News & Notes from Sitterson Hall

Issue Twenty-Seven, Spring 2000

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

In This Issue

Chairman's Corner

First, some sad news. We are very sorry to have to report the death of one of our graduate students, **Sanjay Sthapit**. Sanjay was a second year student who would have received his Master's degree in May. We are also saddened by the death of **Michael Loeb**, a Duke graduate student with connections to our Department, who died in February. At the time of his death, Michael was completing his Ph.D. under the direction of **James Coggins**, associate professor. For more about Sanjay and Michael, see "In Memoriam".

On a happier note, we congratulate two of our award-winning alumni. **Victoria Interrante** (Ph.D. 1996) was presented with a 1999 Presidential Early Career Award in April. Also in April, **Jon L. Bentley** (Ph.D. 1976) was awarded the Excellence in Programming Award by *Dr. Dobb's Journal*. For more about their accomplishments and for news on other alumni, see "Alumni News".

Frederick P. Brooks Jr., Kenan professor, received the Turing Award at ACM's annual awards banquet on 6 May in San Francisco, Calif. The previous evening in Palo Alto, alumnus **J. Craig Mudge** (Ph.D. 1973) hosted a dinner in Fred's honor, which was attended by about 20 alumni and friends. This fall, the Department will hold a reception in Chapel Hill to celebrate Fred winning the award.

UNC-Chapel Hill has a new chancellor. **James Moeser**, currently the chancellor of the University of Nebraska at Lincoln, will take up his post here in mid-August. He will succeed **William McCoy**, who has served as interim chancellor since the June 1999 death of **Michael Hooker**.

We wish you a very pleasant summer. Please visit us if you are in the area.

Stephen F. Weiss

Retirement party for Gyula Mago

Current and former faculty, staff, and students gathered in Sitterson Hall on 15 May to honor **Gyula Mago**, professor emeritus, for his 29 years of service to the Department and to wish him well in his retirement. **Stephen F. Weiss**, professor and chairman, presented Gyula with a certificate recognizing his achievements and honoring his years of service. Gyula also received a gift certificate and a notebook of letters written by former students and colleagues who shared their fond memories of him.

Steve Weiss presents Gyula Mago with a certificate of appreciation. (Photo: Linda Houseman)

Gyula (center) talks with Claire Stone, publications manager, and alumnus William Hargrove (M.S. 1987). (Photo: Linda Houseman)

Congratulations to...

Christopher D. Arrington, an undergraduate in the computer science option of the Mathematical Sciences curriculum, who was initiated into Phi Beta Kappa on 10 April.

Bil Hays, network manager, one of ten UNC-Chapel Hill employees to receive an Individual Information Technology Award, recognizing his outstanding contributions to information technology support at UNC. He was presented with the award on 12 April at UNC's Information Technology Support Awards Luncheon.

Brent Insko (M.S. 1998), **Aditi Majumder** (M.S. 1999), and **Voicu Popescu**, graduate students, who have been awarded Link fellowships for the 2000-2001 academic year.

Erin Parker, graduate student, who has been awarded a Computer Science Ph.D. Fellowship from the Los Alamos Computer Science Institute, beginning 1 September.

Karen Thigpen, formerly our receptionist, who was promoted in February to the new position of Undergraduate Student Services Assistant.

Faculty Promotions and Reappointments

Bert Dempsey, adjunct assistant professor, has been reappointed to a three-year term, effective 1 July 2000.

Nick England, research professor, will become an adjunct research professor, effective 1 July 2000.

Steven Molnar (Ph.D. 1991) has been promoted to adjunct associate professor and reappointed for a three year term, effective 1 September 2000.

John Poulton has been reappointed as a research professor for a five year term, effective 1 July 2000.

Russell M. Taylor II (Ph.D. 1994) has been promoted to research associate professor and has been reappointed for a five year term, effective 15 May 2000. He has a joint appointment in the departments of Computer Science and Physics and Astronomy, and in the Curriculum in Applied and Materials Sciences. He is also the principal investigator of the new National Institutes of Health Research Resource.

Leandra Vicci has been reappointed as lecturer for a five year term, effective 1 July 2000.

Welcomes and Farewells

New Staff

Andrea Bunn, accounting technician, joined us in March. She has been with UNC-Chapel Hill for about seven years. Prior to joining us, she worked in the Department of Biochemistry. She is very excited about the June graduation of her twin sons, Bryan and Brandon, from Chapel Hill High School. They will attend N.C. State University and N.C. A&T State University, respectively, in the fall.

