



News & Notes from Sitterson Hall

Issue Nineteen, Spring 1997

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

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Stephen F. Weiss

Chairman's corner

The past two semesters opened with some sort of natural disaster--an ice storm last spring and a hurricane in the fall. I'm happy to report that this semester has, thus far, been unremarkable, at least where bad weather is concerned!

Life has been pretty eventful around here, however. Our faculty continue to win awards. Congratulations to **Henry Fuchs**, Federico Gil professor, who won the Satava Award in January for his contributions to medical communications. He was also recently elected to the National Academy of Engineering. Congratulations also to **Dinesh Manocha**, assistant professor, who won a Young

Investigator Award from the Office of Naval Research--one of only two this year in computer science and math, and one of only 28 total awardees. **John B. Smith**, professor, is pursuing some interesting work on distance learning, courtesy of a grant from the Chancellor's Distance Learning Initiative at UNC-Chapel Hill. **Peter Calingaert**, professor emeritus, was recently honored by the American Association for the Advancement of Science for his contributions to computer science.

Congratulations also to **Frederick P. Brooks, Jr.**, Kenan professor and **Gerrit Blaauw**, professor emeritus of Twente University of Technology, whose book *Computer Architecture: Concepts and Evolution* was just published by Addison-Wesley. The 1200-plus page book has been in the making for more than 20 years.

We are very sorry to say good-bye to **Don Stanat**, professor, who retires at the end of June after 30 years on our faculty. His book, *Discrete Mathematics in Computer Science* (1977), written with Dave McAllister, has been a classic text, taught in numerous computer science departments over the years. Don has been a fine teacher, scholar, author, mentor, and friend to all of us. We will miss him, and we wish him well.

We welcome two new members of our research faculty, although they are certainly no strangers to us! **Don Smith** (Ph.D. 1978) joins us as a research professor, following his retirement from IBM Corp. Don has been an adjunct professor for many years and he will continue his work with the Collaboratory and the distributed systems group. **Stephen Aylward** (Ph.D. expected May 1997) joins us as an adjunct assistant professor. His primary appointment is as a research assistant professor in the UNC-Chapel Hill Department of Radiology.

We celebrate our tenth year in Sitterson Hall this summer. All our personnel and equipment moved under this one roof during the summer of 1987, after having been spread out over as many as six buildings for many years. We plan to have a birthday party for the building early in the fall semester. Watch our web pages for details!

The anniversary of our building will coincide with the completion of its newest lab, the Hardware Teaching Lab. We are currently recruiting for new faculty with expertise in building novel experimental hardware systems.

We were saddened by the recent death of our friend and colleague, **Charlie Molnar**. Charlie was a professor at Washington University, in St. Louis, Mo., for many years and was a collaborator and frequent visitor to Chapel Hill. His son, Steven, has been with us for several years, first as a graduate student, and currently as a research assistant professor. Our deepest condolences go to Charlie's family. Please see [below](#) for more about the fellowship that is being established at Washington in his honor.

As always, we welcome your comments and your visits. Please visit our ever-expanding web pages for the latest news and information about the Department.

Steve Weiss

Welcomes

New faculty appointments

Stephen R. Aylward (1997), adjunct assistant professor, B.S. 1988 (Purdue), M.S. 1989 (Georgia Tech.), Ph.D. expected May 1997 (UNC-Chapel Hill). *Statistical pattern recognition; shape-based object representation; image processing; neural networks.*

Stephen recently completed his Ph.D. work here and receives his degree in May. He joined the Department of Radiology at UNC-Chapel Hill on 1 February 1997 as a research assistant professor, and joined our Department as an adjunct assistant professor on 1 March. He previously worked with the Neural Network Support Laboratory and the Corporate Research Laboratory at McDonnell Douglas in St. Louis, Mo. Stephen's primary research interest is the development of a general-purpose image segmentation technique and its application to aiding in the early detection of cancers in mammograms. He is working with **Stephen M. Pizer**, Kenan professor, on extracting organ representations from 2D and 3D medical images.

F. Donelson Smith (1989), research professor, B.S. 1962, M.S. 1964 (Tennessee-Knoxville), Ph.D. 1978 (UNC-Chapel Hill). *Distributed systems; computer-supported cooperative work; operating systems; computer networks.*

Don has been with us since 1989, first as a visiting professor, then as an adjunct faculty member. In February, he retired after 32 years at IBM Corp., where he was a senior technical staff member. Don's primary research interests are in Internet resource management and performance issues. In particular, he is interested in end-to-end congestion control and in mechanisms that will support multiple types of data to implement integrated services. A closely-related interest is in operating system services for efficient implementation of network protocols. Another aspect of Don's research concerns distributed file systems that could be used to store linked objects in future generations of the World Wide Web.

Visiting faculty

Bruce Thomas is a visiting professor working with **David Stotts**, associate professor, from January to June 1997, on user interface issues for the Collaboration Bus Project. Bruce is on the faculty of the School of Computer and Information Science at the University of South Australia, in Adelaide. His research interests are animation in user interface toolkits, user interface issues with augmented realities contained within wearable computers, and visualization of parallel program data dependency graphs.

Postdoctoral scholars

Maha Hana is a postdoctoral scholar working with **Jonathan Marshall**, assistant professor, from December 1996 until June 1997. She is working on several projects in neural networks, vision, and image processing. Maha earned a Ph.D. in Biological and Agricultural Engineering from N.C. State in 1996.

