salt Lake Council of the Boy Scouts of America. He received the Silver Beaver Award for Distinguished Service to Boyhood in honor of his many years of service. He has served for 20 years as a scoutmaster and 5 years concurrently as a cubmaster. James is a senior software engineer at Auto-Soft Corp. in Salt Lake City, Utah. *(jim_stanfield@autosoft.com)*

Mark Surles (Ph.D. 1992) reports that Interactive Simulations Inc. (ISI), the company he founded in 1994, was sold recently to MDL Information Systems Inc., the leading database supplier for drug discovery informatics. ISI, which markets 3D graphics for chemists to use in drug discovery, has sold its products to most of the world's major pharmaceutical companies during the past four years. Mark is now director of decision support at MDL. *(surles@mdli.com)*

C. Thomas White (M.S. 1996) has joined the BioInformatics Department at Glaxo Wellcome in Research Triangle Park, N.C., as a senior systems analyst. *(ctw19953@glaxowellcome.com)*

Yunshan Zhu (Ph.D. 1998) has been working for Verysys, a startup company in the San Francisco Bay area, since the beginning of this year. He works on formal tools for verifying hardware designs. *(yunshan.zhu@cs.cmu.edu)*

Undergraduate Alumni

George "Chip" Anderson, III (B.S. MSci. 1987) recently left Microsoft Corp., after 10 years as a Windows developer, to found his own company, StockCharts.com, Inc., which publishes a financial services Web site, **http://stockcharts.com.** He lives in Redmond, Wash. *(chipa@StockCharts.com)*

Jill Craven (B.S. MSci. 1984) received her doctorate in comparative literature in May and joined Millersville University of Pennsylvania, as assistant professor of film. She lives in Lancaster, Pa. *(jill@millersv.edu)*

Christine C. (Chi) England (B.S. MSci. 1993) has joined General Mills in Minneapolis, Minn., as manager of strategic development and analysis. *(engla001@mail.genmills.com)*

Former Faculty News

James Foley, former assistant professor, and **Richard Snodgrass,** former associate professor, recently were named ACM Fellows.

John McHugh, former research associate professor, joined the Software Engineering Institute's Computer Emergency Response Team (CERT), in Pittsburgh, Pa., in July. *(jmchugh@cert.org)*

David Lorge Parnas, former professor, delivered a keynote speech at a colloquium held in honor of the late Dr. Harlan Mills (in connection with the International Conference on Software Engineering) on 18 May. **Frederick P. Brooks, Jr.,** Kenan professor, also gave a keynote speech at the colloquium. Currently, Dr. Parnas is director of the Software Engineering Program in the Department of Computing and Software, of the Faculty of Engineering at McMaster University in Hamilton, Ontario, Canada. *(parnas@qusunt.cas.mcmaster.ca)*

Family Matters

John Allen Atkins was born on 20 October 1998 in Chapel Hill, N.C., to Tom Atkins and Kathy R. Atkins (B.S. MSci. 1992).

Allan Bastos was born on 19 June 1999 in Chapel Hill, N.C., to Rui Bastos (M.S. 1997) and Claudine Bastos.

Jonathan Clark (B.S. MSci. 1987) and **Sandra Simmons** were married on 1 May 1999 in Norfolk, Va.

Benjamin Thaddeus Daniel was born on 29 March 1999 in Raleigh, N.C., to Roy Daniel and Ellen (Wyatt) Daniel (B.S. MSci. 1989).

Selena Maia Faith was born on 12 August 1999 in Durham, N.C., to Rik Faith (Ph.D. 1998) and Melissa Clepper-Faith. She has an older sister, Rhiannon, who is four years old.

Hala Fauzi (M.S. 1987) and **James Loftus** were married on 26 June 1999 in Montara, Calif.

Veronica Lynn Harper was born on 12 July 1999 in Durham, N.C., to Ronnie and Nicole Harper.

Mei Hannah Lander was born on 6 November 1997 in Jiangsu Province, China, and joined the family of Howard Lander (M.S. 1988) and Sue Lander on 29 January 1999.

Congratulations to . . .

Tim Quigg Receives Chancellor's Award

Tim Quigg, lecturer and associate chair for administration and finance, is one of four recipients of the 1999 Chancellor's Award for Excellence. The award is given to UNC-Chapel Hill employees for meritorious and distinguished accomplishments that go beyond normal job duties. Tim was recognized for his skill in negotiating collaborative agreements with several corporations, in which he ensured that the University would reap substantial gains and that its interests would be protected. He also procured for the Department a large equipment gift from Intel Corp.

In his nominating letter for Tim, **Stephen F. Weiss,** professor and chairman, praised him as an "excellent manager of both people and of money. He can leverage scarce resources better than anyone else I've ever seen."

Graduating Seniors win Awards

Three senior undergraduates who had worked for Computer Services were among the 62 undergraduates to be honored on 20 April with UNC-Chapel Hill's most prestigious academic, service and leadership awards for undergraduates. **Scott Campbell** (B.S. MSci.) received the Kenneth C. Royall Award, which is given to the senior Air Force Reserve Officer Training Corps cadet who shows excellence in scholarship and ability as an officer. **Daryl Houston** (B.A. English) was awarded the Robert B. House Memorial Prize in Poetry, which is given to the senior who has done distinguished work in poetry. **Joel Sgro** (B.S. MSci.) received the Josephus Daniels Scholarship Medal, which is given to the senior Naval Reserve Officers Training Corps midshipman who has the highest academic average.

Congratulations also to . . .

Hussein Abdel-Wahab, adjunct professor, and **Julian Rosenman, M.D.,** adjunct professor, who were both reappointed to five-year terms, effective 1 July 1999.