Tammy Pike, receptionist, joined us in April. Previously, Tammy worked in the main office of Contracts and Grants at UNC-Chapel Hill. She has been with the University for a little over a year.

Visiting Researchers

Joel Goossens, postdoctoral researcher, joins us from April to June. He received his doctoral degree in January 1999 from the Universite Libre de Bruxelles, Belgium. During his stay here, Joel is working with Sanjoy Baruah, associate professor, on scheduling theory for real-time systems.

Roger Hubbold, visiting scholar, joins us from May to November. He is a senior lecturer and a member of the Advanced Interfaces Group in the Department of Computer Science at the University of Manchester, England. His research interests include virtual reality, novel 3D interfaces, software architectures for distributed multi-user virtual reality, large model processing, and interactive visualization using parallel computing systems. While here, Roger is studying techniques for improving face-to-face, collaborative interaction between participants in shared environments.

Leaves of Absence

John G. Eyles, research associate professor, **John Poulton**, research professor, and **Stephen G. Tell** (M.S. 1991), senior research associate, each have been granted extensions to their off-campus assignments at Chip2Chip, through 31 December 2000.

Stephen Brumback and **Kurtis Keller**, research associates, are on off-campus assignments from April to August at 3rdTech, Inc. (the new name for the Corporation for Development of Advanced Technology, which we described in our Winter 1999-2000 issue).

Lars Nyland, research associate professor, has been granted an extension to his part-time off-campus assignment, through 30 September 2000. He is working at 3rdTech, Inc.

Mary Whitton, research assistant professor, is on a part-time off-campus assignment, working with the Institute for Development of Advanced Technology, from mid-May to mid-July.

Thanks and Farewell to...

Arthur Gregory (B.S. MSci. 1997), research associate, who left in May to pursue consulting opportunities. Most recently, Arthur worked on the inTouch 3D modeling project. *(arthurgregory@pobox.com)*

Aron Helser (M.S. 1998), research associate, who left in May to join 3rdTech, Inc., where he is part of a team working to develop the nanoManipulator system into a commercial product.

Family Matters

Ahir Jyoti Chatterjee was born on 11 April 2000 in Durham, N.C., to Siddhartha Chatterjee, associate professor, and Sarmita Chatterjee. His brother, Arnab, is five.

Jai Glasgow, former graphics demo coordinator and secretary, and **Randy Pausch** were married on 20 May 2000 in Pittsburgh, Pa. *(glasgow@cs.cmu.edu)*

Lalit Kumar (M.S. 1999) and **Sandhya Upadhyay** were married on 25 January 2000 in New Delhi, India. *(lkumar@yahoo-inc.com)*

Michael Schilling Munson was born on 13 March 2000 in Putnam Valley, N.Y., to Jonathan P. Munson (Ph.D. 1997) and Elizabeth Schilling. He has a brother, Daniel, who is four-and-a-half years old. *(jpmunson@us.ibm.com)*

Marie Tarjan, secretary, and **Randy Ensley** were married on 2 April 2000 in Cary, N.C.

Research Highlights

Medical Image Analysis Researchers Get New Lab

In March, the Department of Psychiatry at UNC-Chapel Hill established a new laboratory to support clinical research projects that require access to state-of-the-art image analysis technology. With its central location, in the C-wing of the Old Nurses Building on South Campus, the new lab will facilitate interdisciplinary collaboration between medical image analysis researchers from a number of campus departments, including Biomedical Engineering, Biostatistics, Computer Science, Mathematics, Neurology, Psychiatry, Radiation Oncology, Radiology, Statistics, and Surgery. Directing the lab's activities are **Guido Gerig**, Taylor Grandy professor of computer science and psychiatry, **Jeffrey A. Lieberman M.D.**, Thad and Alice Eure distinguished professor of psychiatry, and **Joseph Piven**, professor of psychiatry and director of the Mental Retardation Development Disabilities Research Center.

The idea for the new lab grew out of discussions between Guido, Jeffrey, and their colleagues, who recognized that existing campus facilities did not provide enough space, equipment, or technical support for them to conduct research or to perform clinical studies. They envisioned a work space in which researchers from different disciplines could meet to share their common interests and could benefit from each other's expertise.

Current projects in the lab include morphometric studies of brain volume and shape in schizophrenia and autism, analysis of neonatal ventricular shape in 3D ultrasound images, pilot projects for automatic detection of brain lesions in vascular depression and neurofibromatosis, the development of new methods for surgical planning and intervention in vascular diseases, and morphological analysis of brain images in mental retardation. Currently, the lab hosts a UNIX client-server computer system with five workstations and six Windows-NT PCs. When fully equipped, it will provide a work area for 14 researchers.