Wolfgang Stürzlinger is a postdoctoral scholar working with the graphics group on various projects, from January to December 1997. He comes to us from the Department for Computer Graphics and Parallel Processing at Johannes Kepler University in Linz, Austria. Wolfgang earned his Ph.D. in Computer Science from the Technical University of Vienna in 1993.

Frederick P. Brooks, Jr., Kenan professor, is his host.

New students, spring 1997

Herman Harjono

Renee Maheshwari

Jonathan Oringer

Sivasubramanian Paramasivan

We say thanks and farewell to . . .

William "J. R." Key, technology transfer and outreach secretary for the Graphics and Image Lab, who left in January. He now works at the Ballston Center for Computer Training in Arlington, Va., where he teaches software packages to a variety of clients, ranging from private industries to government agencies, throughout the country. He had worked with us since April 1996.

Alumni news

David C. Banks (Ph.D. 1993) is an assistant professor at Mississippi State University. He won a 1996 CAREER Award from the National Science Foundation in May 1996 and also received the 1997 Hardin Foundation Award for Innovative Technology. Last June, David was invited to the DIMACS Research and Education Institute Workshop on Visualizing Mathematics in Princeton, N.J., where he and his colleagues presented a technique for interacting with complex algebraic curves. Last fall, he gave an invited address, "Exerting a Scientific Influence on Visualization," at the 1996 Huntsville Modeling Workshop. He met up with former UNC-Chapel Hill colleagues at the 1996 IEEE Visualization Conference in San Francisco, Calif., in late October, where he presented one paper, co-authored two others, and served on a panel. He also presented a paper at the Symposium on Information Visualization just prior to the Visualization Conference. (banks@cs.msstate.edu). David's recent papers include:

Banks, D. C., B. Hamann, P.-Y. Tsai, R. Moorhead, and J. Barlow. "Data Reduction and Interpolation for Visualizing 3D Soil-Quality Data," *Proc. 1996 IEEE Visualization*, San Francisco, Calif., 27 Oct.-1 Nov. 1996, 421-424.

Kiu, M.-H., and D. C. Banks. "Multi-Frequency Noise Textures for LIC," *Proc. 1996 IEEE Visualization*, San Francisco, Calif., 27 Oct.-1 Nov. 1996, 121-126.

Liquin, J., and D. C. Banks. "Visualizing a Tennis Match," *Proc. 1996 IEEE Symposium on Information Visualization*, San Francisco, Calif., Oct. 1996.

Weigle, C., and D. C. Banks. "Complex-Valued Contour Meshing," *Proc. 1996 IEEE Visualization*, San Francisco, Calif., 27 Oct.-1 Nov. 1996, 173-180.

Ritu Chadha (Ph.D. 1991) has two recent publications:

Chadha, R., and S. Wu. "Managing Distributed Systems using OSI Systems Management," *Proc. Second International IEEE Systems Management Workshop*, Toronto, Ont., Canada, June 1996, 117- 126.

Chadha, R., R. Erickson, S. Jani, L. Ness, and C. Ratel. "Automated Test Generation for Improved Protocol Testing," *Proc. IEEE International Conference on Communications (ICC '95)*, Seattle, Wash., 18-22 June 1995.

Ritu is a research scientist at Bellcore in Morristown, N.J., and a part- time faculty member at Rutgers University. (chadha@bellcore.com)

Weihai Chen (M.S. 1996) has moved to Bellevue, Wash., and is working at Microsoft Corp.

James C. Chung (Ph.D. 1993) recently published the paper:

Chung, J. C., D. L. Ryan-Jones, and E.R.N. Robinson. *Graphical Systems for Explosive Ordnance Disposal Training*, NPRDC-TN- 97-2, Navy Personnel Research and Development Center, San Diego, Calif., 1996, 13 pp.

David Doerner (M.S. 1983) was selected to win the Intel Achievement award for his work on Winsock 2.0.

Susan Gauch (Ph.D. 1990) is receiving notice for her WWW meta-search and filtering engine, *ProFusion*. For more information, see <http://profusion.ittc.ukans.edu/> (sgauch@tisl.ukans.edu)

Thom Haynes (M.S. 1989) received an IBM Consumer Division "Excellence Award" for his work on the Aptiva home PC 'Helper' (HTML) and 'Update Connector' (Java) applications. The latter allows users to connect to the Help Center server, to automatically download and to install needed fixes and enhancements. (haynest@raleigh.ibm.com)

Curtis Hill (M.S. 1991) recently started work at Tiburon, Inc., in Durham, N.C., where he is helping to develop a 2D mapping system for geographic databases.

Subodh Kumar (Ph.D. 1996) received the best student paper award at SuperComputing '96 for the paper, "Scalable Algorithms For Interactive Visualization of Curved Surfaces," written with C. Chang, and Dinesh Manocha. Subodh is currently an assistant professor at Johns Hopkins University.

