News & Notes

Spring 2012 ◆ Issue Forty-nine

CompSci @ Carolina

Dear Friends,

The spring semester is quickly drawing to a close here in Chapel Hill, and it has been a busy one. This semester we held our first annual department awards luncheon, where we recognized faculty and staff who have received recent honors. We also presented the first Computer Science Staff Excellence Award which went to and was named for Catherine Perry. The award was created to recognize computer science staff who display excellence in their job, and carries with it a $1,000 award and recognition on a plaque that hangs in the Sitterson lobby. Catherine retired at the end of February after more than 36 years of state service, 35 of which were in our department. You can see pictures from the awards luncheon and Catherine's retirement celebration on pages 6 and 7.

Some of the faculty recognized at this year's luncheon were recently named IEEE Fellows. Congratulations to Jim Anderson, Ming Lin, Dinesh Manocha, Marc Pollefeys and John Poulton. Ming was also named a 2012 ACM Fellow.

We were host to two conferences this academic year - LANMAN 2011 in October and MMSys 2012 in February - bringing a large number of visitors from all over the world to the department. We will be hosting two more conferences in 2012. The Symposium on Computational Geometry will be held in Chapel Hill in June of this year, and the Real-Time Linux Workshop this coming October. Maybe we'll get to see some of you as a result!

Anselmo Lastra

FROM PROTEIN FOLDING TO EFFICIENT ALGORITHMS

Professor Jack Snoeyink and his students are applying their knowledge of computational geometry to help solve real world problems. Computational geometry is a branch of computer science that studies geometric algorithms and their applications. It may sound abstract, but computational geometry forms a fundamental basis for many other areas of computing, including graphics, robotics, gaming, and computer-aided design.

Some of the Computational Geometry Group's research is based on collaborations with scientists in other fields, such as biology and biochemistry. The central dogma of biology is that the sequences of DNA in genes code for the sequence of amino acids in proteins, which in turn fold into three dimensional structures that perform many of the functions of living organisms – from transporting and converting oxygen and energy in the blood and in muscle fibers, to the structure of hair and cell membranes. Molecules are in constant motion, so there isn't a single "structure," but, instead, probabilities of finding electrons in certain places or of finding certain lengths and angles for bonds between atoms.

In his work on the structure of protein molecules, Snoeyink's graduate student advisee Matthew O'Meara studies geometric properties of inter-atomic bonds as observed from native molecular structures, and

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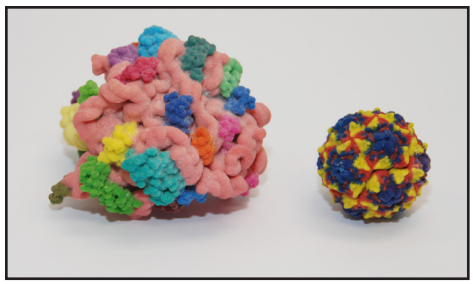
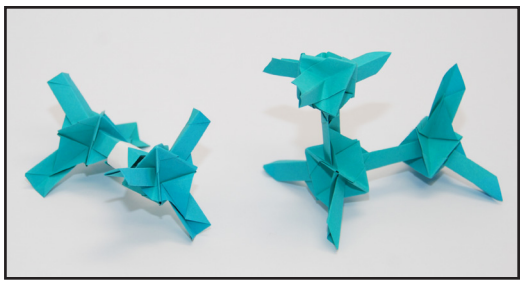
Protein Folding, continued from page 1

uses these observations to help build energy functions to solve the structure prediction problem. O'Meara's tools let him visualize the distributions of parameters, including bond lengths and angles, from experimentally determined "native" structures and from predicted "decoy" structures, and tune the energy functions used to make the predictions so that the distributions become closer together.



Models of the ribosome (a protein construction factory) and a virus capsid from 3-D printing by A. Olson, Scripps.



Origami models of carbon atoms from a module by Y. Momotani.

O'Meara has taken a leadership role in the Rosetta Commons, a consortium of 23 research labs around the world, headquartered at the University of Washington Seattle. Recently, Rosetta has been used to computationally design a protein that manipulates the motion of cells with light (Wu, Nature 2009) and design a protein that binds a common region of variants of the flu Hemagglutinin molecule (Fleishman, Science 2011). It also is the engine of the popular Fold.It protein folding game (Cooper, Nature 2010).