Distributed nanoManipulator at Intel Conference

Kevin Jeffay, S. S. Jones associate professor, and **Russell M. Taylor II** (Ph.D. 1994), research associate professor, traveled to San Francisco, Calif., in March, to present a poster on the distributed nanoManipulator project at Intel's Computing Continuum Conference. They were among 35 distinguished speakers from academia, government research labs, and industry invited to discuss the technical and sociological implications of pervasive computing. Pervasive computing environments transcend the traditional physical boundaries of personal computers by integrating computing devices as seamlessly as possible into people's everyday lives. Jeffay and Taylor discussed the role of the nanoManipulator in material science research and educational outreach.

Russell M. Taylor II (left) and Kevin Jeffay at Intel's Computing Continuum Conference in March (Photo: Michelle Taylor)

DiRT Lab Goes International

During the past two years, the Distributed and Real-Time Systems (DiRT) Group has hosted several doctoral students from European universities for extended stays. European students often spend part of a year studying at a foreign institution to fulfill their degree requirements. The students chose UNC-Chapel Hill based on recommendations by faculty at their home institutions familiar with the DiRT Group's research and reputation. Both hosts and visitors have enjoyed the collaboration and the exchange of cultures.

The first international student to arrive was **Mikkel Christiansen** from Aalborg University in Denmark, who visited during spring and fall 1998. Mikkel worked with **Kevin Jeffay**, S. S. Jones associate professor, and **Don Smith** (Ph.D. 1978), research professor, on a networking project that grew into his dissertation topic. He studied the performance of Random Early Detection (RED), a new technology that has been proposed for deployment in all future routers in order to improve the performance of the Internet.

The next visitor, **Gerardo Lamastra** of the Scuola Superiore de Santa Anna in Pisa, Italy, spent six months here in mid 1999. The work he did here became part of his dissertation. Gerardo conducted a comparative study of two methods of supporting real-time and non real-time workloads in all-purpose operating systems. He worked closely with Kevin Jeffay, who will travel to Pisa later this year to attend his doctoral defense.

Guiseppe Lipari, also from the Scuola Superiore in Pisa, visited in fall 1999 to work with **Sanjoy Baruah**, associate professor, on scheduling theories for real-time systems. While here, he pursued his dissertation research, which concerns the design of scheduling algorithms that provide real-time services in general-purpose operating systems.

The DiRT lab's networking infrastructure has significant remote access capabilities, which allowed Mikkel and Gerardo to run all of their experiments here at UNC, even after returning to Europe. Mikkel ran the majority of his experiments remotely. One downside to the ease of access became apparent last year, when hackers in Slovenia were able to find their way into our

Department's network, and then into the network at Duke, after attacking the lab at Scuola Superiore in Pisa.

In Touch With Computer Graphics World

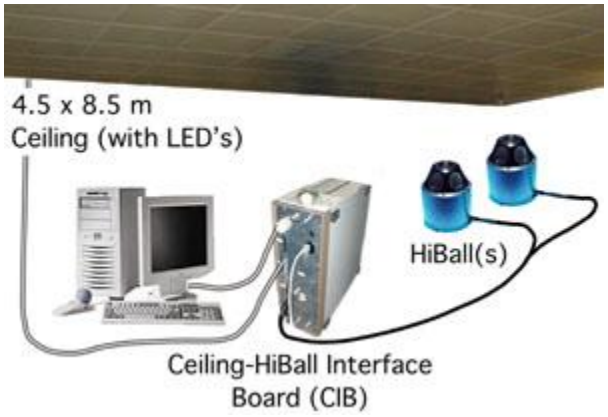
Articles in two recent issues of *Computer Graphics World* feature UNC-Chapel Hill research. "Hands-on Modeling" (March 2000) describes the inTouch System, a 3D modeling and painting interface prototype proposed by **Ming C. Lin**, assistant professor, and developed by **Stephen Ehmann**, graduate student, and **Arthur Gregory**, research associate. The system allows the user to create, edit, and paint a multiresolution polygonal mesh. It combines visual feedback (a stereo display) and haptic technology (a force feedback device), to create a very intuitive and natural interface for the user. The researchers created inTouch to allow designers building virtual environments to create 3D models more simply, easily, and quickly than they currently are able to create using existing commercial modeling systems, most of which use 2D input and output devices. inTouch uses the SGI Onyx2(TM) Infinite Reality2(TM) workstation for its graphical display, a dual-processor Pentium III PC as the haptic server, and a UNC-developed network-transparent interface to link the application programs and the haptic system. For more information, visit: **http://www.cs.unc.edu/~geom/inTouch**

Research associate Arthur Gregory demonstrates the inTouch modeling and painting system.

