News & Notes from Sitterson Hall

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

WINTER 2006-2007 • ISSUE THIRTY-SEVEN

In this issue

www.cs.unc.edu

Chairman's corner

Greetings from Sitterson Hall! Our building is now in its 20th year of service and has performed admirably in the face of heavy use and some recent excitement, and we are gearing up for its expansion.

Last spring space was tight with one of our largest graduate student populations ever. Rooms were reshuffled and repurposed over the summer as significant space was lost in preparation for the building expansion, but we still managed to host two large meetings in the building. This fall torrential rains and a storm drain damaged during construction preparations resulted in a major flood that rendered the bottom floor unusable for the remainder of the semester!

Despite the space crunch, we still graduated 15 Ph.D.'s in 2006 – the largest ever annual Ph.D. production in this department. Moreover, by the end of the year things were looking up, as our bottom floor was restored to better than new, including a welcome update to our large classrooms.

The building also hosted two large meetings last summer. The Workshop on Edge Computing Using New Commodity Architectures (EDGE), organized by Professors Ming Lin and Dinesh Manocha, was held in May with over 200 attendees from academia, industry, and government, including many alumni of the department. The Third International Symposium on 3D Data Processing, Visualization and Transmission (3DPVT) conference, organized in part by Associate Professor Marc Pollefeys, was attended by over 230 people and also brought back many familiar faces. Both conferences were a huge success, thanks to the excellent efforts of our staff, with many distinguished guests speaking at the conferences as well.

Speaking of distinguished, Dinesh Manocha was named the Phi Delta Theta/ Matthew Mason Distinguished Professor earlier this fall. The new professorship in the College of Arts and Sciences is the second endowed chair to be funded by a fraternity at UNC. Congratulations, Dinesh!

Finally, although construction on Sitterson South is scheduled to start late spring 2007 next semester, we are still looking for ways to deal with overruns arising out of escalating materials costs. Please consider showing your support by making a donation to the department. Remember that all donations count toward the University's Carolina First campaign.

Jan F. Prins

Welcomes and Farewells

NEW FACULTY APPOINTMENTS

Rob Fowler, adjunct professor (Director of High Performance Computing Research, Renaissance Computing Institute), Ph.D., Computer Science, University of Washington.

Chris Healey, adjunct associate professor (associate professor, Computer Science, NC State), Ph.D., Computer Graphics, University of British Columbia.

Hye-Chung (Monica) Kum (Ph.D. 2004), adjunct assistant professor (assistant professor, School of Social Work, UNC-Chapel Hill).

NEW STAFF APPOINTMENTS

Marko Bertogna, short-term research scholar visiting Jim Anderson and Sanjoy Baruah.

Kim Jones, assistant to faculty, who joined the department in September.

Wilson Pires Gaviao Neto, short-term research scholar visiting Associate Professor Marc Pollefeys.

Avneesh Sud (Ph.D. 2006), postdoctoral researcher working with Professor Dinesh Manocha.

THANKS AND FAREWELL TO…

Delphine Bull, assistant to the MIDAG group, who left in May to accept a position with the Program in Molecular Biology and Biotechnology at UNC-Chapel Hill.

Naga Govindaraju (Ph.D. 2004), research assistant professor, who accepted a position with Microsoft Corporation in Washington.

Merkourios Karaliopoulos, postdoctoral researcher working with Adjunct Assistant Professor Maria Papadopouli, who left in October.

Family matters

Steve and **Lyn Pizer** have a new grandson, born on 26 March 2006 in San Diego. His name is **Adrian Zihao Luo**, and he, his mother **Tonia**, father **Roger**, and sister **Carina** are all doing well. (*pizer@cs.unc.edu*)

Spencer Lorenzen was born in Chapel Hill on 16 April 2006 to **Peter Lorenzen** (Ph.D. 2006) and his wife, **Amy**. (*Peter.Lorenzen@ucsf.edu*)

Edwin Ralph Luebke was born on 13 May 2006 to **David Luebke** (Ph.D. 1998) and his wife, **Emily**. Edwin joins big brother **Owen**. (*dave@luebke.us*)

Chloe Rose Pausch was born on 15 May 2006 to **Jai Glasgow Pausch**, former outreach coordinator, and her husband, **Randy**. Chloe joins big brothers **Dylan** and **Logan**. (*jaipausch@mac.com*)

Aaron Block, graduate student, was married to **Nicolle Ginsberg** on 4 June 2006 in Chapel Hill. (*block@cs.unc.edu*)

Sebastián Daniel Aliaga Barreto was born on 7 June 2006 to **Daniel Aliaga** (Ph.D. 1999) and his wife, **Varinia Barreto**. (*aliaga@cs.purdue.edu*)

