# News & Notes from Sitterson Hall

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

SPRING 2006 • ISSUE THIRTY- SIX


## In this issue



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(Left to right) Ben Wagner, Jared Brothers, Phillip Kelley, and Alan Norton, some of the members of the 2004-2005 undergraduate Computer Science Club, pose for a group shot with the Bodie Island lighthouse during a beach trip in spring 2005.

## Chairman's corner

Spring is blooming in Chapel Hill as we near the close of another busy semester.

Two of our younger faculty members received special recognition last year. In May, Wei Wang was named one of the inaugural Microsoft New Faculty Fellows. Then, in October, Marc Pollefeys was named a Packard Fellow in Science and Engineering. Both of these awards are highly competitive, and we are very proud to have our faculty members recognized nantionally for their outstanding accomplishments. You can read more about Wei and Marc on page 7 of this newsletter.

Over the last year the university has been engaged in a major effort to restructure its undergraduate curricula. We have taken this opportunity to make some additions to our undergraduate computer science programs.

First, we have created an undergraduate minor in computer science to enable majors outside of computer science (such as business, the sciences, or mathematics) to include computer science in their degree program in a substantial fashion.

Second, we have entered into an exchange arrangement to enable our computer science majors to follow computer science courses at the highly regarded Computer Science Department of University College London. This special opportunity for computer science students satisfies a new university requirement for experiential education without sacrificing progress on the substantial requirements of our B.S. program.

Further changes are still underway, including a co-op program with local industry and a proposed undergraduate B.A. program in computer science.

Site preparation for the Sitterson South addition has started, and the design of the new space to be built is finalized. Major construction is expected to start this fall, with completion of the addition scheduled for spring 2008. About 20% of the physical science complex funding, of which the Sitterson addition is a part, is expected to come from donations. Please keep us in mind if you are able to make a contribution. Feel free to contact me for additional information, including commemorative gift opportunities.

As always, we are interested to hear your latest news and we welcome your visit to the department.

*Jan F. Prins*

## Welcomes and Farewells

### FACULTY AND STAFF

**Jan Michael Frahm**, Postdoctoral Research Associate.

**Christopher Healey**, Visiting Associate Professor from North Carolina State University.

**Merkourios Karaliopoulos**, Postdoctoral Research Associate.

**Vivek Kwatra**, Postdoctoral Research Associate.

**Philippos Mordohai**, Postdoctoral Research Associate.

**Sharif Razzaque** (Ph.D. 2005), Postdoctoral Research Associate.

**David Tuft**, Software Engineer for the GAMMA group.

# Family matters

**Jaron Bryce** was born on February 26 2005, in Palo Alto, Calif., to **Steve** and **Audra (Sugerman) Lemke** (M.S. 1995). Jaron joins big sister **Brina**, 4. (*audra@lemkeville.org*)

**Amy Henderson** (M.S. 2000) and **Michael Squillacote** were married on February 26, 2005, in Loudonville, NY. (*amy.squillacote@kitware.com*)

**Cory Quammen**, graduate student, and **Sandra Valnes** were married on June 11, 2005, in Moorhead, Minn. (*cquammen@cs.unc.edu*)

**Karston Pierce** was born on July 3, 2005, in Chapel Hill to **Joni** and **Kurtis Keller**, Research Associate and Engineer for the Microelectronic Systems Laboratory. (*keller@cs.unc.edu*)

**Benjamin Lok** (Ph.D. 2002) and **Laura Boland** were married on July 9, 2005, in Tampa, Fla. (*lok@cise.ufl.edu*)

**Jenni Styron**, office assistant, and **Scott Clark** were married on July 23, 2005, in Atlantic Beach, N.C. (*jsc@cs.unc.edu*)

**Scott Leslie** (B.S. MSci. 1991) and **Shannon Caldwell** were married on August 20, 2005, in Kennebunkport, Maine. (*Scott.Leslie@sas.com*)

**Patrick Quirk**, graduate student, and **Christy Nell** were married on August 21, 2005 in Chapel Hill. (*quirk@cs.unc.edu*)

**Channing Elizabeth** was born in Durham on October 23, 2005, to **Lori** and **Jim Mahaney**, Computing Consultant and Assistant to Henry Fuchs. Channing joins big brother **Leif**, 2, and big sister **Georgia**, 8. (*mahaney@cs.unc.edu*)

**Neil Martin** was born on November 13, 2005, in Chapel Hill to graduate students **Swaha (Das)** and **Dorian Miller**. (*swaha@cs.unc.edu*, *dorianm@cs.unc.edu*)

**Sophia Mae** was born on December 20, 2005, in Chapel Hill to **Katie** and **David Tuft**, software engineer. (*tuft@cs.unc.edu*)

**GurMeher Kaur** was born on December 22, 2005, in Durham to Assistant Professor **Jasleen Kaur** and husband **Darshan Singh**. (*jasleen@cs.unc.edu*)

# Congratulations to…

## THANKS AND FAREWELL TO…

**Myra Gwin-Summers**, research assistant to Henry Fuchs, who left in August 2005.

**Faye Lewis**, administrative assistant, who left in December 2005. Faye is currently working as an assistant in the College of Arts & Sciences dean's office.