"On the Right Track" (April 2000) describes how the Tracker Research Group's HiBall Tracking System lets users move freely through full-scale virtual worlds in real time. The article notes that the success of any virtual reality experience depends on the user's sense of presence in the virtual environment. Most existing motion-tracking systems have been required to make tradeoffs in trying to generate the user's position and orientation (pose) in real time without compromising the graphical display or the user's freedom of motion. The UNC system improves on the performance of these existing systems by using ceiling panels that house LED targets, a miniature optical-sensor cluster (the HiBall) that senses and digitizes the LED flashes, a custom interface board that facilitates communications among the various components of the system, and tracking software that processes the communications in real time. The HiBall system includes novel optical, mechanical, electronic, and algorithmic aspects that combine to provide unprecedented performance. The system generates more than 2,000 pose estimates per second,

with better than 0.5 millimeter and 0.003 degree resolution and absolute accuracy. For more information, see **http://www.cs.unc.edu/~tracker**.

To read these articles on line, visit **http://www.cgw.com** and fill out the free registration form. The HiBall article can also be read at **http://www.cs.unc.edu/~welch/media/pdf/hiball_cgw_0400.pdf**.



Components of the HiBall Tracking System.

New Contracts and Grants

Ming C. Lin, assistant professor. "Haptic Workbench," U. S. Army Research Office.

Dinesh Manocha, associate professor, and **Ming C. Lin**. "Hardware Accelerated 3D Route Planning," Hughes Research Labs.

Jack Snoeyink, professor. Academic Equipment Grant: "Equipment Supporting Computational Geometry in Geographic Information Systems," Sun Microsystems.

Upcoming Conferences

Several faculty and alumni are involved in planning upcoming conferences:

ACM Distributed Computing Symposium
James Anderson, associate professor, is the chair of the program committee for the 19th Annual ACM Symposium on Principles of Distributed Computing, which takes place in Portland, Ore., from 16-19 July 2000. **(http://www.podc.org/podc2000)**

MICCAI 2000
Guido Gerig, Taylor Grandy professor, is co-organizing the Third International Conference on Medical Robotics, Imaging, and Computer Assisted Surgery (MICCAI 2000), to be held in Pittsburgh, Pa., from 11-14 October. **(http://www.miccai.org)**

NOSSDAV 2000 and RTSS 2000
Kevin Jeffay, S. S. Jones associate professor, is co-chair of the conference committee for the Tenth International Workshop on Network and Operating Systems Support for Digital Audio and Video (NOSSDAV 2000), to be held in Chapel Hill, N.C., from 26-28 June **(http://www.cs.umass. edu/~shenoy/nossdav).** He is also chair of the program committee for the 21st IEEE Real-Time Systems Symposium (RTSS 2000), which takes place in Orlando, Fla., from 27-30 November. **(http://www.cs.unc.edu/rtss2000)**

SIGGRAPH Eurographics Workshop
Anselmo Lastra, research associate professor, and **Ulrich Neumann** (Ph.D. 1993) are co-chairing the papers committee for the SIGGRAPH Eurographics Workshop 2000, to be held in Interlaken, Switzerland from 20-21 August. **(http://www.merl.com/hwws00)**

SIGGRAPH 2000
Several faculty and alumni are involved in planning SIGGRAPH 2000, which takes place in New Orleans, La., from 23-28 July. Six of the thirty-four members of the papers committee have direct ties to UNC-Chapel Hill: **Henry Fuchs**, Federico Gil professor, **Dinesh Manocha**, associate professor, and four alumni--**David Banks** (Ph.D. 1993) of Florida State University, **Andrew Glassner** (Ph.D. 1988) of Microsoft Research, **Victoria Interrante** (Ph.D. 1996) of the University of Minnesota, and **Marc Levoy** (Ph.D. 1989) of Stanford University. David, Dinesh, Marc, and Victoria will chair paper sessions during the conference. **Anselmo Lastra**, research associate professor, is chair of the courses committee. Several faculty and alumni are making course presentations. Among the accepted papers are several from faculty, students, and alumni. For a complete list, see **http://www.siggraph.org/s2000.**

Recent Publications

Baruah, S., G. Buttazzo, S. Gorinsky, and G. Lipari. "Scheduling Periodic Task Systems to Minimize Output Jitter," *Proc. International Conference on Real-Time Computing Systems and Applications,* Hong Kong, China, December 1999, 62-69.