Julien Pollefeys was born on 7 June 2006 to **Marc Pollefeys**, associate professor, and his wife, **Monika**. (*marc@cs.unc.edu*)

Hannah Jean Seeger was born on 13 July 2006, to **Adam Seeger** (Ph.D. 2004) and his wife, **Sukyung**. (*seeger@cs.unc.edu*)

Ryan Azuma was born in August 2006 to **Ronald Azuma** (Ph.D. 1995) and his wife, **Sun Chang**. (*azuma@HRL.com*)

Adrian Dumitru Ilie, graduate student, was married to **Barbara Jane Brewer** on 30 September 2006 in Chapel Hill. (*adyilie@cs.unc.edu*)

Ishansh Kwatra was born on 7 October 2006 to **Vivek Kwatra**, postdoctoral researcher, and his wife, **Aditi**. (*kwatra@cs.unc.edu*)

FAREWELLS, continued…

Jane Stine, desktop systems manager, who left in November.

Karen Thigpen, undergraduate student services manager, who left in July.

David Tuft, research associate working with professors Ming Lin and Dinesh Manocha, who left in October.

Congratulations to…

FACULTY AND STAFF

Charlie Bauserman, who has been promoted into the Desktop Systems Manager position.

Katrina Coble, who was one of two recipients of the 2006 University Excellence in Management award.

Anselmo Lastra, who was promoted to full professor, effective 1 July 2006.

Dinesh Manocha, who was named Phi Delta Theta/Matthew Mason Distinguished Professor, effective 1 July 2006.

Catherine Perry, accounting manager, on 30 years of service to the state of North Carolina. Catherine assures us that she is not yet ready to retire.

Tim Quigg, associate chair for administration and finance, whose chapter titled, "Special Issues in Departmental Administration," was published in the book, *Research Administration and Management*, by Jones and Bartlett Publishers, Inc., (2006).

David Stotts, who was promoted to full professor, effective 1 July 2006.

Russell Taylor, who was promoted to Research Professor, effective 1 July 2006.

GRADUATE STUDENTS

Nathan Fisher, graduate student, and **Sanjoy Baruah**, professor, who won two best-paper awards at international conferences in spring 2006 – the first, for a paper titled, "The Partitioned Multiprocessor Scheduling of Non-preemptive Sporadic Task Systems," at the 14th International Conference on Real-Time and Network Systems held in Poitiers, France; and the second, for a paper titled, "The Feasibility Analysis of Multiprocessor Real-Time Systems," at the 18th Euromicro Conference on Real-Time Systems held in Dresden, Germany.

December 2005 M.S. Recipients

Ankur Agiwal, Christopher S. Ashworth, Andrew John Chen, Bradley Charles Davis, Ann Marie Fred, Nico Galoppo, Karl Anders Gyllstrom, Michael William Henson, Guodong Liu, Henry L. McEuen, Jeffrey L. Schoner, Stephen R. Titus, Sriram Thirthala Venkata.

May 2006 M.S. Recipients

Manoj Kumar Ampalam, Brian C. Begnoche, Brian Stewart Eastwood, Xifeng Fang, Qiong Han, Kevin M. Ivarsen, Sasa Junuzovic, Vincent Andre Noel, Michael Andrew Noland, Claire Marie O'Shea, Rahul Prasad, Cory W. Quammen, Morten Sommervoll, Joshua V. Stough, Benjamin Gustav Wilde, Tynia C. Yang, Stefan Cosmin Zota.

August 2006 M.S. Recipients

Patrick Jacob Quirk, Rohit R. Saboo, Christopher M. Vanderknyff.

May 2006 Ph.D. Recipients

Deepak Bandyopadhyay. *A Geometric Framework for Robust Neighbor Analysis of Protein Structure and Function.* Advisor: Jack Snoeyink.

Theodore W. Kim. *Physically-Based Simulation of Ice Formation.* Advisor: Ming Lin.

2006-2007 STUDENT FELLOWSHIPS AND SPECIAL AWARDS

Lavar Askew	Board of Governors Fellowship
Aaron Block	National Science Foundation Fellowship - Year 3 of 3
Bjoern Brandenburg	Fulbright Fellowship
David Feng	Graduate School Merit Assistantship
Russ Gayle	Department of Energy - Year 3 of 4
Stephen Guy	AGEP Minority Fellowship
Jerald Jason	LINK Foundation Fellowship
Brandon Lloyd	NVIDIA Fellowship
Dorian Miller	UNC Royster Dissertation Completion Fellowship
Rahul Narain	Graduate School Merit Assistantship
Avery Smith	Minority Presence Fellowship
Josh Steinhurst	Paul Hardin Dissertation Completion Fellowship
Theo Walker	BCB Fellowship in Bioinformatics
Jeremy Wendt	National Science Foundation Fellowship - Year 3 of 3
Kirstin Williams	National Science Foundation Fellowship - Year 1 of 3

Peter Jonathan Lorenzen. *Multi-Modal Image Registration and Atlas Formation.*
Advisor: Sarang C. Joshi.