**Jim Mahaney**, computing consultant and assistant to Henry Fuchs, who left in December 2005. Jim is currently working as a tech support specialist for UNC Information Technology Services.

**Gokul Varadhan** (Ph.D. 2005), postdoctoral research associate working with the GAMMA group, who left in February 2006 to accept a job with Google.

## Congratulations to…

### FACULTY AND STAFF

**Gary Bishop** (Ph.D. 1984), professor, who was the recipient of a 2005 Class of 1996 Award for Advising Excellence. This award is presented annually to advisors of undergraduate students from academic departments, professional schools, and the Academic Advising Programs in the College of Arts & Sciences and the General College.

**Jenni Styron Clark**, office assistant, who received her B.A. in History in December 2005.

**David Harrison**, computer network coordinator, who was elected to the UNC Employee Forum as a delegate from Division 8.

**Catherine Perry**, accounting manager, who received the 10th annual Robert R. Cornwell Unsung Hero Award from the Office of Institutional Research and Assessment in December 2005.

**Russell Taylor** (Ph.D. 1994), research associate professor, **Gail Jones**, adjunct professor, and **David Borland**, graduate student, who, along with James Minogue, graduate assistant at NC State, received an honorable mention from SensAble Technologies, Inc., in the SensAble Developer Challenge for their Haptic Cell application. Haptic Cell is a computer-based instructional program that provides an innovative and exciting way for students to interactively explore the structure and functioning of a typical animal cell. Using the PHANTOM® Omni™ device, students can actually feel the cell parts and forces associated with the functions of the cell membrane. This instructional program capitalizes on the PHANTOM® Omni device's unparalleled ability to provide bi-directional, simultaneous information exchange between the user and the device. This instruction is unlike other educational software programs, because it reaches kinesthetic as well as visual learners.

**Steve Weiss**, professor, who was named the Interim Associate Dean for First Year Seminars in the Office of Undergraduate Education, effective July 1, 2005.

### GRADUATE STUDENTS

**May 2005 Ph.D. Recipients:**
**Karl Ernest Hillesland.** Image streaming to build image-based models. (Anselmo Lastra)

**Michael Hayden Rosenthal.** Three-dimensional registration and tracking of vascular structures using calibrated biplane fluoroscopy. (Henry Fuchs)

**August 2005 Ph.D. Recipient:**
**Sharif A. Razzaque.** Redirected walking. (Frederick P. Brooks Jr.)

**December 2005 Ph.D. Recipients:**
**David Gotz.** Channel Set Adaptation: Scalable and Adaptive Streaming for Non-Linear Media. (Ketan Mayer-Patel)

### 2005-2006 STUDENT FELLOWSHIPS AND SPECIAL AWARDS

| | |
|---|---|
| Aaron Block | National Science Foundation Fellowship (Year 2 of 3) |
| Tristin Celestin | Robot Visual Navigation Assistantship |
| Kwangbom Choi | BCB Fellow in Bioinformatics |
| Brian Cornell | Graduate School Merit Assistantship |
| Uma Devi | IBM Fellowship |
| Russ Gayle | Department of Energy Fellowship (Year 2 of 4) |
| Gennette Gill | NDSEG Fellowship (Year 2 of 3) |
| Justin Hensley | ATI Fellowship |
| Jun (Luke) Huan | Alumni Fellowship |
| Jason Jerald | NPSC (Year 5 of 6) |
| Scott Larsen | NVIDIA |
| Brandon Lloyd | National Science Foundation Fellowship (Year 3 of 3) |
| Dorian Miller | IBM Fellowship |
| Avery Smith | Graduate School Minority Presence Fellowship (RENCI) |
| Jennifer Staab | BCB Fellow in Bioinformatics |
| Josh Steinhurst | Paul Hardin Dissertation Completion Fellowship |
| Xueyi Wang | Bioinformatics Grant |
| Jeremy Wendt | National Science Foundation Fellowship (Year 2 of 3) |

**Nguyen Tuong Long Le.** Investigating the Effects of Active Queue Management on the Performance of TCP Applications. (Kevin Jeffay)

**Swaha Miller.** OSHL-U: A First Order Theorem Prover Using Propositional Techniques and Semantics. (David Plaisted)

**Jaime Navon.** Specification and Semi-Automated Verification of Coordination Protocols for Collaborative Software Systems. (David Stotts)

**David Ott.** An Open Architecture for Transport-level Coordination in Distributed Multimedia Applications. (Ketan Mayer-Patel)

**Jason McColm Smith.** SPQR: Formal Foundations and Practical Support for the Automated Detection of Design Patterns From Source Code. (David Stotts)

**Gokul Varadhan.** Accurate Sampling Based Algorithms for Surface Extraction and Motion Planning. (Dinesh Manocha)

**Kelly Ward.** Modeling hair using levels-of-detail. (Ming Lin)

**Sung-Eui Yoon.** Interactive Visualization and Collision Detection using Dynamic Simplification and Cache-Coherent Layouts. (Dinesh Manocha)

**May 2005 M.S. Recipients:**
Priscilla Carmini Alexander, Aaron David Block, Robert Elijah Broadhurst, Vasile Bud, Craig Samuel Falls, George Todd Gamblin, Sean Thomas Hanlon, Nitin Jain, Joshua Howard Levy, David Brandon Lloyd, William Howard Luebke Jr., Priyank Porwal, Jason Michael Repko, Sushant Pramod Rewaskar, Alok Shriram, Sudipta Narayan Sinha, Karl Robert Strohmaier, Angela H. Van Osdol, Tian Wang.