Anderson, J., S. Baruah, and K. Jeffay. "Parallel Switching in Connection-Oriented Networks," *Proc. 20th IEEE Real-Time Systems Symposium,* Phoenix, Ariz., December 1999, 200-209.

Clark, M., and K. Jeffay. "Application-Level Measurements of Performance on the vBNS," *Proc. IEEE International Conference on Multimedia Computing and Systems,* Vol. 2, Florence, Italy, June 1999, 362-366.

Gerig, G., D. Welti, C. Guttmann, A. Colchester, and G. Szekely. "Exploring the Discrimination Power of the Time Domain for Segmentation and Characterization of Lesions in Serial MR Data," *Medical Image Analysis,* 4(1), 2000.

Gerig, G., D. Welti, G. Szekely, E. W. Radue, and L. Kappos. "Quantification of MS Lesion Evolution in a Serial MRI Study," *Proc. 15th Congress of the European Committee for Treatment and Research in Multiple Sclerosis,* Spring 2000.

Goddard, S. M., and K. Jeffay. "Analyzing the Real-Time Properties of a U.S. Navy Signal Processing System," *Proc. Fourth IEEE International Symposium on High Assurance Systems Engineering,* Washington, D.C., November 1999, 141-150.

Gopi, M., and D. Manocha. "Simplifying Spline Models," *Computational Geometry: Theory and Applications,* Vol. 14, 1999, 67-90.

Gregory, A., S. Ehmann, and M. Lin. "inTouch: Interactive Multiresolution Modeling and 3D Painting with a Haptic Interface," *Proc. IEEE Virtual Reality Conference,* March 2000, 45-52.

Gregory, A., M. Lin, S. Gottschalk, and R. Taylor. "Real-Time Collision Detection for Haptic Interaction Using a 3-DoF Force Feedback Device," *Computational Geometry: Theory and Applications* (special issue on virtual environments), 15(1-3), February 2000, 69-89.

Gregory, A., A. State, M. C. Lin, D. Manocha, and M. Livingston. "Interactive Surface Decomposition for Polyhedral Morphing," *Visual Computer,* Vol. 15, 1999, 453-470.

Guthold, M., M. Falvo, W. G. Matthews, S. Paulson, A. Negishi, S. Washburn, R. Superfine, F. P. Brooks Jr., and R. M. Taylor II. "Investigation and Modification of Molecular Structures Using the NanoManipulator," *Journal of Molecular Graphics and Modeling,* Vol. 17, October 1999, 187-197.

Hoff, K., T. Culver, J. Keyser, M. Lin, and D. Manocha. "Interactive Motion Planning Using Hardware Accelerated Computation of Generalized Voronoi Diagrams," *Proc. IEEE International Conference on Robotics and Automation,* 2000, 2931-2937.

Jeffay, K. "Towards a Better-Than-Best-Effort Forwarding Service for Multimedia Flows," *IEEE Multimedia,* 6(4), October-December 1999, 84-88.

Jeffay, K., and S. M. Goddard. "A Theory of Rate-Based Execution," *Proc. 20th IEEE Real-Time Systems Symposium,* Phoenix, Ariz., December 1999, 304-314.

Kelemen, A., G. Szekely, and G. Gerig. "Elastic Model-Based Segmentation of 3-D Neuroradiological Data Sets," *IEEE Transactions on Medical Imaging,* 18(10), October 1999, 828-839.

Larsen, E., S. Gottschalk, M. Lin, and D. Manocha. "Fast Distance Queries Using Rectangular Swept Sphere Volumes," *Proc. IEEE International Conference on Robotics and Automation,* 2000, 3719-3726.

Lin, M. C. "Fast Proximity Queries for Large Game Environments," *Proc. Computer Game Developers Conference,* March 2000.

Pisula, C., K. Hoff, M. Lin, and D. Manocha. "Randomized Path Planning for a Rigid Body Based on Hardware Accelerated Voronoi Sampling," *Proc. Fourth International Workshop on Algorithmic Foundations of Robotics,* 2000, SA31-SA44.

Plaisted, D. A. "Special Cases and Substitutes for Rigid E-Unification," *Applicable Algebra in Engineering, Communication and Computing*, 10(2), 2000, 97-152.

Prins, J., S. Chatterjee, and M. Simons. "Irregular Computations in Fortran--Expression and Implementation Strategies," *Scientific Programming*, Vol. 7, 1999, 313-326.