Marc Levoy (Ph.D. 1989) has received tenure and has been promoted to associate professor at Stanford University. (levoy@graphics.stanford.edu)

Pete Litwinowicz (M.S. 1987) recently left Apple Research Labs, where he had helped to develop animation algorithms and user interfaces. He served on the film show jury for SIGGRAPH '96. Last year he published: Hoch, M., and P. Litwinowicz. "A Semi-Automatic System for Edge Tracking with Snakes," *The Visual Computer*, 1996, 75-83. His paper, "Processing Images and Video for an Impressionist Effect," was accepted for presentation at SIGGRAPH '97. (litwinow@best.com)

Jennifer Longstaff (M.S. 1982) is in the MBA program at the University of Colorado. In her studies she emphasizes Operations Management in the software industry, including metrics to be used in software companies. Currently, she is evaluating cyclical development models from an operational standpoint. She recently won two awards: the Women in Business Conference essay contest and the Entrepreneurship Program Business Plan Competition. Winning the latter sent Jennifer to compete in the "New Venture" Competition, a national contest at the University of Oregon in March 1997. She expects to graduate this December. (jkl@fsl.noaa.gov)

Chris Ramming (M.S. 1989) is at AT&T Research, where he is a member of the Innovative Services Research Department. Recently, he has been designing systems and languages for creating integrated WWW and telephone services. Chris has also been working with the USENIX Association to organize the Conference on Domain- Specific Languages (DSL), which will explore the use of DSLs in software production. Other UNC-Chapel Hill people lending support to the conference are **Jan F. Prins**, associate professor, and alumnus **Jon Bentley** (Ph.D. 1976). The conference will be held in Santa Barbara, Calif., in October 1997; the deadline for paper submission is 13 June. For more details, see <http://www.usenix.org/dsl/cfp.html>. (jcr@research.att.com)

David G. Stahl (M.S. 1993) has joined the Computer Science Department of Dickinson College, in Carlisle, Penn., as an adjunct faculty member. He will teach a software engineering course to undergraduates, using Kenan professor **Frederick P. Brooks, Jr.**'s *Mythical Man Month* as his primary text. (stahl@stoner.com)

Undergraduate alumni news*

Cindy Hong (B.S. 1996) is working this spring for **Fred Brooks** as a modeler on the Walkthrough project. She is also a teaching assistant for lecturer **Jeannie M. Walsh's** COMP 4 class. Cindy will study art in Italy this summer, before returning to the U.S. to work.

**Computer Sciences Options of the Applied Sciences and Mathematical Sciences Curricula.*

Alumni and friends on line

Visit the Alumni home page at <http://www.cs.unc.edu/People/Alumni/> and check out the Alumni Directory to find out what many of your former classmates are up to now. Please use the on-line registration form to add your own entry!

Our Friends Directory is now ready to accept entries. We invite our former faculty, staff, and colleagues to visit the page at <http://www.cs.unc.edu/People/Friends/> and to fill out the registration form.

Alumni career services

The General Alumni Association offers career support services as one of its many membership benefits. Services include professional career consulting and coaching, career development workshops, an alumni advisor network, resume review and referral, and networking receptions. Resources include a job line, an Internet web page, an Internet listserver with job listings, and a career resource center. Contact Linda Conklin at (919) 962-3749, or linda_conklin@unc.edu.

Charles E. Molnar fellowship

Our longtime friend and colleague, **Charles Edwin Molnar**, Sc.D., died on 13 December 1996 at his home in Sunnyvale, Calif., of complications from diabetes. He leaves a wife, Donna Addicott Molnar; two sons, Steven (a research assistant professor in our Department), and Christopher; and several grandchildren.

Charlie was at Washington University from 1964 until 1995, where he was a professor of physiology, biophysics, computer science, and electrical engineering. He founded the University's Institute for Biomedical Computing in 1984 and was its director from 1984 until 1991. From 1995 until his death, he was the director of the Science Office at Sun Microsystems Laboratories in California, where he worked on advanced hardware design.

He earned his bachelor's and master's degrees from Rutgers University in 1956 and 1957 and his doctoral degree from the Massachusetts Institute of Technology (MIT) in 1966, all in electrical engineering. At MIT, Charlie was a co-developer of the first personal computer, the LINC (Laboratory Instrument Computer). He was well known by many of our Department's faculty. During the mid-1980s, Charlie collaborated with **Gyula Mago**, professor, on the FFP project.

An endowed fellowship is being established in honor of Charlie, to be awarded annually to an outstanding entering graduate student in Washington University's Biological and Medical Engineering Program. Send contributions to: Charles E. Molnar Fellowship, Campus Box 1163, Washington University School of Engineering & Applied Science, One Brookings Drive, St. Louis, MO 63130-4899. For more information, contact: Fred Rosenberger (314-362-3124, fred@ibc.wustl.edu), or Steven Molnar (919-969-1028, molnar@cs.unc.edu).

Family matters

Fred and Nancy Brooks have a fourth grandchild and second grandson, **Henry Lawrence Brooks**, who was born on 31 January 1997 in Irvington, N.Y., to Roger and Ann (Jarkesy) Brooks. Henry has an older sister, Marie, and an older brother, Phil.

Timothy Culver married **Kathleen Marie Hitselberger** on 8 March 1997 in Chapel Hill, N.C.

Carolyn Din married **Rick Smith** on 28 December 1996 in Hillsborough, N.C.

Jake Thomas Goddard was born on 14 February 1997 in Chapel Hill, N.C., to Steve and Anne Goddard.

Ameila Anne Menges was born on 1 December 1996 in Corvallis, Ore., to John (M.S. 1990) and Nancy Menges. She has two brothers, Nathaniel and Lewis.