## UNDERGRADUATE STUDENTS

**May 2005 B.S. Recipients:**
David Christopher Allen**, Tyler Christopher Amos, Zachary N. Bailey*, Michael Aaron Blacker, Alexander Robert Boone**, Bradley Scott Davis, Boriana Hristova Ditcheva*, Yuanyuan Duan, Nikolas Taylor Everett*, Matthew Emanuel Goldberg**, James A. Hughes, James Leon Irving Jr., Eric Thomas Kirkham, Eden Kung*, Elise Celia London*, Alexander Benjamin McLin, Ryan Thomas Niedzialek, Benjamin Ross Porterfield*, Ian Marc Quattlebaum, Thaddius Riley Roberts III, Leon Gawayne Scroggins III**, Andrew Michael Synowiez, Mark Conley Turner, Christopher Kurt Upton

**August 2005 B.S. Recipient:**
Aamer Abbas*

*With Honors **With Highest Honors

## Grants and Contracts

**Sanjoy K. Baruah**, professor (PI), and **James H. Anderson**, professor (Co-PI). "Multiprocessor Real-time Computing: Formal Foundations," NSF.

**Frederick P. Brooks**, professor (PI). "Preparation of Two Books on the Science of Design," NSF.

**Henry Fuchs**, professor (PI). "Virtual and Augmented Reality Guidance for Hepatic Rfa," National Cancer Institute.

**Guido Gerig**, professor (PI). "Quantitative White Matter Analysis of Early Brain Development in Autism," National Alliance for Autism Research.

**Ming Lin**, professor (PI). "CI-TEAM," NSF, subcontract to Drexel University.

**Dinesh Manocha**, professor (PI), and **Naga Govindaraju**, research assistant professor (Co-PI). "STTR: Utilizing GPUs as an Efficient Chemical Kinetics Co-processor," DARPA, subcontract to Combustion Research and Flow Technology Inc.

**Dinesh Manocha**, professor (PI). "Efficient and Scalable Data Structures for Topological Geometric Models," University of California, Lawrence Livermore National Laboratory.

**Marc Pollefeys**, associate professor (PI). "CAREER: Visual 3D Acquisition Modeling and Rendering of the Real World," NSF.

**Marc Pollefeys**, associate professor (PI). "UrbanScape Project," DARPA, subcontract to Geo Spatial Technologies.

**Marc Pollefeys**, associate professor (PI). "Packard Fellowship Grant," Packard (David & Lucile) Foundation.

**Montek Singh**, assistant professor (PI). "High-speed Asynchronous Pipeline Technology for the DARPA CLASS project," DARPA, subcontract to The Boeing Company.

**Jack Snoeyink**, professor (PI). "Inverse Kinematics, Sterics & Data – To Fit RNA Backbone," NIH, subcontract to Duke University.

### ALUMNI FELLOWSHIP RECIPIENT

**Jun "Luke" Huan** (M.S. 2003) is the recipient of the 2005-2006 Computer Science Alumni Fellowship. The fellowship is awarded annually to a Ph.D. candidate in his or her final year of study, allowing the student to work full time on dissertation research. Generous contributions by alumni and friends help to make this fellowship possible.

Luke is pursuing a dissertation under his advisors Jan Prins and Wei Wang. His research focuses on the interface of data mining and bioinformatics by developing pattern mining algorithms for protein structure data. Specifically, Luke is investigating methods to represent a protein structures as a graph and developing efficient algorithms to enumerate frequently occurring subgraphs in a graph database. Learning protein structural patterns is critical for better understanding of many biological processes such as the biological function of the proteins, protein-protein interaction, and protein-drug interaction. In addition, such research is useful in engineering proteins and searching for novel medicines. Luke's primary focuses within this area are devising various pattern searching algorithms for graph databases, augmenting domain constraints into the pattern learning processes, evaluating the statistical significances of the derived patterns, and developing techniques for improving performance and efficiency.

**Jack Snoeyink**, professor (PI). "Meshless Wavelets and Their Application to Terrain Modeling," DARPA.

**Wei Wang**, associate professor (PI). "CAREER: Mining Salient Localized Patterns in Complex Data," NSF.

**Wei Wang**, associate professor (PI). "Identifying Spatial Motifs for Classification of Protein Structure and Function," NSF.

# 4 Recent publications


Agiwal, A., and M. Singh. "An Architecture and Wrapper Synthesis for Multi-Clock Latency-Insensitive Systems," *Proc. of the Intl. Conf. on Computer-Aided Design*, 2005.

Allen, B. D., and G. Welch. "A General Method for Comparing the Expected Performance of Tracking and Motion Capture Systems," *Proc. of the 12th ACM Symposium on Virtual Reality Software and Technology*, November 2005.