Felix Hernández Campos. *Generation and Validation of Empirically-derived TCP Application Workloads.*
Advisor: Kevin Jeffay.

Kok-Lim Low. *View Planning for Range Acquisition of Indoor Environments.*
Advisor: Anselmo Lastra.

Ajith Arthur Mascarenhas. *Time-varying Reeb Graphs: A Topological Framework Supporting the Analysis of Continuous Time-varying Data.*
Advisor: Jack Snoeyink.

Olufisayo Ayodele Omojokun. *Interacting with Networked Devices.*
Advisor: Prasun Dewan.

August 2006 Recipient

Sang-Uok Kum. *Encoding of Multiple Depth Streams.*
Advisor: Ketan Mayer-Patel.

December 2006 Recipients

Devi, Umamaheswari C. *Soft Real-Time Scheduling on Multiprocessors.*
Advisor: James Anderson

Huan, Jun (Luke). *Graph-based Pattern Discovery in Protein Structures.* Advisors: Jan Prins and Wei Wang

Leaver-Fay, Andrew Philip. *Capturing Atomic Interactions with a Graphical Framework in Computational Protein Design.* Advisor: Jack Snoeyink.

Liu, Jinze. *New Clustering Approaches for Mining Salient Patterns in High Dimensional Data.* Advisor: Wei Wang.

Sud, Avneesh. *Efficient Computation of Discrete Voronoi Diagram and Homotopy-Preserving Simplified Medial Axis of 3D Polyhedron.* Advisor: Dinesh Manocha

Terriberry, Timothy B. *Continuous Medial Models in Two-Sample Statistics of Shape.* Advisor: Guido Gerig.

Weigle, Christopher Charles. *Displays for Exploration and Comparison of Nested or Intersecting Surfaces.* Advisor: Russell Taylor.

UNDERGRADUATE STUDENTS

December 2005

Donald Brett Clippingdale, John Ryan Crouch, Lisa Lang Fowler, Mahmood Ali Qureshi, Tadeu A. Sakoda, Michael Thomas Thorp, Jaime Xavier Vega, Benjamin Allen Wagner.

May 2006

Thomas Leigh Bien III, Alexander S. Borst, Matthew Nolan Caudill, John Russell Corn, John Thompson Eberline III, Daniel C. Evans, Grant Douglas Gill, Jeffrey Wayne Gula, Patrick M. Hanna**, Derick Allen Hitchcock, David A. Kratz, Kathleen Lu*, Alan L. Norton, G. Ryland Nuckols*, Dale E. Smith, Kellen D. Smith, Jason M. Wain, Turner D. Walters, Christopher R. Westbrook, Jason T. Yanchuleff, Christopher Richard Young.

August 2006

Daniel Watson.

*With Honors **With Highest Honors

Grants and Patents

NEW GRANTS

James Anderson (PI) and Sanjoy K. Baruah (Co-PI). CSR--EHS: Real-Time Computing on Multicore Platforms. National Science Foundation..

James Anderson (PI) and Sanjoy K. Baruah (Co-PI). Real-Time Computing on Multicore Platforms. US Army Research Office.

Leonard McMillan (PI) and Wei Wang (Co-PI). Collaborative Systems: Visualizing and Exploring High-dimensional Data. National Science Foundation.

Ming Lin (PI) and Dinesh Manocha (Co-PI). Multiresolution Algorithms for Processing Giga-Models: Real-time Visualization. US Army Research Office.

Jack Snoeyink (PI). MolProbity Service and Related 3D-Analysis Resources. Duke University Medical Center.

Dinesh Manocha (PI). High Performance Clusters for Modeling and Simulation. US Army Research Office.

Leonard McMillan (PI) and Ketan Mayer-Patel (Co-PI). Tera-Pixels - Next Generation Display Architectures. National Science Foundation.

Henry Fuchs (PI), Marc Pollefeys (Co-PI) and Greg Welch (Co-PI). Transportable Computing Clusters for Real World Acquisition, Display, and Immersive Training.
Office of Naval Research.

Dinesh Manocha (PI) and Ming Lin (Co-PI). Conference Support for Edge Computing Workshop.
National Science Foundation.

NEW PATENTS

U.S. 6,930,681, "System and Method for Registering Multiple Images with Three-Dimensional Objects," Greg Welch, Ramesh Raskar, and Kok-Lim Low.