Mike Stone married **Patricia Morrison** on 9 November 1996 in Sanford, N.C.

Research highlights

Long gestation for *Computer Architecture*

Computer Architecture: Concepts and Evolution, the new book by **Gerrit Blaauw**, professor emeritus of Twente University of Technology, the Netherlands, and **Frederick P. Brooks, Jr.**, Kenan professor, published by Addison-Wesley, is a seminal work that has been more than 20 years in the making. The two first outlined the book in 1974 during Gerry's sabbatical in Chapel Hill. They drafted a number of chapters during Fred's 1975 sabbatical.

The book grew and grew and its ever-changing completion date became a source of amusement. **Stephen F. Weiss**, professor and chairman, reports that in 1979, **Maurice Wilkes** of Cambridge University asked him how Fred's book was coming along. When Steve said, "It's almost done," Wilkes just smiled. **William V. Wright**, research professor emeritus, used a draft copy to prepare his COMP 261 lectures in fall 1985. Joining us in 1989, **Kevin Jeffay**, associate professor, heard that it would be completed in six months.

The lengthy gestation time of *Computer Architecture* reflects the thoroughness with which Fred and Gerry treat their subject. Their goals are: "to give a thorough treatment of the art of computer architecture," and "to display unfamiliar design alternatives, and to analyze and systematize familiar ones" (v). The book's focus on hardware complements Fred's recently updated and

republished work, *The Mythical Man Month*, which focuses on software. *Computer Architecture* is a definitive guide and reference both for practicing computer architects and for students.

Distance learning

John B. Smith, professor, recently received a grant from the UNC-Chapel Hill Chancellor's Office to fund a project that will explore how the Internet and related technologies can be used to improve distance learning. He is exploring Distributed Asynchronous Learning (DAL) within the Internet and related technologies, by creating an evolving technical infrastructure for distributed, asynchronous groups, and by observing how learning takes place within that context. Project work includes reviewing Internet and WWW tools that support DAL, selecting those that are well-suited for project needs, and installing them in the Department's computing environment.

John is also collaborating with researchers from the UNC-Chapel Hill School of Public Health's Environmental Resource Program, and the N.C. Public Health and Training Information Network on a virtual center--The Carolina Health and Environment Community Center-- where individuals and community groups can meet to find information and resources and can interact with one another. For more information about these projects, see

<http://www.cs.unc.edu/~jbs/proj/dal/docs/overview.html>.

nanoManipulator

The nanoManipulator project was shown at SIGGRAPH '96 as part of a course on force-feedback. It was also shown at the ACM '97 Expo in March, where participants were able to scrape new pits into a music CD and to feel them, all in real time. All equipment was provided by other vendors at the Expo, which fulfilled one of the goals of the NSF-sponsored ARI grant: that the nanoManipulator should run on off-the-shelf hardware available to anyone. For more information, see <http://www.cs.unc.edu/Research/nano/>

GRIP board meeting

This year's GRIP Advisory Board meeting will focus on the nanoManipulator. The meeting brings potential users and outside experts together on 7 April to see the system and to provide our researchers with advice on future directions and research emphasis.

Research and study leaves

Frederick P. Brooks, Jr., Kenan professor, will be a visiting scholar in the Department of Computer Science at University College, London, England, from September to December 1997. His host will be **Mel Slater**, professor, whose research group is working on virtual reality projects in collaboration with the university's School of Architecture. Fred will work with the research group, participate in seminars and discussion groups, and give talks about our Department's research. He will also draft a book of essays on the design of complex artifacts, *The Design of Design*, which will look at principles and concepts across a variety of design disciplines.

Raj Singh, research associate professor is on leave working at Fujitsu Network Communications in Raleigh, N.C. He is engaged in researching and developing high-speed networks and internets.

New faculty colloquia

The departments of Computer Science at UNC-Chapel Hill, Duke, and N.C. State have begun a seminar series featuring their newest faculty. New faculty members at one school give a talk at one of the other two schools, and the talk is broadcast live over the North Carolina Research and Education Network (NC-REN). **Michael Littman** of Duke began the series with a talk on "Decision-making Under Uncertainty via Partially Observable Markov Decision Processes," on 9 December 1996 at UNC-Chapel Hill. **Felix Wu** of N.C. State spoke on 13 January 1997 at Duke on "Intrusion Detection for Link- State Routing Protocols." From our Department, **Siddhartha Chatterjee**, assistant professor, spoke at Duke on 24 February about "Experimentation in Computer Science," and **Gary Bishop** (Ph.D. 1984), associate professor, spoke at N.C. State on 24 March about "Image-Based Rendering." **Jeff Chase** of Duke speaks at N.C. State on 7 April, and **Munindar Singh** of N.C. State speaks at UNC-Chapel Hill on 12 May. Check our web page at <http://www.cs.unc.edu/Info/Events/> for more information about these and other colloquia.