Anderson, J., V. Bud, and U. Devi. "An EDF-based Scheduling Algorithm for Multiprocessor Soft Real-Time Systems," *Proc. of the 17th Euromicro Conference on Real-Time Systems*, 199-208, July 2005.

Block, A., J. Anderson, and G. Bishop. "Fine-Grained Task Reweighting on Multiprocessors," *Proc. of the 11th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications*, 429-435, August 2005.

Borland, D., J. P. Clarke, J. R. Fielding, and R. M. Taylor II. "Volumetric depth peeling for medical image display," *Visualization and Data Analysis, IS&T/SPIE Symposium on Electronic Imaging*, 2006.

Broadhurst, R.E., J. Stough, S. Pizer, and E. Chaney. "Histogram Statistics of Local Model Relative Image Regions," *International Workshop on Deep Structure, Singularities and Computer Vision*, LNCS 3753: 71-82, June 2005.

Chakos, M.H., S.A. Schobel, H. Gu, G. Gerig, D. Bradford, C. Charles, and J. Lieberman. "Duration of illness and treatment effects on hippocampal volume in male patients with schizophrenia," *British Journal of Psychiatry*, 86: 26-31, 2005.

Devi, U. C., and J. H. Anderson. "Tardiness Bounds under Global EDF Scheduling on a Multiprocessor," *26th IEEE International Real-Time Systems Symposium*, 330-341, 2005.

Fisher, J., J. Cummings, K. V. Desai, L. Vicci, B. Wilde, K. Keller, C. Weigle, G. Bishop, R. M. Taylor II, C. W. Davis, R. Boucher, E. T. O'Brien, and R. Superfine. "Three-dimensional force microscope: A nanometric optical tracking and magnetic manipulation system for the biomedical sciences," *Review of Scientific Instruments*, 76(5):053711-053722, 2005.

Fisher, N., J. Anderson, and S. Baruah. "Task Partitioning upon Memory-constrained Multiprocessors," *Proc. of the 11th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications*, 416-421, August 2005.

Gayle, R., M. Lin, and D. Manocha. "Constraint-Based Motion Planning of Deformable Robots," *Proc. of the IEEE International Conference on Robotics and Automation*, 2005.

Gerig, G., I. Corouge, C. Vachet, K.R. Krishnan, and J.R. MacFall. "Quantitative Analysis of Diffusion Properties of White Matter Fiber Tracts: A Validation Study," *International Society for Magnetic Resonance in Medicine*, May 2005.

Gerig, G., L. Weili, Y.K. Vetsa, and J.H. Gilmore. "Assessing White Matter Growth Trajectory of Early Neonatal Development by 3T MR-DTI," *International Society for Magnetic Resonance in Medicine*, May 2005.

Govindaraju, N., M. Henson, M. C. Lin, and D. Manocha. "Interactive Visibility Ordering of Geometric Primitives in Complex Environments," *Proc. of ACM Symposium on Interactive 3D Graphics and Games*, 2005.

Govindaraju, N., M. Lin, and D. Manocha. "Quick-CULLIDE: Fast Inter- and Intra-Object Collision Culling Using Graphics Hardware," *Proc. of IEEE VR*, 2005.

Han, Q., S. Pizer, D. Merck, S. Joshi, and J-Y. Jeong. "Multi-figure Anatomical Objects for Shape Statistics," *Information Processing in Medical Imaging*, LNCS 3565: 701-712, July 2005.

Hensley, J., A. Lastra, and M. Singh. "A Scalable Counterflow-Pipelined Asynchronous Radix-Four Booth Multiplier," *Proc. of the Intl. Symp. On Asynchronous Circuits and Systems*, 2005.

Hensley, J., M. Singh, and A. Lastra. "A Fast, Energy-Efficient Z-Comparator," *Proc. of the Graphics Hardware Workshop*, 2005.

Hensley, J., T. Scheuermann, G. Coombe, A. Lastra, and M. Singh. "Fast Summed-Area Table Generation and its Applications," *Proc. of EUROGRAPHICS*, 2005.

Hensley, J., T. Scheuermann, M. Singh, and A. Lastra. "Interactive Summed-Area Table Generation for Glossy Environmental Reflections," *SIGGRAPH Sketches*, 2005.

Hollins, M., F. Lorenz, A. Seeger, and R. M. Taylor II. "Factors Contributing to the Integration of Textural Qualities: Evidence from Virtual Surfaces," *Somatosensory and Motor Research*, 22(3):193-206, September 2005.

Holman, P., and J. Anderson. "Adapting Pfair Scheduling for Symmetric Multiprocessors," *Journal of Embedded Computing*, 1(4), 2005.

Holman, P., and J. Anderson. "Group-based Pfair Scheduling," *Real-Time Systems*, 32(1-2):125-168, February 2006.

Holman, P., and J. Anderson. "Supporting Lock-Free Synchronization in Pfair-scheduled Systems," *Journal of Parallel and Distributed Computing*, 66(1):47-67, January 2006.