The focus of O'Meara's thesis research is tuning the computational model for hydrogen bonding in Rosetta. To do this, he is using a survey of 8000 experimentally validated protein structures assembled by collaborators in the Richardson Lab at Duke University. He has developed a framework to test how well the geometric features of Rosetta predictions match the geometric features in the experimental structures. He then optimizes the hydrogen bond parameters to increase the overall likelihood that Rosetta predictions match the experimental structures.

Other research being done by the Computational Geometry Group is helping to advance the field of computer science itself. Dave Millman, another of Snoeyink's graduate student advisees, is exploring a new approach to design efficient algorithms for geometric problems that are guaranteed to give correct answers. Suppose that you want a map of the nearest fire station to every house in an area. In middle school geometry, you might construct a perpendicular bisector between two stations -- houses on one side are closer to one station, and houses on the other side are closer to the other station. In a computer, house positions are stored as coordinates, and the computer does numerical calculations to perform this geometric test. The computer, by default, approximates the numbers with a fixed number of digits, and so can get geometric tests slightly wrong – e.g. some house that is almost equidistant from two stations may be assigned to the wrong one. Not a major problem for this house, but a small numerical error may compound to large errors if the algorithm is founded on geometrical properties like, "the region closest to fire station A is connected and convex," that can cause this to be the only house assigned to station A, leaving all houses that are in fact closest to A with no assigned fire station.

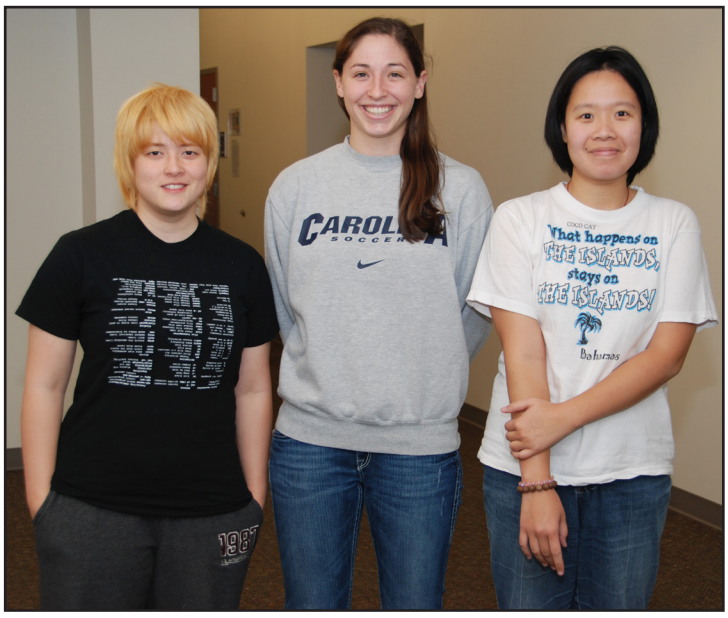
Computer Scientists traditionally develop programs for a model of a computer that can run for an arbitrarily long time, storing arbitrarily many data items in memory that has arbitrarily many bits of precision per location. Algorithm designers seek to minimize use of time and memory space, while hardware designers seek to expand those two resources. Precision, however, is often ignored by algorithm designers, even though it is rarely increased by hardware designers. Millman's research seeks algorithms that minimize precision, as well as time and space.

One of the recurring themes in Snoeyink's research is clearly stating the problem that you are solving, and clearly demonstrating that you have solved it as stated. This is an important skill for computer scientists at all levels, even though it is emphasized most in mathematical courses. When some of the undergraduate students choosing to pursue the new Bachelor of Arts in computer science told Snoeyink that they were trying to avoid the additional math required by the Bachelor of Science, he volunteered to teach "Discrete Structures," as a more CS-oriented version of MATH 381, "Discrete Mathematics." Both are about "proof" but where MATH 381 focuses on number theory, in "Discrete Structures" Snoeyink draws on material he developed in teaching to as many as 180 at the University of British Columbia how logical thinking and proof appears in computer science from automata to video games.