Faculty speak at alumni lecture series

James M. Coggins, associate professor, **John B. Smith**, professor, **Russell M. Taylor, II** (Ph.D. 1994), research assistant professor, and **Jeannie M. Walsh**, lecturer, were among the instructors for a seminar series, "Computers, Technology, and the Internet," held weekly from 26 September to 6 November 1996. Approximately 30 people attended the series, which was part of the "Carolina College for Seniors Lecture Series," sponsored by the General Alumni Association. Russ began the series with an overview of how computers work. In the sessions that followed, James discussed the Internet, and John spoke about the World Wide Web. Jeannie concluded the series with a discussion of implications and concerns for the future. **Roger Nelson**, director of Alumni Records, also spoke on how computers communicate, and on how to access the WWW.

Recent conferences

CASCON '96

David Luebke, **Jonathan Munson**, and **Mark Parris** (M.S. 1992), graduate students and IBM fellowship holders, each presented posters at CASCON '96, the Centre for Advanced Studies Conference, held in Toronto, Canada, from 12-15 November 1996. Dave's poster was "Dynamic Simplification of Polygonal Environments," Jon's was "A Concurrency Control Framework for Collaborative Systems," and Mark's was "A Network Based Congestion Control Scheme for Real-Time Continuous Media." IBM Corp. sponsored their trip.

CSCW '96

The 1996 Conference on Computer Supported Cooperative Work took place in Boston, Mass., from 16-20 November. Participants from our Department included **Prasun Dewan**, associate professor, who conducted a workshop on "Designing and Implementing Collaborative Applications" and served on the program committee; and **Jonathan Munson**, graduate student, who presented the paper, "A Concurrency Control Framework for Collaborative Systems,"

which he wrote with Prasun. Graduate student **Eileen Kupstas** (M.S. 1992) was the co-coordinator of the student volunteers, and alumnus **Mike Capps** (M.S. 1996), now a student at MIT, was a student volunteer. **John B. Smith**, professor, who co-chaired the 1994 conference, also attended.

1997 Medicine Meets Virtual Reality Conference

The 1997 Medicine Meets Virtual Reality Conference was held in San Diego, Calif., from 22-25 January. The conference is the major annual meeting of researchers working in the application of virtual reality to medical practice. **Henry Fuchs**, Federico Gil professor, spoke on "Experiences with Augmented Reality Visualization of Ultrasound Imagery for Needle Biopsies of the Breast," and served on the program committee. **Jannick Rolland**, former research assistant professor, now at the University of Central Florida, also attended and presented "Towards an Augmented-Reality Tool to Visualize Dynamic 3-D Anatomy." Henry was presented with the Satava Award at the conference (see [Congratulations to...](#)).

Visualization '96

Several faculty, students, and alumni attended the 1996 IEEE Visualization Conference in San Francisco, Calif., from 27 October- 1 November 1996. Faculty attendees were **Russell M. Taylor, II** (Ph.D. 1994) and **Gregory Welch** (Ph.D. 1997), research assistant professors. Graduate student **Daniel Aliaga** (M.S. 1993) presented his paper, "Visualization of Complex Models Using Dynamic Texture-based Simplification."

Among those alumni attending and presenting papers were **David C. Banks** (Ph.D. 1993), now an assistant professor at Mississippi State University, who co-wrote three papers (see [Alumni news](#)), presented one, and served on the panel, "Mathematical Visualization: Standing at the Crossroads." **Bill Garrett** (M.S. 1995), now at Apple Computer, presented "Real-Time Incremental Visualization of Dynamic Ultrasound Volumes Using Parallel BSP Trees," written with Henry Fuchs, Andrei State, and Mary C. Whitton. **Victoria Interrante** (Ph.D. 1996), now at ICASE, NASA Langley Research Center, in Virginia, presented "Illustrating Transparent Surfaces with Curvature-Directed Strokes," written with Henry Fuchs and Stephen M. Pizer. **Penny Rheingans** (Ph.D. 1993), now an assistant professor at the University of Mississippi, presented "Opacity-modulating Triangular Textures for Irregular Surfaces." **Amitabh Varshney** (Ph.D. 1994), now at SUNY at Stony Brook, and his students presented two papers: "Optimizing Triangle Strips for Fast Rendering" and "Dynamic View-Dependent Simplification for Polygonal Models."

Other faculty activities



James Anderson

James Anderson, associate professor, attended the 17th IEEE Real-Time Systems Symposium in Washington, D.C., from 3-6 December 1996, where graduate student **Srikanth Ramamurthy** (M.S. 1994) presented a paper the two wrote: "A Framework for Implementing Objects and Scheduling Tasks in Lock- Free Real-Time Systems."

Frederick P. Brooks, Jr., Kenan professor, attended the Ninth ACM User Interface Software and Technology Conference in Seattle, Wash., in

November 1996. He gave the plenary talk, "3D User Interfaces: When Results Matter." Fred is serving on the program committee for the next Symposium on Interactive 3D Graphics, to be held in Providence, R.I., from 27-30 April 1997. In December, he gave a colloquium in the Department on "How to get a Ph.D. in Computer Science at UNC." He plans to repeat it annually.

Siddhartha Chatterjee, assistant professor, attended Supercomputing '96 in Pittsburgh, Pa., in November and presented "Runtime Performance of Parallel Array Assignment: An Empirical Study," written with Lei Wang and James M. Stichnoth. In early February 1997, he gave a talk at HP Labs and visited SGI and Xerox PARC in Palo Alto, Calif. He is on the program committees for the SIGPLAN '97 Conference on Programming Language Design and Implementation, and the Sixth ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming, which will both take place in Las Vegas, Nev., in June 1997. He is also on the program committees for two conferences taking place this August: the 1997 International Conference on Parallel Processing in Bloomingdale, Ill., and the Tenth Workshop on Languages and Compilers for Parallel Computing in Minneapolis, Minn. Sid is the registration chair for the 16th IEEE Symposium on Reliable Distributed Systems, to be held in Durham, N.C., in October 1997.