Ilie, A., and G. Welch. "Ensuring Color Consistency Across Multiple Cameras," *Proc. of the International Conference on Computer Vision (ICCV)*, October 2005.

Ilie, A., R. Raskar and J. Yu. "Gradient Domain Context Enhancement for Fixed Cameras," *International Journal of Pattern Recognition and Artificial Intelligence*, 19(4):533-549, June 2005.

Kohli, L., E. Burns, D. Miller and H. Fuchs. "Combining Passive Haptics with Redirected Walking," *Proc. of the International Conference of Artificial Reality and Telexistence*, 2005.

Marshburn, D., C. Weigle, B. G. Wilde, K. Desai, J. K. Fisher, J. Cribb, E. T. O'Brien, R. Superfine, and R. M. Taylor II. "The Software Interface to the 3D-Force Microscope," *Proc. of IEEE Visualization*, 2005.

Otaduy, M., and M. C. Lin. "Stable and Responsive Six-Degree-of-Freedom Haptic Manipulation Using Implicit Integration," *Proc. of the World Haptics Conference*, 247-256, 2005.

Pizer, S., J-Y. Jeong, C. Lu, K. Muller, and S. Joshi. "Estimating the Statistics of Multi-Object Anatomic Geometry Using Inter-Object Relationships," *International Workshop on Deep Structure, Singularities and Computer Vision*, LNCS 3753: 59-70, June 2005.

Pizer, S., J-Y. Jeong, R.E. Broadhurst, S. Ho, and J. Stough. "Deep Structure of Images in Populations via Geometric Models in Populations," *International Workshop on Deep Structure, Singularities and Computer Vision*, LNCS 3753: 48-58, June 2005.

Pizer, S., P.T. Fletcher, S. Joshi, A.G. Gash, J. Stough, A. Thall, G. Tracton, and E. Chaney. "A Method & Software for Segmentation of Anatomic Object Ensembles by Deformable M-Reps," *Medical Physics*, 32(5): 1335-1345, May 2005.

Prastawa, M., J. Gilmore, W. Lin, and G. Gerig. "Automatic Segmentation of MR Images of the Developing Newborn Brain," *Medical Image Analysis Journal*, 9(5):457-466, October 2005.

Rao, M., J. Stough, Y-Y. Chi, K. Muller, G. Tracton, S. Pizer, and E. Chaney. "Comparison of Human and Automatic Segmentations of Kidneys from CT Images," *International Journal of Radiation Oncology, Biology, Physics*, 61(3): 954-960, 2005.

Redon, S., and M. Lin. "A Fast Method for Local Penetration Depth Computation," *Journal of Graphical Tools*, 2005.

Redon, S., and M. Lin. "Practical Local Planning in the Contact Space," *Proc. of the IEEE International Conference on Robotics and Automation*, 2005.

Redon, S., M. Lin, D. Manocha, and Y. Kim. "Fast Continuous Collision Detection for Articulated Models," *Journal of Computing and Information Science in Engineering*, 2005.

Shi, F., Y. Makris, S. Nowick, and M. Singh. "Test Generation for Ultra-High-Speed Asynchronous Pipelines." *Proc. of the Intl. Test Conference*, 2005.

Srinivasan, A., and J. Anderson. "Efficient Scheduling of Soft Real-time Applications on Multiprocessors," *Journal of Embedded Computing*, 1(2), 2005.

Srinivasan, A., and J. Anderson. "Fair Scheduling of Dynamic Task Systems on Multiprocessors," *Journal of Systems and Software*, 77(1):67-80, April 2005.

State, A., G. Welch, and A. Ilie. "An Interactive Camera Placement and Visibility Simulator for Image-Based VR Applications," *Proc. of the Engineering Reality of Virtual Reality 2006 (3D Imaging, Interaction, and Measurement; IS&T/SPIE 18th Annual Symposium on Electronic Imaging Science and Technology)*, January 2006.

Steinhurst, J., G. Coombe, and A. Lastra. "Reordering for Cache Conscious Photon Mapping," *Proc. of Graphics Interface*, 97-104, 2005.

Styner, M. and K. Van Leemput. "Retrospective Evaluation and Correction of Intensity Inhomogeneity," In L. Landini, V. Positano, and M. F. Santarelli (Eds.), *Advanced Image Processing in Magnetic Resonance Imaging*, pp. 145-168, CRC Press, 2005.

Styner, M., J.A. Lieberman, R.K. McClure, D.R. Weinberger, D.W. Jones, and G. Gerig. "Morphometric analysis of lateral ventricles in schizophrenia and healthy controls regarding genetic and disease-specific factors," *Proc. of the National Academy of Sciences*, 102(13): 4872-4877, March 2005.

Terriberry, T., S. Joshi, and G. Gerig. "Hypothesis Testing with Nonlinear Shape Models," *Information Processing in Medical Imaging*, LNCS 3565: 5-26, July 2005.

Weigle, C., and R. M. Taylor II. "Visualizing intersecting surfaces with nested-surface techniques," *Proc. of IEEE Visualization*, 2005.