UNDERGRADS CONTRIBUTE TO NETWORKING RESEARCH by Erin Kelley (UNC JOMC '13)

Three enterprising female undergraduate students in the UNC Department of Computer Science are doing research on networking and Internet traffic measurement funded by a Collaborative Research Experience for Undergraduates (CREU) grant for the 2011-2012 academic year. The grant, sponsored by the National Science Foundation (NSF), was awarded by the Computing Research Association's Committee on the Status of Women in Computing Research (CRA-W), a non-profit organization that focuses on providing women with collaborative undergraduate research opportunities they might not otherwise have had in the fields of computer science and engineering.

The project, titled "Analyzing the Role of Measurement and Modeling of Internet Traffic in Network Experimentation," focuses on network characterization and modeling. Wai Yau, Stephanie Zolayvar and Rebecca Crabb, all members of the class of 2012, began their research in the fall 2011 semester by understanding the field of networking and reading published research papers before deciding on their individual projects. Yau, from Charlotte, N.C., is focusing on traffic analysis and analyzing variability in Transmission Control Protocol (TCP) round-trip time. She examines the TCP traces and obtains key information about the connection between each pair of exchanges. Zolayvar, from Burlington, N.C., is conducting a statistical analysis of TCP traces while attempting to identify characteristics of modern web tracking and how new innovations affect network traffic. Finally, Crabb, from Omaha, Neb., concentrates on adding a component to the existing system. She is modeling User Datagram Protocol (UDP) traffic generation that can be used for future research in this area.



From left to right: Stephanie Zolayvar, Rebecca Crabb, and Wai Yau

The general goal of the research is to measure and analyze traffic and create tools to generate traffic. This type of networking research can help improve anything from using secure HTTP to web browsing to large file downloading. Although their work is self-admittedly not the most glamorous, their findings will create more credible results for future projects because researchers will be able to use a model for the simulation of a network. One of the group's faculty advisors, Jay Aikat (Ph.D. 2010), says the team members were chosen because of their backgrounds in networking and proven performance in the classroom and research projects with other faculty. In fact, as part of their research on the topic, the team will reproduce a project on which Aikat collaborated, titled "Variability in TCP round-trip times." This will allow them to study how network traffic has changed between 2004, 2008 and 2012.

The primary faculty advisor for the project, Kevin Jeffay, mentioned the team members were all previous students of his and chosen because they were bright, motivated and ready for an out of the box project. He said he also knew they all wanted to graduate with honors. Each of the students will be submitting her own paper for her Honors Thesis and presenting at the department's Undergraduate Research Symposium in late April. As part of this project, each of the students will also receive funding to attend the 2012 Grace Hopper Women in Computing Conference later this year.

As for their plans after graduation, Crabb has landed a job with Google in California, where she will be an associate product manager. Zolayvar is also going to Google, as a software engineer, but would like to start her own company one day. Yau is still looking for her perfect job, but eventually would like to work in software development for IBM.

In the meantime, these undergraduates are all doing graduate-level work while Jeffay and Aikat provide support as needed and emphasize the importance and relevance of their findings in the grand scheme of networking research.

ALUMNUS TO SPEAK AT UNC DOCTORAL HOODING CEREMONY

Alumnus Marc Levoy (Ph.D. 1989) will be the keynote speaker at the 2012 UNC Doctoral Hooding Ceremony, to be held at 10 a.m. on Saturday, May 12, in the Dean E. Smith Center.

Levoy is the VMware Founders professor of computer science at Stanford University, with a joint appointment in Stanford's electrical engineering department and his career achievements include developing the cartoon animation system used in "The Flintstones" TV show and launching Google's Street View project. He is also known for helping create the field of computational photography.

He is currently on a two-year, part-time leave of absence to work on another project for Google.

Levoy received bachelor's and master's degrees in architecture from Cornell University. His master's thesis focused on computer-assisted cartoon animation – research he applied later as senior scientist and director of Hanna-Barbera Productions' computer animation department.

He began his doctoral studies in the UNC Department of Computer Science in 1984, focusing on a computer graphics technique called volume rendering. The technique provides 3D depth when displaying computed tomography and magnetic resonance imaging data. After receiving his Ph.D., Levoy spent a year as a research assistant professor in the department before joining the Stanford faculty in 1990.