Siddhartha Chatterjee

Vern Chi, director of the Microelectronic Systems Laboratory, served on a National Science Foundation review panel for the "Distributed Design Initiative," in December 1996.



Henry Fuchs

Prasun Dewan, associate professor, attended two conferences in November where his students presented papers--the Ninth ACM User Interface Software and Technology Conference in Seattle, Wash., and the 1996 Conference on Computer Supported Cooperative Work in Boston, Mass.

Henry Fuchs, Federico Gil professor, gave invited talks at Yale University in November 1996 and Stanford University in February 1997. In January 1997, he presented a paper at the Medicine Meets Virtual Reality Conference in San Diego, Calif. He attended the ICE Technical Advisory Board Meeting in Waltham, Mass., on 13 February. Henry is serving on the program committee for the next Symposium on Interactive 3D

Graphics.

Kevin Jeffay, associate professor, presented a paper at the IEEE Local Computer Networks Conference in Minneapolis, Minn., in mid-October 1996. Also in October, he gave an invited talk at the Honeywell Advanced Technology Center in Plymouth, Minn., and chaired a panel at the USENIX Conference on Operating System Design and Implementation, in Seattle, Wash. In early December 1996, he chaired an IEEE Workshop on Resource Allocation Problems in Multimedia Systems and presented a



Kevin Jeffay

paper at the IEEE Real-Time Systems Symposium, both in Washington, D.C. In February 1997, he presented a paper at the SPIE/ACM Multimedia Computing and Networking '97 Conference in San Jose, Calif.

Dinesh Manocha, assistant professor, presented a paper at Supercomputing '96, in Pittsburgh, Pa., in mid-November. While in Pittsburgh, he also gave an invited colloquium at Carnegie Mellon University. In early December 1996, he attended the 3D Scanning Workshop, held at the Geometry Center at the University of Minnesota. In January 1997, Dinesh was an invited Course Speaker at the Annual American Mathematical Society Meeting.

Jonathan Marshall, assistant professor, gave an invited talk to the Vision Sciences group at Harvard University in October 1996. He gave a presentation at the annual meeting of the Society for Neuroscience in Washington, D.C., in mid-November.

Steve Molnar (Ph.D. 1991), research assistant professor, is the papers chair for the SIGGRAPH/Eurographics Workshop on Graphics Hardware, to be held in Los Angeles, Calif., from 3-4 August 1997. For information, see:

<http://www.cs.unc.edu/Info/Events/Conferences/hwws97.html>.

Stephen M. Pizer, Kenan professor, was at Brigham and Women's Hospital in January 1997 to give Radiology Grand Rounds, and to give a colloquium at MIT's AI Laboratory. In February, he gave an address, "Summarizing Image Registration Methods and Associated Display Methods," at the Midwinter Conference of the Society of Nuclear Medicine, in Palm Springs, Calif.

Turner Whitted, research professor, is the papers chair for SIGGRAPH '97, to be held in Los Angeles, Calif., from 3-8 August.

Recent publications

Aliaga, D. G. "Visualization of Complex Models Using Dynamic Texture- based Simplification," *Proc. 1996 IEEE Visualization*, San Francisco, Calif., 27 Oct.-1 Nov. 1996, 101-106.

Anderson, J., and S. Ramamurthy. "A Framework for Implementing Objects and Scheduling Tasks in Lock-Free Real-Time Systems," *Proc. 17th IEEE Real-Time Systems Symposium*, Washington, D.C., Dec. 1996, 94-105.

Blaauw, G. A., and F. P. Brooks, Jr. *Computer Architecture: Concepts and Evolution*, Addison-Wesley, 1997.

Chung, G., and P. Dewan. "A Mechanism for Supporting Client Migration in a Shared Window System," *Proc. Ninth ACM User Interface Software and Technology Conference*, Seattle, Wash., 6- 8 Nov. 1996, 11-20.

Garrett, W. F., H. Fuchs, M. C. Whitton, and A. State. "Real-Time Incremental Visualization of Dynamic Ultrasound Volumes Using Parallel BSP Trees," *Proc. 1996 IEEE Visualization*, San Francisco, Calif., 27 Oct.-1 Nov. 1996, 235-240.

Interrante, V., H. Fuchs, and S. M. Pizer. "Illustrating Transparent Surfaces with Curvature-Directed Strokes," *Proc. 1996 IEEE Visualization*, San Francisco, Calif., 27 Oct.-1 Nov. 1996, 211- 218.

Kumar, S., C. Chang, and D. Manocha. "Scalable Algorithms For Interactive Visualization of Curved Surfaces," *Proc. 1996 ACM/IEEE Supercomputing Conference*, Pittsburgh, Pa., Nov. 1996, CD-ROM. (Best Student Paper Award)

Leech, J., J. F. Prins, and J. Hermans. "SMD: Visual Steering of Molecular Dynamics for Protein Design," *IEEE Computational Science and Engineering*, 3(4), Winter 1996, 38-45.