Welch, G., D. Sonnenwald, K. Mayer-Patel, R. Yang, A. State, H. Towles, B. Cairns, and H. Fuchs. "Remote 3D Medical Consultation," *Proc. of BROADMED: 1st IEEE/CreateNet International Workshop on Telemedicine Over Broadband and Wireless Networks*, October 2005.

Welch, G., R. Yang, B. Cairns M.D., H. Towles, A. State, A. Ilie, S. Becker, D. Russo, J. Funaro, D. Sonnenwald, K. Mayer-Patel, B. D. Allen, H. Yang, E. Freid M.D., A. van Dam, and H. Fuchs. "3D Telepresence for Off-Line Surgical Training and On-Line Remote Consultation," *Proc. of the ICAT CREST Symposium on Telecommunication, Teleimmersion, and Telexistence*, December 2004. Invited submission.

Welch, G., R. Yang, S. Becker, A. Ilie, D. Russo, J. Funaro, A. State, K-L. Low, A. Lastra, H. Towles, B. Cairns, M.D., H. Fuchs, and A. van Dam. "Immersive Electronic Books for Surgical Training," *IEEE Multimedia*, 12(3):22–35, July-September 2005.

## M.S. AND PH.D. ALUMNI

**Ronald Azuma** (M.S. 1990, Ph.D. 1995) served as Program Co-chair for the IEEE International Symposium on Mixed and Augmented Reality 2005 in Vienna, Austria. He also recently published two papers:

Azuma, R., J. Fox, and C. Furmanski. Evaluating Visualization Modes for Closely-Spaced Parallel Approaches. Proc. HFES 49th Annual Meeting, September 2005.

Azuma, R., T. Clausner, M. Daily, J. Fox, and M. E. Miller. Visualization Concepts for Generating Insight from NAS Simulation Data. Proc. AIAA 2005 Modeling and Simulation Conference, August 2005.

Ron is at HRL Laboratories in Malibu, Calif. (*azuma@hrl.com*)

**Steven Bellovin** (M.S. 1977, Ph.D. 1982) was named Professor of Computer Science at Columbia University in spring 2005.

**Kathryn Britton** (M.S. 1977) is a member of the inaugural class of the new Masters of Applied Positive Psychology program at the University of Pennsylvania. (*brittonk@us.ibm.com*)

**Randy Brown** (M.S. 1990), Chief Technical Officer of Virtual Heroes, Inc. (*www.virtualheroes.com*), was the winner of the inaugural *Hot Rod Magazine* Top Speed Challenge held at the season-opener event of the East Coast Timing Association in Maxton, N.C. The event was featured in the September 2005 issue of *Hot Rod Magazine*. Randy set a land speed record of 180.839 mph in the Standing Mile in his 1994 Pontiac Firebird Formula using nitrous oxide, which he also drove to and from the event, 130 miles each way. He also spoke on the use of game engines for Simulation and Training on a panel at the inaugural Space Forum held at the Simulation Interoperability Workshop in Orlando, Fla., on Sept. 21. (*randy.brown@virtualheroes.com*)

**Michael Capps** (B.S. 1994, M.S. 1996) is president of Epic Games in Raleigh, N.C., which pulled off a sweep of the "Best Xbox 360 Game" category at the E3, the main games industry tradeshow, with its upcoming game "Gears of War." In addition, Epic's Unreal Engine 3 game technology recently was awarded "Best Game Engine" by *Game Developer Magazine*, and Sony Computer Entertainment Inc. recently announced that it will be making the Unreal Engine available to all Playstation 3 developers. In September 2005, Epic was named one of the "Best Places to Work in the Triangle" by the *Triangle Business Journal*, placing in the top 3 for medium-sized businesses. (*Mike.Capps@epicgames.com*)

**Eric Carlson** (Ph.D. 1972) has retired from Silicon Valley executive life, and says he is reinventing himself in the field of social benefit entrepreneurship at Santa Clara University's Center for Science, Technology, and Society. Eric's wife, Mimi, continues as a flautist with Symphony Silicon Valley and Ballet Silicon Valley. Both of their children are married (and employed), so they now have room for visitors during the academic year in Los Gatos, Calif., and in the summer in northern Minnesota. (*ecarlson@scu.edu*)

**Joel Dunn** (M.S. 1995) is now working for UNC's Information Technology Services as Director of Networking Collaborations. In his new role, Joel is the primary contact for networking collaborations and partnerships with both on and off campus participants, working to foster collaborative projects with other campus schools and departments and with local and national networking partners. Joel has worked at UNC since 1983. (*joel_dunn@unc.edu*)

**Benjamin Lok** (Ph.D. 2002) and his wife, Laura (see Family Matters) live in Gainesville, Fla. Benjamin currently works as an assistant professor at the University of Florida. (*lok@cise.ufl.edu*)

**David McAllister** (Ph.D. 1972) retired from the Computer Science Department at NCSU in June, 2005 after 33 years at NCSU. From 1967-1972 he taught full- or part-time at UNC-Greensboro in the Department of Mathematics. His major areas of research included stereo graphics, speech processing, fault tolerant software and numerical analysis. He will continue in the University Phased Retirement half-time program for the next three years. He will continue to do research and work with graduate students. (*David@cmonline.com*)