Prins, J., J. Hermans, G. Mann, L. Nyland, and M. Simons. "A Virtual Environment for Steered Molecular Dynamics," *Future Generation Computer Systems,* Vol. 15, 1999, 485-495.

Raskar, R. "Immersive Planar Displays Using Roughly Aligned Projectors," *Proc. IEEE VR 2000,* New Brunswick, N.J., 18-22 March 2000.

In Memoriam

Sanjay Sthapit

Sanjay Sthapit, a second year master's student in computer science, died on 19 March 2000 in Delhi, India, following heart surgery. He was 28 years old. During his time at UNC-Chapel Hill, Sanjay served as a teaching assistant in our Department and worked as a research assistant in the Department of Radiology on projects related to the work of the Medical Image Display and Analysis Group. Under the direction of **Etta Pisano M.D.**, professor of radiology, Sanjay conducted research on improving the display and recognition of breast cancer in mammograms. At the time of his death, he was working with **Brad Hemminger** (M.S. 1985), a senior research associate in radiology, on the automatic detection and display of mammographic lesions to aid in the earlier detection of cancer. Brad said of him: "Those of us who worked with Sanjay in Radiology mourn him. He was a bright and positive force in our lives and we will miss him." Sanjay received his undergraduate degree in computer science from Clark University in 1995. He was scheduled to complete his degree here in May. A native of Kathmandu, Nepal, Sanjay is survived by his parents, Bijay and Prabha, and a brother Akshay, who is studying engineering at the Georgia Institute of Technology.

Michael Loeb

Michael Alan Loeb, a doctoral student in the Department of Computer Science at Duke University, died of natural causes at his home in Durham, N.C., on 15 February 2000, aged 34. He was nearing completion of his dissertation under the direction of **James Coggins**, associate professor. For several years, Michael regularly attended Image Lunch in our Department, while he worked on his dissertation. He had planned to defend the dissertation, which concerned fast density estimation in high-dimensional feature spaces based on uniform kernel densities in cardinal bounding boxes, this spring. James is working with Duke faculty and administrators to award Michael the doctorate posthumously. James has created a memorial web page for Michael at **http://www.cs.unc.edu/~coggins/Personal/Loeb.html.**

Alumni News

M.S. and Ph.D. Alumni

Ron Azuma (Ph.D. 1995) and fellow alumnus **Ulrich Neumann** (Ph.D. 1993) were among the authors on a recent paper: Azuma, R., J. W. Lee, B. Jiang, J. Park, S. You, and U. Neumann, "Tracking in Unprepared Environments for Augmented Reality Systems," *Computers and Graphics*, 23(6), December 1999, 787-793. *(azuma@HRL.com)*

Steven Bellovin (Ph.D. 1982) was quoted in several recent publications, including *Business Week, Newsweek, The New York Times,* and *The Wall Street Journal,* concerning breaches in Internet security and cell phone viruses. Steven, a researcher at AT&T Bell Labs, is an expert on Internet security issues. *(smb@research.att.com)*

Edoardo Biagioni (Ph.D. 1992) recently received the grant, "A Remote Ecological Micro-Sensor Network," from the Defense Advanced Research Projects Agency. He is an assistant professor in the Department of Information and Computer Science at the University of Hawaii at Manoa. *(esb@hawaii.edu)*

Michael Capps (M.S. 1996) defended his Ph.D. dissertation, "Fidelity Optimization in Distributed Virtual Environments," in June. Michael, a research assistant professor at the Naval Postgraduate School in Monterey, Calif., is organizing the course "Developing Shared Virtual Environments," again at this year's SIGGRAPH. He is a co-author on a paper for Eurographics 2000 to be held in Interlaken, Switzerland, in August: "Collaboration Between Heterogeneous Stand-Alone 3-D Graphical Applications." Michael is the workshops chair for VR 2001 to be held in Tokyo, Japan, next March, and is program chair for the Web3D 2001 conference to be held in Paderborn, Germany, next February. *(capps@acm.org)*

Matthew Cutts (M.S. 1998) recently joined Google, Inc., a search engine company located in Mountain View, Calif. *(matt@google.com)*

Ransom Murphy (M.S. 1993) has been working at Lucent Technologies in Cary, N.C., for the past six years as a systems architect for wireless application development. *(gmurphy@lucent.com)*