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Wang, L., J. M. Stichnoth, and S. Chatterjee. "Runtime Performance of Parallel Array Assignment: An Empirical Study," *Proc. 1996 ACM/IEEE Supercomputing Conference*, Pittsburgh, Pa., Nov. 1996, CD-ROM. (Best Student Paper nominee)

Recent Ph.D.s

David A. Ellsworth, "Polygon Rendering for Interactive Visualization on Multi-computers" (Henry Fuchs, advisor).

Subodh Kumar, "Interactive Rendering of Parametric Spline Surfaces" (Dinesh Manocha).

Daniel Palmer, "Efficient Execution of Nested Data-Parallel Programs" (Jan F. Prins).

Terry Yoo, "Image Geometry Through Multiscale Statistics" (Stephen M. Pizer).

New contracts and grants

James Anderson, associate professor. Sloan Research Fellowship, Alfred P. Sloan Foundation.

James Anderson and **Kevin Jeffay**, associate professors. Research Experiences for Undergraduates, "An Experimental Evaluation of Real-Time Object Sharing Protocols," National Science Foundation.

Siddhartha Chatterjee, assistant professor. University Faculty Research Grant, UNC-Chapel Hill

Dinesh Manocha, assistant professor. Young Investigator Award, Office of Naval Research.

Dinesh Manocha. "Modeling and Interactive Walkthrough of Large CAD Models," U.S. Army Research Office.

John Poulton, research professor, and **William Dally**, professor, Massachusetts Institute of Technology (MIT). "Equalized 4 GB/s CMOS Signalling," MIT.

John B. Smith, professor. "Distributed Asynchronous Learning," Chancellor's Distance Learning Initiative, UNC-Chapel Hill.

In the media

An article in *Sports 'N Spokes*, a magazine for wheelchair sports and recreation, mentions Walk-through and related tracking research (Smith, C. "Incredible Universe," *Sports 'N Spokes*, 22(2), March/April 1996, 62ff).

An article in the *New Scientist* featured the nanoManipulator project (Schmidt, K. "Bend It, Shake It . . .," *New Scientist*, 151(2045), 31 Aug. 1996, 22-23).

Last fall the nanoManipulator appeared in the program *High-Tech Shower International*, which airs in Asian markets, in a segment called "Feeling the Nanoworld."

A nanoManipulator image appears on the cover of *Quantum Technology* by Gerard Milburn (Allen & Unwin Pty Ltd., 1996).

An episode of c|net's *The New Edge*, which aired on 20 October 1996, mentioned the nanoManipulator in a story about work by Don Eigler, a quantum physicist at IBM's Almaden Research Lab.

The BBC program *Tomorrow's World* featured our augmented- reality research in its 28 October 1996 broadcast.

Inside R&D magazine had a brief article on Pixel-Planes 5 ("3D Imaging System for Video Screens," *Inside R&D*, 15(48), 26 Nov. 1996, 1).

Kevin Jeffay, associate professor, was interviewed for an article about the death of the Internet that appeared in the 21 December 1996 issue of *The Durham Herald*.

A feature on our augmented reality research appeared on the 11:00 p.m. news of WRAL TV Channel 5, in Raleigh, N.C., on 16 January 1997. **Henry Fuchs**, Federico Gil professor, was interviewed for the story.

John B. Smith, professor, was interviewed for the story "Cyber Strangers," which aired on the 11:00 p.m. news of WTVD News Channel 11, in Raleigh, N.C., from 18-20 February 1997.

Congratulations to . . .

Daniel Aliaga (M.S. 1993), graduate student, who received an On-Campus Dissertation Fellowship for the Spring 1997 semester, from the Graduate School at UNC-Chapel Hill.

Alexandra Bokinsky and **Rik Faith** (M.S. 1994), graduate students, who received Teaching Assistant Technology Supplement awards from the Graduate School at UNC-Chapel Hill, for using technology in their classrooms.

Peter Calingaert, professor emeritus, who was elected as a Fellow by the American Association for the Advancement of Science. He was honored for his contributions to research, design, and education in computer science, at a ceremony in Seattle, Wash., in February 1997.

Henry Fuchs, Federico Gil professor, who was elected to the National Academy of Engineering in February 1997. He was cited for his contributions to computer graphics hardware and algorithms. He also won the 1997 Satava Award (see below).

Don Smith (Ph.D. 1978), who was appointed research professor, effective 1 March 1997.

To those faculty and staff who attained the following level of State service as of March 1997:

15 years: **Turner Whitted**

10 years: **Graham Gash, Raj Singh, Jeannie M. Walsh**

5 years: **Stephen Brumback, Steven Molnar, Andrei State, Claire L. Stone**

And to our December graduates:

M.S.: **Weihai Chen, Gentaro Hirota, Christine Yao Israel, Mark Livingston, Jiang Qian, Huiwen Ru, and Viswanath Srikanth**

Ph.D.: **David Ellsworth, Subodh Kumar, Daniel Palmer, and Terry Yoo**

Henry Fuchs Wins Satava Award

Henry Fuchs was presented with the 1997 Satava Award on 24 January during the Medicine Meets Virtual Reality Conference in San Diego, Calif. He was cited for his "commitment to the transformation of medicine through visionary applications of interactive technology."