**Gopi Meenakshisundaram** (Ph.D. 2001) and his student won the second best paper award at Eurographics 2005 with a paper titled Hierarchyless Simplification, Stripification, and Compression of Triangulated Two-Manifolds. Gopi won the same award at Eurographics 2004 for a paper on single-stripification. He has been an assistant professor at the University of California, Irvine since fall 2001. (*gopi@barcelona.ics.uci.edu*)

**Lee Nackman** (Ph.D. 1982) continues to work for IBM in Research Triangle Park, N.C. He was recently promoted to Vice President, Product Development and Customer Support, for Rational Software, a division of IBM's Software Group. Lee is also co-editor of Addison-Wesley's Eclipse series. Lee, his wife Ava, and their two sons Samuel (17) and Joel (13) reside in Chapel Hill; their daughter, Rachel (20), is a junior at Tufts University and recently spent a semester abroad in Paris where she studied French, art history, and music. Lee and Ava welcome visits from fellow CS Alumni who find themselves in Chapel Hill. (*lrn@us.ibm.com*)

**Ramesh Raskar** (Ph.D. 2000) is the co-author of a new book, *Spatial Augmented Reality*. He was a co-organizer, along with **Aditi Majumder** (Ph.D. 2002), for the PROCAMS 2005 workshop at CVPR 2005. Ramesh was also promoted to Senior Research Scientist at MERL in Cambridge. (*raskar@merl.com*)

**Ray Van Dyke** (M.S. 1989) has been appointed to the Board of Directors of the Computer Law Association, and a Chair of the Emerging Technologies Committee of the American Intellectual Property Law Association. He teaches a course in intellectual property fundamentals and the history of technology and law this fall in the Computer Engineering School at Southern Methodist University in Dallas, and taught a course on International and Comparative Patent Law at American University's Washington College of Law, where he is also an Adjunct Professor. He has also been reappointed as the Greater Washington, DC, Chair of the Licensing Executives Society. (*rvandyke@nixonpeabody.com*)

**Jana Van Wyk** (M.S. 1985) celebrated her 20 year anniversary as a software developer at SAS Institute Inc., located in Cary, N.C., in June 2005. (*Jana.VanWyk@sas.com*)

## UNDERGRADUATE ALUMNI

**Lawrence Bercini** (B.S.M.Sci. 1977) received his Certified Business Intelligence Professional (CBIP) certification from the Institute for the Certification of Computing Professionals (ICCP). This new certification designation was a joint

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effort between the ICCP and The Data Warehousing Institute (TDWI). His mastery-level certification focuses on the Data Architecture aspect of Business Intelligence. (*lbercini@transunion.com*)

**Derrick Cole** (B.S.M.Sci. 1988) was promoted to the position of IT Risk Manager at GlaxoSmithKline. (*derrick@nc.rr.com*)

**Mark Hutchinson** (B.S.M.Sci. 1981) published the article "An Examination of Visual Basic's Random Number Generation," which examines Visual Basic's PRNG methods and weaknesses. (*www.15seconds.com/issue/051110.htm*)

**Byron Kinnaird** (B.S. 2001) left his position as a software consultant with UPS Professional Services (United Parcel Service) in February 2005. He now lives in Washington, DC, and works with a small private software development company in Reston, Va., (*www.avenity.com*) that develops business applications for state governments and financial institutions, among others. (*byronkinnaird@yahoo.com*)

Iris and Steve Weiss enjoyed the great outdoors during a trip to Alaska in July 2005. Iris and Steve are pictured above visiting Wonder Lake at Denali National Park, with Mount McKinley seen in the background.

### FORMER FACULTY AND STAFF

**John McHugh**, former research associate professor, has taken a position as the Canada Research Chair in Privacy and Security at Dalhousie University in Halifax, N.S. He is in the process of setting up a laboratory for research in these areas. In January 2005, he had the honor of serving as the "Opponent" in the successful PhD examination of Stefan Axelsson at Chalmers University in Sweden. (*mchugh@cs.dal.ca*)

**Lars Nyland**, adjunct associate professor, is now a senior architect at NVIDIA in Research Triangle Park, working on performance-related issues, and glad to join the many UNC CS graduates who work there. (*lnyland@gmail.com*)

## DeltaSphere Featured on CBS' CSI: Crime Scene Investigation


The DeltaSphere 3D Scene Digitizer and SceneVision software was featured on a March 2005 episode of CBS' popular TV show, *CSI: Crime Scene Investigation*. The DeltaSphere is a 3D Scanner that quickly and accurately captures scenes and objects in 3D and color. The captured data can be displayed as a 3D computer graphics model and viewed from any perspective. Investigators in the show use the products, and the computer graphics model produced, to explore the murder of a suburban family in the episode called "Spark of Life."

"The CSI writers are always looking for the latest technology being applied to crime scene investigation," said Nick England, president of 3rdTech and adjunct research professor of computer science. "It might seem like science fiction, but the script accurately portrays what our products can do."

The DeltaSphere, which was developed in the Department of Computer Science by former Research Associate Professor Lars Nyland (now adjunct associate professor), replaces the tedious work of manually making dozens of measurements at a crime scene by automatically making thousands of measurements per second. SceneVision combines these millions of laser measurements with professional-quality, calibrated digital photographs to create accurate, photo-realistic models of real-world scenes that can be viewed, measured, analyzed, and presented.