U.S. 7,068,274, "System and Method for Animating Real Objects With Projected Images," Greg Welch, Kok-Lim Low, and Ramesh Raskar.

U.S. 7,119,645, "Methods and Systems for Controlling Motion of and Tracking a Mechanically Unattached Probe." Leandra Vicci and Richard Superfine.

ALUMNI FELLOWSHIP RECIPIENT

David Borland (M.S. 2003) was the recipient of the Fall 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.

David is pursuing a dissertation under his advisor Russell M. Taylor, collaborating with Dr. John P. Clarke from UNC Radiology. His research involves producing 3D renderings of medical images to aid in diagnosis. 3D viewing is more natural and intuitive than viewing the hundreds of 2D slices generated by MRI and CT scanners. However, occluding objects can make optimal views impossible using standard 3D volume rendering. David's research is aimed at automatically removing occluding material in the volume without performing segmentation, enabling views that are more useful for radiologists performing diagnosis. His approach is being applied to virtual arthroscopy of joints from MRI data, virtual ureteroscopy from CT data, and knee-fracture visualization from CT data.

4 Recent publications

Anderson, J. and J. Calandrino. "Parallel Real-Time Task Scheduling on Multicore Platforms," *Proc. of the 27th IEEE Real-Time Systems Symposium*, Dec 2006.

Anderson, J., J. Calandrino, and U. Devi. "Real-Time Scheduling on Multicore Platforms," *Proc. of the 12th IEEE Real-Time and Embedded Technology and Applications Symposium*, 179-190, April 2006.

Block, A. and J. Anderson. "Accuracy versus Migration Overhead in Multiprocessor Reweighting Algorithms," *Proc. of the 12th International Conference on Parallel and Distributed Systems*, 355-364, July 2006.

Block, A., J. Anderson and G. Bishop, "Fine-Grained Task Reweighting on Multiprocessors," *Journal of Embedded Computing*, special issue on multiprocessor real-time scheduling, to appear.

Block, A., J. Anderson and U. Devi. "Task Reweighting under Global Scheduling on Multiprocessors," *Proc. of the 18th Euromicro Conference on Real-Time Systems*, 128-138, July 2006.

Calandrino, J. and J. Anderson. "Quantum Support for Multiprocessor Pfair Scheduling in Linux," *Proc. of the Second International Workshop on Operating Systems Platforms for Embedded Real-Time Applications*, 36-41, July 2006.

Calandrino, J., H. Leontyev, A. Block, U. Devi and J. Anderson. "LITMUSRT: A Testbed for Empirically Comparing Real-Time Multiprocessor Schedulers," *Proc. of the 27th IEEE Real-Time Systems Symposium*, Dec 2006, to appear.

Devi, U., and J. Anderson. "Flexible Tardiness Bounds for Sporadic Real-Time Task Systems on Multiprocessors," *Proc. of the 20th IEEE International Parallel and Distributed Processing Symposium*, April 2006 (on CD ROM).

Devi, U., H. Leontyev and J. Anderson. "Efficient Synchronization under Global EDF Scheduling on Multiprocessors," *Proc. of the 18th Euromicro Conference on Real-Time Systems*, 75-84, July 2006.

Fielding, J.R., D. Borland, K.H. Lee, J.P. Clarke, E. Wallen, R. Pruthi, R.M. Taylor. "Virtual pyeloscopy using volumetric depth peeling." *Academic Radiology*, 13(6):759-763.

Holman, P. and J. Anderson. "Locking under Pfair Scheduling," *ACM Transactions on Computer Systems*, 24(2):140-174, May 2006.

Kim, Y.-J. and J. Anderson. "Adaptive Mutual Exclusion with Local Spinning," *Distributed Computing*, to appear.

Kim, Y.-J. and J. Anderson. "Nonatomic Mutual Exclusion with Local Spinning," *Distributed Computing*, to appear.

Miller, J., C. W. Quammen and M. C. Fleenor, M.C. "Interactive Visualization of Intercluster Galaxy Structures in the Horologium-Reticulum Supercluster," *IEEE Transactions on Visualization and Computer Graphics* (Proc. Visualization / Information Visualization 2006), 12(5):1149-1156, Sept/Oct 2006.

Nister, D., M. Pollefeys, A. Akbarzadeh, J.-M. Frahm, P. Mordohai, R. Yang, B. Clipp, C. Engels, D. Gallup, P. Merrell, M. Phelps, S. Sinha, B. Talton, L. Wang, Q.-X. Yang, H. Stewenius, G. Welch, and H. Towles. "Towards Urban 3D Reconstruction From Video," *Proc. of the Third International Symposium on 3D Data Processing, Visualization and Transmission* (3DPVT 2006), Chapel Hill, NC, June 2006.