In his first decade at Stanford, Levoy researched topics including 3D laser scanning. He and his students traveled to Italy to digitally scan the statues of Michelangelo as a part of a yearlong Digital Michelangelo Project.

Levoy's more recent research achievements have included co-designing the Google book scanner and launching Google's Street View project. Levoy's current interests include light fields, optical microscopy and the emerging field of computational photography.

BRANDENBURG RECEIVES DISTINGUISHED DISSERTATION AWARD

Björn Brandenburg (Ph.D. 2011) is the recipient of the 2012 Linda Dykstra Distinguished Dissertation Award in Mathematics, Physical Sciences and Engineering for his dissertation titled "Scheduling and Locking in Multiprocessor Real-Time Operating Systems," completed under his advisor Jim Anderson. Recipients are nominated for the award, which recognizes the best dissertations at UNC-Chapel Hill in each of four areas: Mathematics, Physical Sciences and Engineering; Social Sciences; Biological and Life Sciences; and Humanities and Fine Arts.

Brandenburg's dissertation makes novel contributions to real-time systems research. Real-time systems are at the core of virtually all modern technologies to control or monitor physical processes. Common examples include cars, some of which now contain more than 100 computers, and medical devices for computer-assisted surgery. It is crucial that real-time systems be subject to stringent time constraints – an airbag must trigger at exactly the right moment in order to be effective, for example. Real-time operating systems (RTOS) are the foundation on which dependable, certifiably correct real-time systems are built. In particular, an RTOS controls the execution of tasks such that isolation is ensured (e.g. a fault in the anti-lock brake controller should not spread to the airbag controller), which requires careful scheduling such that all timing constraints are met and predictable locking such that tasks can access shared resources without incurring unpredictable delays. A recent trend affecting RTOSs is the emergence of cheap, low-power multiprocessors, which can execute several tasks in parallel, but current RTOSs are ill-suited to multiprocessors as hardware parallelism requires fundamentally new designs. In his thesis, Brandenburg examined how practical multiprocessor real-time operating systems can realize scheduling and locking to efficiently ensure isolation.

Brandenburg's dissertation is supported by 23 publications in top journals, conferences and workshops related to real-time systems research. Two of

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DEPARTMENT NEWS

WELCOME

New Faculty Appointments

Jay Aikat (Ph.D. 2010) was named Research Assistant Professor in December 2011, working with the networking research group.

Derek Chiang, was named Adjunct Assistant Professor in March 2012. He is an Assistant Professor in the Department of Genetics.

Yun Li was named Adjunct Assistant Professor in February 2012. She is an Assistant Professor in the Department of Genetics.

William Valdar was named Adjunct Assistant Professor in January 2012. He is an Assistant Professor in the Department of Genetics and an Adjunct Assistant Professor in the Department of Biostatistics.

New Staff

Crystal Walker joined the department in January 2012 as Proposal and Outreach Coordinator.

THANKS AND FAREWELL

Svetlana Lazebnik left the department in December 2011 to accept an assistant professor position at the University of Illinois at Urbana-Champaign. She maintains an adjunct appointment here at UNC.

Catherine Perry retired on February 29, 2012, after 36.5 years of state service, 35 of which were in the Department of Computer Science.

CONGRATULATIONS

Faculty and Staff

Björn Brandenburg (Ph.D. 2011) and **James Anderson** won best paper at EMSOFT 2011. The paper is titled, "Real-Time Resource-Sharing under Clustered Scheduling: Mutex, Reader-Writer, and k-Exclusion Locks."

Katrina Coble was the recipient of the 2011 Award in Management, given annually by the College of Arts and Sciences to recognize "outstanding accomplishments in leadership and management." She received the award at the College's annual managers' lunch January 25, 2012.

IEEE named five members of the UNC Department of Computer Science as 2012 fellows. They are:

James Anderson, professor, for contributions to the implementation of soft-real-time systems on multiprocessor and multicore platforms.

Ming C. Lin, John R. and Louise S. Parker Distinguished Professor, for contributions to real-time physics-based interaction and simulation for virtual environments, robotics and haptics. Lin was also named an ACM Fellow for 2012 for her contributions to geometric modeling and computer graphics.