Established in 1995, the Satava Award is named for its first recipient, **Col. Richard M. Satava**, M.D. The award is given annually to acknowledge those technology developers who demonstrate unique vision and commitment to the transformation of medicine through communication. In 1996 the award was given to **Victor Spitzer** of the University of Colorado and **Michael Ackerman** of the National Library of Medicine for the Visible Human project.

Special visitors

Members of the Australian firm, **Broken Hill Proprietary**, visited the graphics group on 22 October 1996.

Barry Bronson of Hewlett Packard Labs in Palo Alto, Calif., visited on 20 November. Anselmo Lastra was his host.

Bruce Buchanan of the University of Pittsburgh visited on 3 December as part of the Distinguished Lecturer Series. He gave a talk on "Knowledge-Based Learning and Discovery," broadcast from N.C. State on 2 December.

Herbert Edelsbrunner of the University of Illinois at Urbana- Champaign visited on 19 November 1996, as part of the Distinguished Lecturer Series. Russell M. Taylor, II, was his host. He spoke on "Complexes, Algorithms, and Modeling Applications," broadcast from Duke on 18 December.

Ioannis Emiris of INRIA in France visited during November 1996 to work with the modeling group and with Dinesh Manocha, with whom he is writing a book.

Guido Gerig and **Martin Berger** of the Communication Technology Laboratory at ETH in Zurich, Switzerland, visited the Medical Image Display and Analysis Group from 11-13 December 1996. They gave a colloquium, "Displacement Measurements in Portal Images Using Multi Template Matching." Stephen M. Pizer was their host.

Alan Jones, principal research engineer, and **Andy Ward**, graduate student, of Oracle & Olivetti Research Laboratory, Cambridge University, England, visited on 18 November 1996. Andy Ward gave a colloquium on "Sensor-driven Computing."

Randy Katz of U.C.-Berkeley visited on 17 February 1997 as part of the Distinguished Lecturer Series. He spoke on "The Case for Wireless Overlay Networks." Kevin Jeffay was his host.

Fred Kitzen and **Craig Wittenbrink** of Hewlett Packard Labs visited on 23 October 1996. Anselmo Lastra was their host.

Kenton Melland and several colleagues from Newport News Shipbuilding Company visited the Walkthrough project from 12-13 December 1996.

Dave Orton, vice president and general manager of the Advanced Systems Division of Silicon Graphics, visited on 30 January 1997. He spoke at Graphics Lunch on "Infinite Reality and Reality Monster Architecture." Mary C. Whitton was his host.

Ruth Pachter of the Materials Directorate, Wright Laboratory, Wright-Patterson AFB, Ohio, visited the Graphics and Image Lab on 25 November 1996.

John R. Rice of Purdue University visited on 5 November 1996, as part of the Distinguished Lecturer Series. He gave a talk on "Problem Solving Environments for Scientific Computing," broadcast from N.C. State on 4 November.

Robert F. Sproull, vice president and Fellow at Sun Microsystems Laboratories, gave a talk on "Digital Interfaces to Services" on 3 February 1997, as part of the Distinguished Lecturer Series. Nick England was his host.

Whitaker Foundation members visited on 25 February 1997 to review a grant application for a graduate academic focus in Biomedical Engineering. Stephen M. Pizer was their host.

Stanley Zdonik of Brown University visited on 8 October 1996, as part of the Distinguished Lecturer Series. He gave a talk, "Data, Data Everywhere," broadcast from Duke on 7 October.

Computer Services news

Mail servers replaced

In December 1996, **Michael North**, systems programmer, upgraded the Department's mail servers. Our mail system, designed and implemented by **Michael Winslett** (M.S. 1988), consists of a primary and a secondary mail server, providing redundancy in case one of the systems fails. Michael North moved the mail system from the DEC Ultrix computers, *mcenroe* and *borg*, to two dual-processor Sun systems, *ashe* and *austin*, running the Solaris operating system. The Suns are an order of magnitude faster, enabling them to cope better with our large volume of electronic mail.

Migrating software off DEC's

In fall 1996, **John Sopko**, systems programmer, began migrating software from the old DEC Ultrix servers, onto *gamma*, a Sun server equipped with two 25 gigabyte disk packs, running the latest versions of Sun's Solaris operating system and Transarc's AFS software. The DEC's continue as file servers.

PC support

The Department will soon obtain a number of PCs, many of which will replace the DEC workstations in student offices. Most will be set up to run both Windows 95 and Linux (a PC version of UNIX). **Kenneth Weaver**, network manager, and **Jane Stine**, systems programmer, are leading the PC support effort, with help from faculty and students. We hope to have a PC administrator to handle software support soon. For now, **Frederic R. Jordan**, electronic shop supervisor, and **Mike Stone**, electronics technician, are being trained to provide hardware support.

TSC changes

We have changed the staffing and operation of The Support Center (TSC) to provide better service for our users. Two people are now scheduled for all staffed hours. One is a full-time person or an experienced student staffer, who stays in TSC, answers the phone, reads "problem" and "tsc" mail, and who calls on the second person, as needed, to make office visits. **Lori McRae**, computer support technician and TSC manager, and **Ernest Parker**, computer systems administrator, who both have a great deal of experience dealing with "problem" mail, are each working half time in TSC. The new arrangement will ensure that TSC is always staffed with an experienced person and that problems can be responded to quickly and efficiently.

About News & Notes

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