Karl Owen (M.S. 1992) was recently promoted to the position of staff specialist at EMC Corp. in Research Triangle Park, N.C. He works in the CLARiiON division, where he develops advanced storage devices. Karl lives in Chapel Hill with his wife, Susan Buchanan, and their daughter, Jordan, aged two. They expect a second child in June. *(karl.owen@kmodem.org)*

Jason Priebe (M.S. 1996) is the technical director of WRAL OnLine **(http://www.wral-tv.com).** In December, the National Association of Television Programming Executives awarded

WRAL OnLine the prestigious Iris Award for the best web site by a television station. *(priebe@wral-tv.com)*

Raymond Van Dyke (M.S. 1989), an e-commerce lawyer at the firm of Jenkens & Gilchrist, P.C., in Dallas, Texas, was quoted in the March issue of MIT's Technology Review on software patent issues, and in the March issue of the National Law Journal on e-commerce and Internet viral patenting problems. Raymond has been busy speaking on e-commerce and related topics. This spring, he spoke to students and visitors at Southern Methodist University's Computer Engineering Department on software and business method patenting issues and e-commerce. In June, he spoke about business method patenting issues at the 17th Annual Pacific Rim Computer Law Institute in Seattle, Wash. In July, he will give presentations on copyright ownership at Bar Association meetings in Dallas and Houston. *(vandyke@acm.org, vandyke@jenkens.com)*

Amitabh Varshney (Ph.D. 1994) will join the University of Maryland faculty as an associate professor this fall. He and his wife, Poonam, are relocating to the College Park area in June. Since receiving his Ph.D., Amitabh has been on the faculty at SUNY Stony Brook in Stony Brook, N.Y. *(varshney@cs.umd.edu)*

John Q. Walker II (Ph.D. 1991) was one of four co-founders of Ganymede Software, which became part of NetIQ Corp. through a series of mergers and acquisitions this spring. Ganymede is a leading provider of end-to-end network performance management software. Its development offices remain in Morrisville, N.C. Ganymede joins Mission Critical Software of Houston, Texas, Sirana Software of Bellevue, Wash., and the original NetIQ Corp. of Santa Clara, Calif. The new NetIQ, a public company, provides comprehensive, leading-edge solutions for managing eBusiness infrastructures and Windows NT- and Windows 2000-based systems and applications. *(johnq@netiq.com)*

Undergraduate Alumni

Howard Gross (B.S. MSci. 1984) has been the executive director of HawkWatch International since June 1999 **(www.hawkwatch.org).** Headquartered in Salt Lake City, Utah, HawkWatch's mission is to protect hawks, eagles, and other birds of prey through research, education, and conservation. It operates research projects in eight western states, Florida, and Mexico. Howard reports that he thoroughly enjoys the job. *(hgross@hawkwatch.org)*

Former Faculty News

John McHugh, former research associate professor, is the general chair for the Fourth International Information Hiding Workshop, to be held in Pittsburgh, Pa., next April **(http://chacs.nrl.navy.mil/IHW2001).** He has a recent paper, "Chaffing at the Bit: Thoughts on a Note by Ron Rivest," *Proc. 1999 Information Hiding Workshop*, Dresden, Germany. *Lecture Notes in Computer Science #1798*, Springer-Verlag, 1999, 395-404. John is on the Computer Emergency Response Team at the Software Engineering Institute in Pittsburgh, Pa. *(jmchugh@cert.org)*

Award-Winning Alumni

Presidential Early Career Award

Victoria Interrante (Ph.D. 1996) is one of 20 researchers supported by the National Science Foundation (NSF) to receive the 1999 Presidential Early Career Award for Scientists and Engineers (PECASE). She attended the awards ceremony at the White House Old Executive Office Building on 12 April where **Neal Lane**, the President's science advisor presented the awards (for more information, see NSF's press release at **http://www.nsf.gov/od/lpa/news/press/00/pr0022.htm).** Victoria was cited for her innovative contributions to research and education in combining graphics, visualization, and cognitive science to develop a science of representation for the design of computer interfaces. The PECASE award is the highest honor bestowed by the U.S. government on outstanding new scientists and engineers in the early stages of establishing their independent research careers. NSF selects its PECASE nominees from among its most meritorious CAREER (Faculty Early Career Development) awardees. The CAREER award supports exceptionally promising college and university junior faculty committed to the integration of research and education. Victoria received a CAREER award in 1999. Currently, she is an assistant professor in the Department of Computer Science and Engineering at the University of Minnesota. *(interran@cs.umn.edu)*

Victoria Interrante (Photo: Tomas Filsinger)