In the past year, the DeltaSphere and SceneVision have been acquired by a number of law enforcement agencies and training institutes, including the U.S. Army Criminal Investigation Laboratory, the Henry C. Lee Institute of Forensic Science, and the American Academy of Applied Forensics in Huntersville, N.C.

## Save the Date!

**The Siggraph 2006 Alumni Reception will be held on Monday, July 31**

**Location details coming soon!**

If you are not on our email list and would like to be, please send a request to pubs@cs.unc.edu

## Marc Pollefeys awarded Packard Fellowship in Science & Engineering

Dr. Marc Pollefeys, associate professor of computer science, received a $625,000 Packard Fellowship in Science and Engineering in October 2005.

The Packard fellowship program is designed to strengthen university-based science and engineering programs by supporting innovative researchers early in their careers. Each year, the David and Lucile Packard Foundation selects 16 fellows nationally to receive $625,000 over five years to support their research. The program funds research in a broad range of disciplines, including astronomy; biology; chemistry; computer science; mathematics; physics and all branches of engineering.

A member of the Department of Computer Science faculty since July 2002, Pollefeys is using the fellowship to develop algorithms that will enable camera networks to perform a multitude of observation tasks. Pollefeys' work contributes to the area of three-dimensional graphic imaging.

Pollefeys focuses his research on computer vision – a field of computer science concerned with developing algorithms for extracting information from images in the real world. He has published more than 80 scientific papers, helped to organize major conferences and workshops and is on the editorial board of IEEE Transactions on Pattern Analysis and Machine Intelligence, the main scientific journal in his area.

"Marc is internationally recognized for the techniques he has developed to estimate the three-dimensional structure of a scene from an uncalibrated video camera moving through the scene," said Dr. Jan Prins, professor and chairman of computer science. "The Packard Fellowship will support his extension of this work to address the extremely challenging problems in the reconstruction of dynamic scenes as viewed simultaneously from several cameras."

In 2003, Pollefeys received a National Science Foundation Faculty Early Career Development Award, which supports outstanding new teacher-scholars. He has received other awards, including the 1998 Marr Prize, an award given for the best paper appearing at the International Conference on Computer Vision.

Pollefeys is the third UNC recipient of a Packard Fellowship since its inception in 1988, and the first recipient in computer science. The two previous UNC recipients were from the Department of Chemistry, in 1991 and 1998.

## Wei Wang receives first Microsoft New Faculty Fellowship

Dr. Wei Wang, associate professor of computer science, was named one of five recipients of the first Microsoft New Faculty Fellowship Awards in May 2005.

The awards recognize and support early-career professors who demonstrate "exceptional talent for novel research and thought leadership in their disciplines."

Selected from a pool of 110 nominees representing universities nationwide, each of the fellows received a $200,000 grant to pursue innovative research in computer science, as well as the opportunity to explore collaborations with some of the top researchers working in their areas of interest at Microsoft Research.

Wang, who joined the Department of Computer Science in July 2002, also is a member of UNC's Carolina Center for Genome Sciences. She was a research staff member at the IBM T. J. Watson Research Center from 1999 to 2002.

She specializes in the area of data mining, which focuses on finding patterns within vast data collections. She teaches graduate courses in data mining and bioinformatics and taught a new undergraduate class on bioalgorithms in fall 2005.

Wang's research involves developing algorithms to find structural patterns in protein databases, which may be used to classify and provide hypotheses for the functions of unknown proteins.

"Proteins are the building blocks of life," Wang said. "Understanding their function is essential to curing diseases, as well as understanding the many mysteries of life."

The fellowship allows her to pursue interdisciplinary collaborations with researchers in genetics, biochemistry and pharmacology, she said.

Wang has filed seven patents, and has published one monograph and more than 70 research papers in international journals and major peer-reviewed conference proceedings. She also recently received a National Science Foundation Faculty Early Career Development Award, which supports outstanding new teacher-scholars.

"We have much to learn and much to gain from today's talented young minds," said Rick Rashid, senior vice president of Microsoft Research in announcing the fellowship recipients. "Even early in their teaching careers, these award winners are pushing the boundaries of computer science research in exciting new directions," he said. "The intellectual curiosity, creative drive and thought leadership they demonstrate is exactly the sort of initiative we seek to encourage in developing programs like the New Faculty Fellowship Awards."

Associate Professor Wei Wang (second from left) is pictured with Microsoft Chairman Bill Gates and two other Microsoft New Faculty Fellows.

# News & Notes
*from Sitterson Hall*

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*Throughout News & Notes, we list degree information for all our B.S., M.S., and Ph.D. Computer Science and Math Sciences alumni.*

## An Unsung Heroine no longer!

Department Chairman Jan Prins presents Catherine Perry, accounting manager, with a scrapbook containing the letters from coworkers nominating her for the Robert R. Cornwell Unsung Hero Award. Catherine has worked for UNC for 29 years, with 27 of those in the Department of Computer Science.