Qi, W., C. Healey, M. Whitton, and R. Taylor. "A comparison of user performance in an immersive HMD, a fish tank VR, and a fish tank with haptic displays for visualization of volumetric data," *Proc. of Applied Perception in Graphics and Visualization 2006*. (8 pages).

Srinivasan, A. and J. Anderson. "Optimal Rate-based Scheduling on Multiprocessors," *Journal of Computer and System Sciences*, 72(6):1094-1117, September 2006.

Welch, G., H. Yang, A. State, V. Noel, A. Ilie, R. Yang, M. Pollefeys and H. Fuchs. "GPU-Based View Synthesis Using an Orbital Reconstruction Frustum," *Proc. of the 2006 Workshop on Edge Computing Using New Commodity Architectures* (EDGE 2006), May 23-24 (Chapel Hill, NC, USA).

Yang, H., and G. Welch. Illumination Insensitive Model-Based 3D Object Tracking and Texture Refinement. *Proc. of the Third International Symposium on 3D Data Processing, Visualization and Transmission* (3DPVT 2006), The University of North Carolina at Chapel Hill, Chapel Hill, NC USA, June 14-16, 2006.

Yang, R., L. Wang, G. Welch and M. Pollefeys. "Stereovision on GPU," *Proc. of the 2006 Workshop on Edge Computing Using New Commodity Architectures* (EDGE 2006), May 23-24 (Chapel Hill, NC, USA).

The Real-Time Systems Team poses for a picture in Dresden, Germany, where they were attending the 18th Euromicro Conference on Real-Time Systems. Pictured clockwise from far left are: Nathan Fisher, Jim Anderson, Bjoern Brandenburg, John Calandrino, Sanjoy Baruah, Aaron Block and Hennadiy Leontyev.

UrbanScape

Led by Associate Professor **Marc Pollefeys**, UrbanScape is a three year program funded by the Defense Advanced Research Projects Agency (DARPA) that is aimed at the 3D reconstruction of buildings and landscapes using a camera-equipped vehicle. The University of Kentucky, Science Applications International Corporation (SAIC), and UrbanScan Inc. are partnering with UNC-Chapel Hill on this project.

The team poses in front of the camera-equipped truck before beginning the scan of the UNC campus. Front row: Jan-Michael Frahm, Paul Merrell, Marc Pollefeys, Brian Clipp. Back row: Brad Talton, David Gallup, Herman Towles.

The research at UNC and Kentucky focuses on the computer vision aspect of the program. There are eight video-cameras mounted on the vehicle, four on each side, which capture videos at 30 frames per second. **Herman Towles**, senior research associate, with assistance from undergraduate students **Brad Talton** and **Christina Salmi**, has been working on the development of the acquisition software that ensures that no data are lost and everything is stored in the right place. A few hours of recording can produce several terabytes of data.

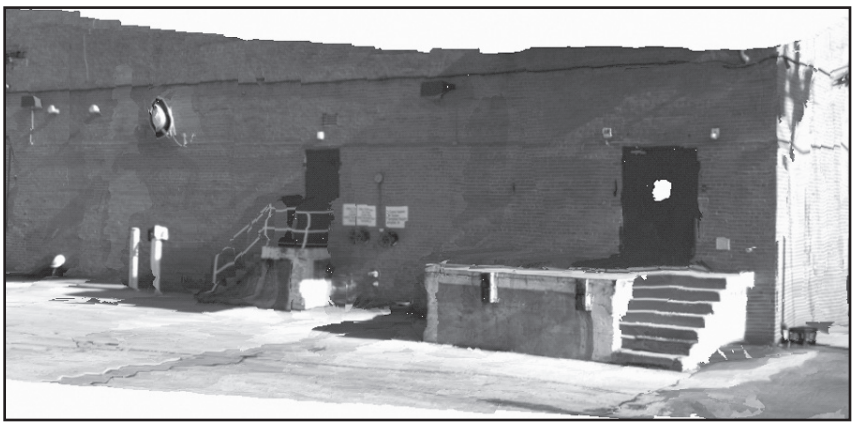
Processing begins by estimating the position and orientation of the vehicle at the time each frame was taken. Pollefeys, along with **Greg Welch**, research associate professor, **Jan-Michael Frahm**, postdoctoral research associate, and graduate students **Brian Clipp** and **Sudipta Sinha**, combine image measurements with GPS signals and information from inertia sensors to estimate accurately where each image was taken.

Given the camera poses, 3D textured models are then made from the videos. Pollefeys, Frahm, Postdoctoral Research Associate **Philippos Mordohai**, and graduate students **David Gallup** and **Paul Merrell** have developed very fast reconstruction algorithms to generate the models in the pictures. The software can perform all processing steps and reconstruct the scene at a few frames per second. This rate is a lot faster than typical video-based reconstruction.