Siddhartha Chatterjee, who has been promoted to associate professor with tenure, effective 1 January 2000.

Guido Gerig, Taylor Grandy professor, and **Gyula Mago,** professor, winners of the 1998-1999 Computer Science Students Association Teaching Award.

Dinesh Manocha, associate professor, who was appointed to the editorial board of *Graphical Models and Image Processing.*

Claire L. Stone, who became the Department's publications manager, effective 1 July 1999.

And to our May and August graduates:

Ph.D. (May):
Daniel G. Aliaga, "Automatically Reducing and Bounding Geometric Complexity by Using Images" (Advisor: Anselmo Lastra).

Jacob D. Furst, "Height Ridges of Oriented Medialness" (Stephen M. Pizer).

William R. Mark, "Post-Rendering 3D Image Warping: Visibility, Reconstruction, and Performance for Depth-Image Warping" (Gary Bishop).

Charles P. Schmitt, "Recognizing Moving Objects: A Neural Model of Temporal Binding in Human Vision" (Jonathan Marshall).

M.S. (May):
Brian Blount, Jessica Crawford Crouch*, Liusong Gao, Michael Kart, Sheila Knight, John Konglathu, Sang-Uok Kum*, Lalit Kumar, Eric Larsen, Benjamin Lok*, Arun Moorthy, Shyam Mundhra, Arun Neelamkavil, Voicu Popescu*, Timothy Preston, Paul Rademacher*, Sadagopan Rajaram, Daniel Rohrer, Salil Sane, Hui Song, Raghavendra Sunku, Andrew Wilson*, Christopher Wynn*

M.S. (August):
David McAllister*, Yuqian Tu

* On to Ph.D. at UNC-Chapel Hill

B.S. Mathematical Sciences, Computer Science Option (May):
Clifton Barnett, Sara Bidgood**, Matthew Blanchard, Alex Blate*, Bjorn Book-Larsson, Scott Campbell*, Brett Chavis, Janette Dresser, Carla Gaskins, Wesley Gyure, James Hadden, Hank Hoffmann**, Leslie Jacobson, David Kline, William Lamb, Robin Linehan, Juan Maturino, Robert McCauley, Brian McKendrick, Randall Murdock, Joel Sgro**, Willliam Silence, Jack Tang**, Robert Tanzola, James Upchurch, Jessica Valpey, Arthur Walker**, Brandon Wood

*With Honors
**With Highest Honors

Phi Beta Kappa: Hank Hoffmann, Arthur Walker
Pi Mu Epsilon: Sara Bidgood, Scott Campbell, Carla Gaskins, Wesley Gyure, Hank Hoffmann, Joel Sgro, Jack Tang, Arthur Walker

Department Graduation Ceremony, May 1999

Mark Livingston receives his Ph.D. hood from professors Kevin Jeffay (left) and Henry Fuchs (Mark's advisor), as chairman Stephen F. Weiss confers upon him the degree of Doctor of Philosophy. (Photo: Claire Stone)

New Ph.D. graduates in front of Sitterson Hall. From left: Daniel Aliaga, William Mark, David Luebke, Jonathan Cohen, Jacob Furst, and Mark Livingston. (Photo: Claire Stone)

Fellowships and Special Assistantships

These students received the following special awards for the 1999-200 academic year:

Danette Allen	National Aeronautics and Space Administration (NASA) Graduate Student Researcher Program
Susan Fisher	Graduate School, Board of Governors Fellowship
Gopi Meenakshisundaram	Link Fellowship
Chris McCue	Silicon Graphics Inc. Fellowship
Josh Steinhurst	Graduate School, Competitive Merit Assistantship
Nick Vallidis	NASA Graduate Student Researcher Program

These students had their awards renewed for the 1999-2000 academic year:

Alexandra Bokinsky	National Science Foundation Fellowship (3rd year)
Jessica Crawford Crouch	Lucent Technologies Fellowship (3rd year)
Matthew Cutts	National Science Foundation Fellowship (3rd year)
Mave Houston	Lucent Technologies Grant/Office of Naval Research Graduate Fellowship (3rd year)
Wynee Johnson	National Physical Sciences Consortium Fellowship (2nd year)
Benjamin Lok	National Science Foundation Fellowship (3rd year)
Kori Needham	Ford Foundation Fellowship (3rd year)
David Ott	Graduate School, Board of Governors Fellowship (3rd year)
Paul Rademacher	National Science Foundation Fellowship (3rd year)
Sharif Razzaque	Graduate School, Board of Governors Fellowship (2nd year)
Andrew Wilson	National Science Foundation Fellowship (2nd year)

About News & Notes

***News & Notes* is published three times a year in fall, winter, and spring.**

Editor:
Claire L. Stone, ***stonec@cs.unc.edu***

Keep in touch!
Let us know where you are and what you are doing so that we can include you in our next issue! Send us information via e-mail to *pubs@cs.unc.edu;* fax it to 919-962-1799; or mail it to the address below, c/o *News & Notes.* Please include your e-mail address.

Department of Computer Science
UNC-Chapel Hill
CB#3175, Sitterson Hall
Chapel Hill, NC 27599-3175

General information:
Voice: 919/962-1700
Fax: 919/962-1799
Internet mail: *info@cs.unc.edu*
World Wide Web: ***www.cs.unc.edu***

Address corrections, submissions, and for information about our publications:
pubs@cs.unc.edu

UNC is an Equal Opportunity/Affirmative Action Institution.

Page maintained by: Department of Computer Science, UNC-Chapel Hill
*Server Manager: **webmaster@cs.unc.edu***
*Content Manager: **pubs@cs.unc.edu***
Last Content Review: 1 November 1999

- **To the Department's home page**