Excellence in Programming Award

Jon L. Bentley (Ph.D. 1976) is this year's recipient of Dr. Dobb's Excellence in Programming Award. The award, which was announced in the April issue of *Dr. Dobb's Journal*, is presented annually to individuals who have made significant contributions to the advancement of software development, in the spirit of innovation and cooperation. Citing Jon for his ability to balance academic research and real world programming and for his lifelong commitment to teaching, Jonathan Erickson, editor-in-chief of *Dr. Dobb's Journal*, wrote: "[He] is a recipient of this year's award not just for the quality of his research and code, but for his ongoing commitment to sharing the fruits of his efforts with fellow programmers." A $4,000 grant accompanies the award, which Jon has chosen kindly to bestow on our Department. Jon is a distinguished member of the technical staff in the Computing Sciences Research Center at Lucent Technologies Bell Labs. Among Jon's many publications, is the well-known book, *Programming Pearls*, (second edition, Addison-Wesley, 2000). *(jlb@research.bell-labs.com)*

Jon L. Bentley (Photo: Brigitta Hanggi, reprinted courtesy of Dr. Dobb's Journal)

Candidates Day

Each spring, the Department invites those applicants who have been admitted to the graduate program for the upcoming fall semester to Chapel Hill for a two-day visit. During the event, which is known as Candidates Day, the prospective students learn first hand about the Department. They attend presentations by faculty members discussing their research, then sign up to meet in small groups with faculty whose research is of particular interest to them. They also hear from currently enrolled students, who talk about why they chose to come to UNC, and take a tour of the Department's facilities and of the UNC campus. There are several social gatherings, which provide the candidates with an opportunity to meet and talk informally with individual faculty and current students. Candidates Day has been an annual event since it was first held in March 1997. This year, twenty-one admitted students from across the United States, visited from 24 to 25 March. Enrolled students who have attended Candidates Day in previous years say the event was influential in helping them decide to come to UNC.

From Left: Mary Whitton, research assistant professor, talks with Susan Fisher, graduate student, and Kelly Ward, one of the 21 candidates who visited in March to learn more about the Department. (Photo: Claire L. Stone)

Visitors to the Department

The Department hosted a number of visitors during the 1999-2000 academic year. Presentations by two visitors had Hollywood connections. In November, **Ari Rapkin**, a production software engineer at Industrial Light & Magic, spoke about "Digital Technologies in Star Wars--Episode

I: The Phantom Menace." In December, **Tony DeRose** of Pixar Animation Studios, gave a talk for the Triangle Distinguished Lecturer Series on "How Computer Graphics is Changing Hollywood." Other distinguished lecturers this year included **Barbara Liskov** of the Massachusetts Institute of Technology, **Vladimir Rokhlin** of Yale University, **Carlo Sequin** of the University of California at Berkeley, **Jude Shavlik** of the University of Wisconsin, **Kang G. Shin** of the University of Michigan, **Burton Smith** of Tera Computer Company, **Jeffrey D. Ullman** of Stanford University, and **Steven W. Zucker** of Yale University.

Research groups hosted a number of visitors. **David Hawkes** of King's College London, England, and Guys and St. Thomas hospitals, London, visited the Medical Image Display and Analysis Group in September and gave a presentation. Also in September, **Gregory F. Welch** (Ph.D. 1997), research assistant professor, hosted **Phil Dunston**, a civil engineering professor at the University of Washington, **Eric Lundberger** of ArcSecond, and **Lt. Cmdr. Alan Lytle** of the U.S. Navy. **Dinesh Manocha**, associate professor, and **Ming Lin**, assistant professor, hosted **Mike Coyle**, **Steve Davis**, and **Julian Wu** of the U.S. Army Research Office in October.

Wolf Pfannenstiehl of the Technische Universitat Berlin, Germany, spent three weeks here in September, hosted by **Jan Prins**, associate professor. He gave a talk at Systems Tea on "Thread-Based Piecewise Execution of Nested Data-Parallel Programs." Jan also hosted **Barry Jay** of the Sydney University of Technology, Australia, who visited in late September. He gave a colloquium on "Shape Theory: FISh Implementation." In December, Jan hosted a visit by **Klaus Rebensburg**, director of the multimedia lab at Technische Universitat Berlin, and **Stefan Jaehnichen** and **Karsten Isakovic** of GMD-FIRST of Berlin.

William Cleavland of Lucent Technologies Bell Labs visited the Distributed and Real-Time Systems Group in January and gave a colloquium on network simulation. **Kevin Jeffay**, S. S. Jones associate professor, and **Don Smith**, research professor, were his hosts.

About News & Notes

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