In July 2006, the team drove around Chapel Hill and collected 3 hours of video, or 2.5 million frames that take 3 terabytes of storage. The goal of the project is a detailed 3D model of most of the UNC campus and downtown Chapel Hill. This is the first time a 3D model of an urban area of this size will have been captured at such a level of detail and realism, and the results should attract much attention. Our 3D models will allow on-line exploration of the campus through virtual 3D exploration tools, the most popular of which is currently GoogleEarth, which provides the ability to visualize 3D computer graphic models. Today, GoogleEarth's database is largely limited to aerial images and simple untextured buildings, but our project will create models with ground-level realism. We plan to provide our 3D models to the community once our reconstruction process delivers high-quality visual 3D models. We expected to release our 3D models of campus within a year.

More information about the project and more pictures can be found at *http://www.cs.unc.edu/Research/urbanscape/*

An example of the kind of image that can be produced from the captured data is below.



M.S. AND PH.D. ALUMNI

Ronald Azuma (Ph.D. 1995) recently published the following paper:

Azuma, R., H. Neely III, M. Daily, J. Leonard. Performance Analysis of an Outdoor Augmented Reality Tracking System that Relies Upon a Few Mobile Beacons. *Proc. IEEE/ ACM International Symposium on Mixed and Augmented Reality* (ISMAR 2006) (Santa Barbara, CA, 22-25 Oct. 2006) *azuma@HRL.com*

William (Bill) Baxter (Ph.D. 2004) is still living in Tokyo with his wife and son, William IV, who recently turned two. Bill recently published the following paper: Baxter, WV, and K. Anjyo. "Latent Doodle Space," *Computer Graphics Forum*, (Eurographics 2006, September 4-8, 2006). 25(3): 477-485, 2006. *wbaxter@gmail.com*

For the past five years, **Ken Bell** (M.S. 1972) has been working for Orbital Sciences Corporation in Dulles, Va., where he is responsible for corporate IT services. The company manufactures orbital and suborbital launch vehicles and communication and science satellites. *Bell.Ken@orbital.com*

Steven M. Bellovin (Ph.D. 1982) will be presented with the 2007 National Computer Systems Security Award by the National Institute of Standards and Technology (NIST) and the National Security Agency (NSA) in a ceremony during the 22nd Annual Computer Security Applications Conference (ACSAC) in Miami Beach, Fla., on December 11-15, 2006. The prestigious honor, first awarded in 1988, recognizes individuals for scientific or technological breakthroughs, outstanding leadership, highly distinguished authorship or significant long-term contributions in the computer security field. Also, in May 2006, Bellovin was interviewed by Robert Siegel on National Public Radio's *All Things Considered* about the National Security Agency's efforts to analyze the phone call databases turned over to the agency by phone companies. *smb@cs.columbia.edu*

Kathryn Britton (M.S. 1977) was a member of the first class of the Master of Applied Positive Psychology degree program at the University of Pennsylvania and has just graduated. She is focusing on ways to use positive psychology with groups and individuals. She still works part-time at IBM on ways to increase employee engagement and satisfaction. She has also starting a professional coaching business, Theano Coaching, to help clients work on increasing personal well-being, flow, and meaning in their lives. She specializes in coaching technical people who are wondering whether they are doing what they really want to do with their lives. *britton.kathryn@gmail.com.*

Randy Brown (M.S. 1990) presented the paper, "Gaming Technology Applied to Space Suit Design and Mission Prototyping," at the Simulation Interoperability Workshop Fall 2006 conference in Orlando, Fla., in September 2006. He is also presenting a talk entitled "Biofeedback for Therapy and Training," at the Games for Health 2006 conference in Baltimore, Md., at the end of September 2006, and is presenting a 45-minute lecture titled, "Applying Biometrics to Assess Training In-Game and During AARs," at the Serious Games Summit conference in Washington, DC at the end of October 2006. He also recently got engaged during a vacation to France in July, in the gardens of Versailles. *Randy.Brown@virtualheroes.com*

Dr. Michael V. Capps (B.S. 1994, M.S. 1996) is still working as President of Epic Games in Cary, N.C. He was recently elected to the Board of Directors of the International Game Developers Association, and is serving as its Treasurer. He also reports that Epic's game *Gears of War* won dozens of best of show awards at the annual E3 tradeshow, and was released in November 2006 on the Xbox 360. *Mike.Capps@epicgames.com*

Ritu Chadha (Ph.D. 1991) recently published the following papers: Chadha, R., Y-H. Cheng, J. Chiang, G. Levin, S-W. Li, A. Poylisher, L. LaVergne, and S. Newman. "Scalable Policy Management for Ad Hoc Networks," *Proc. 24th IEEE Military Communications Conference* (MILCOM 2005),Atlantic City, October 2005.

Chiang, C-Y. J., R. Chadha, Y-H. Cheng, G. Levin, S. Li, and A. Poylisher. "A Novel Software Agent Framework with Embedded Policy Control," *Proc. 24th IEEE Military Communications Conference* (MILCOM 2005), Atlantic City, October 2005.

Chiang, C-Y., R. Chadha, G. Levin, S. Li, Y-H. Cheng, and A. Poylisher. "AMS: An Adaptive Middleware System for Ad Hoc Networks," *Proc. 24th IEEE Military Communications Conference* (MILCOM 2005), Atlantic City, October 2005.

Kant, L., S. Demers, P. Gopalakrishnan, R. Chadha, L. LaVergne, and S. Newman. "Performance Modeling and Analysis of a Mobile Ad Hoc Network Management System," *Proc. 24th IEEE Military Communications Conference* (MILCOM 2005), Atlantic City, October 2005.
chadha@research.telcordia.com

Joel Dunn (M.S. 1995) was named Director of IT and Data Center Services for MCNC in Research Triangle Park in March 2006. *jdunn@mcnc.org*

Gopal Gupta (Ph.D. 1992) has assumed the position of Associate Department Head of Computer Science at the University of Texas at Dallas. The CS department at UT Dallas is a rapidly growing department and currently has 54 faculty members. Gopal continues to work in the area of computational logic and programming languages. A paper that he co-authored with his students recently received the best paper award at the European Conference on Web Services. His recent publications include:

Simon, L., A. Mallya, A. Bansal, and G. Gupta. "Coinductive Logic Programming," in Proc. International Conference on Logic Programming. 2006. pp. 330-345. Springer Verlag, *Lecture Notes in Computer Science* 4079.

Bansal, A., S. Kona, L. Simon, A. Mallya, G. Gupta, and T. Hite. "A Universal Service-Semantics Description Language," *Proc. European Conference on Web Services.* 2005. IEEE. pp. 1-15.

Wang, Q., G. Gupta, and M. Leuschel. "Towards Provably Correct Code Generation via Horn Logical Continuation Semantics," *Proc. International Conference on Practical Aspects of Declarative Languages* 2005. Springer Verlag. LNCS 3350. pp. 98-112. 2005.

Guo, H-F., B. Jayaraman, G. Gupta, and M. Liu. "Optimization with Mode-Directed Preferences," in *ACM Conference on Principles and Practice of Declarative Programming.* 2005. ACM Press. pp. 242-251.

gupta@utdallas.edu

Kenny Hoff (M.S. 2001) is working on Playstation 3 graphics at Sony R&D in Foster City, Calif. *kehoff@gmail.com*

John Keyser (Ph.D. 2000) was recently promoted to Associate Professor with tenure at the Department of Computer Science at Texas A&M University. *keyser@cs.tamu.edu*

Benjamin Lok (Ph.D. 2002) received a 2006 NSF Career Award, titled "Studying Diversity Issues with Immersive Virtual Humans." *lok@cise.ufl.edu*

Peter Lorenzen (Ph.D. 2006) is working as a postdoctoral researcher at the Center for Imaging of Neurodegenerative Disease at the San Francisco Veterans Medical Center. *Peter.Lorenzen@ucsf.edu*

After 8 years at the University of Virginia, **David Luebke** (Ph. D. 1998) has left academia to help form a research group at NVIDIA Corporation. He says they are on the lookout for brilliant interns and full-time researchers! He and his family have moved out to San Jose for a year while the research group bootstraps, and they plan to return to the east coast afterwards. *dave@luebke.us*

William (Bill) Mark (Ph.D. 1999) has been named assistant professor at the University of Texas at Austin. He was also awarded an NSF CAREER award, titled "A systems approach to real-time graphics on single-chip highly-programmable hardware," in February 2006. *billmark@billmark.com*

Vince Noel (M.S. 2006) works for Google in New York City.

Michael Noland (M.S. 2006) works for Emergent Game Technologies in Chapel Hill.

Jim Palistrant (M.S. 1988) co-authored the book Visual Modeling with IBM® Rational® Software Architect and UML™, published by IBM Press. (ISBN-10: 0-321-23808-7; ISBN-13: 978-0-321-23808-5)

Chris Schleter (M.S. 1981) finished with the 2006 Winter Olympic Games in Torino, Italy, in April 2006 and has moved to St. George, Utah, where he is currently playing a lot of golf and just enjoying the views! Chris will be going to Beijing several times in the next couple of years to prepare the baseball and softball result systems for the 2008 Summer Olympics, and then will be moving to Vancouver, BC, in September, 2007, to be the Onsite Project Manager for Swiss Timing for the 2010 Winter Olympics. He will return to Utah in 2010 and says he doesn't know for sure what will happen then. *sprtstat@ix.netcom.com*

Yen-Ping Shan (Ph.D. 1990), who moved to Ohio in January 2006, is currently the CIO and SVP of Engineering & Development at Reynolds & Reynolds and Chairman of Reynolds China. He reports that the company recently sold for $2.8B and is representing a 50% share price increase from a year ago when he joined the company. *ypshan@bizwoh.rr.com*

Joshua Steinhurst (Ph.D. 2006) is a visiting instructor of computer science for this academic year at St. Mary's College of Maryland. *jsteinhu@cs.unc.edu*

Ray Van Dyke (M.S. 1989) coordinated and lead a delegation to China to speak with officials and companies about intellectual property enforcement. He continues as DC Chapter Chair of the Licensing Executives Society, and has spoken at various conferences over the last year on intellectual property, trade and nanotechnology issues. He was recently interviewed on CNBC on the Blackberry controversy (about which he wrote a song available on the Internet), and is speaking at an Intellectual Property Summit in Malaysia later this year. He continues teaching technology law in the Engineering Department of Southern Methodist University, and taught international trade law at American University. *vandyke@acm.org*

Amitabh Varshney (Ph.D. 1994) was promoted to full professor in the Department of Computer Science at the University of Maryland, College Park. *varshney@cs.umd.edu*

UNDERGRADUATE ALUMNI

Aaron R. Fulkerson (B.S. 2004) co-founded MindTouch, Inc., with his business partner, Steve Bjorg, in 2004, based on an idea they began developing while Fulkerson was still attending UNC. MindTouch, Inc., a vendor of business wiki solutions for small and medium businesses, large enterprises and Web communities, has been featured in many local and regional publications, including the NY Times, Wall Street Journal, Information Week and C|Net. In September the company launched their flagship product, the DekiBox, at DemoFall 2006 in San Diego, Calif. *aaronf@MindTouch.com*

Phil Herold (B.S.M.Sci. 1981) has recently gone full-time with a software company that he co-founded in early 2005. The company is called PocketScience (*www.pocketscience.biz*), and is located in RTP. His title is Vice President and Chief Technology Officer, which he says simply means that he can give himself pretty much any title he wants. He says that PocketScience will soon be releasing a one-of-a-kind reference application for desktop and PDAs dealing with the diagnosis and treatment of osteopathic dysfunctions. Longer term, the company is working on a state of the art electronic medical records system targeted at individual, group and hospital-based clinics. Phil also reports that he recently completed the Council for Entrepreneurial Development (CED) FastTrac class, and that he had four articles published in Java Developer's Journal in 2005 concerning Java desktop application development: *(java.sys-con.com/author/herold.htm) phil.herold@pocketscience.biz*

Courtney McCarthy (B.S.M.Sci. 2002) is a Senior Certified Consultant with IBM's Strategy and Architecture group. In April 2006, she authored a whitepaper titled, "Demand-driven IT service management through enterprise resource planning for IT," which can be found on the IBM website (*www-1.ibm.com/services/us/index.wss/whitepaper/imc/a1024180?cntxt=a1000449*). In other news, Courtney is engaged to John Ramey, and will marry him in Chapel Hill on New Year's Eve. *courtneym77@hotmail.com*

Michael W. Trinh (B.S. 2002) is an attorney working as an associate at Orrick, Herrington & Sutcliffe LLP in Menlo Park, Calif. He specializes in software intellectual property litigation. Mike also represents persons detained in Guantanamo Bay Naval Base, Cuba, and has written several amicus briefs on constitutional law issues before the U.S. Supreme Court. *mtrinh@orrick.com*

Jaime Vega (B.S. 2005) works as a software engineer at Transoft International, Inc., in Cary, N.C. *xavier.vega@transoftinc.com*

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.

The sculpture pictured on the right, which hangs above the entrance to the Institute for Computing, Information and Cognitive Systems/Computing Science at the University of British Columbia, was designed and built by Professor **Jack Snoeyink**, who was a member of the UBC Department of Computer Science from 1991-1999, prior to joining the faculty at UNC-Chapel Hill. The sculpture represents his research result on the number of distinct motions needed to assemble collections of simple geometric objects. The sculpture is made from 30 identical aluminum tubes, grouped and colored as five twisted tetrahedra. It has the symmetries of a dodecahedron – from different views you can see two-fold, three-fold, and five-fold symmetries.

Left: **Tim Quigg**, associate chair of administration and finance, visited UBC and Jack's sculpture in July 2006. Jack will be designing and building a new sculpture for the Sitterson lobby at some point in the future. (pictures taken by Lawrie Robertson, University of Washington)