Dinesh Manocha, Phi Delta Theta/Matthew Mason Distinguished Professor, for contributions to robot motion planning, rapid prototyping and virtual environments.

Marc Pollefeys, research professor (professor of computer science, ETH-Zurich, Switzerland), for contributions to three-dimensional computer vision.

John Poulton, adjunct professor (senior technical staff, NVIDIA Corporation), for contributions to high-speed, low-power signaling and to graphics architecture.

Russell Taylor (Ph.D. 1994) had two patents issued last year:

J. Chris Clemens, Charles Evans, Daniel Gregory, Russell M. Taylor II. U.S. Patent No. 7,875,796. "Reflector assemblies, systems, and methods for collecting solar radiation for photovoltaic electricity generation." Issued 1/25/2011 (assigned to Megawatt Solar).

David Borland, John P. Clarke, Russell M. Taylor II. U.S. Patent No. 7,961,187. "Methods, Systems, and Computer program products for processing three-dimensional image data to render an image from a viewpoint within or beyond an occluding region of the image data." Filed 2006, Issued 6/14/2011 (licensed to Siemens).

Graduate Students

Alexis Chan and **Joohwi Lee** got an honorable mention in the IEEE Visualization Design Challenge 2011 for their project Visualization of Vortex Core Differences between Ensemble Simulations. The project was part of Russell Taylor's Visualization in the Sciences class.

Luv Kohli received runner-up for best paper at the 2012 IEEE Symposium on 3D User Interfaces. The paper title is "Redirected Touching: The Effect of Warping Space on Task Performance," and the co-authors are Mary C. Whitton and Frederick P. Brooks, Jr.

Andrew Maimone won best short paper at IEEE Virtual Reality 2012. The paper is titled, "Reducing Interference Between Multiple Structured Light Depth Sensors Using Motion," and the co-author is Henry Fuchs.

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1st Annual Department Awards Luncheon

February 3, 2012

Catherine Perry's Retirement Party

February 29, 2012

ALUMNI NEWS

M.S. and Ph.D. Alumni

Lee Nackman (Ph.D. 1982) has moved from Microsoft to Hewlett-Packard, where he is now VP of Hybrid IT, leading a worldwide team developing products and services for simplifying management of IT in both on-premise datacenters and in the cloud. Lee, and his wife, Ava Nackman, have relocated from Kirkland, Wash., to Los Gatos, Calif. (*lee@nackman.com*)

Dave Kirby (M.S. 1982) received the Empower Award from the Microelectronics Center of North Carolina for his work in developing the N.C. TeleHealth Network (NCTN). The NCTN project also garnered the Public Leadership Award by the N.C. Technology Association in 2011. (*dave@kirbyimc.com*)

Lenwood Heath (Ph.D. 1985), professor of computer science at Virginia Tech, is Principal Investigator on a recently awarded four-year, $1 million grant from the National Science Foundation. The project title is ABI (Advances in Biological Informatics) Development: Representation, Visualization, and Modeling of Signaling Pathways in Higher Plants. (*heath@vt.edu*)

In February 2012, **Ray Van Dyke**, J.D., (M.S. 1989) spoke on patent reform at an IP convention in Las Vegas, taught his course on IP at SMU in Dallas, where he is an adjunct professor in the Engineering School, spoke on copyright law to the DC Chapter of the Sisters in Crime Writers' group, spoke on IP and patent reform to the Montgomery County, Maryland Bar Association, and was a featured speaker on the history of technology and patent law at the Patent Lawyers Club of Washington, D.C. On April 26, 2012, on World IP Day, he will be a keynote speaker at the U.S. Patent and Trademark Office's festivities. He also joined the local chapter of SIGGRAPH. (*vandykelaw@aol.com*)

Bill Oliver (M.S. 1990) is professor of pathology at Brody School of Medicine at East Carolina University in Greenville, N.C., and director of forensic pathology since late 2008. He is chair of the Image Analysis subcommittee of the Scientific Working Group on Imaging Technologies for the FBI, writing best practices guidelines for forensic imaging. He also recently worked with the National Institute of Justice on the evaluation of the safety of electromechanical disruption devices, such as the TASER, and is co-author of the NIJ position paper on the subject. He is on the editorial board of a new journal called "Academic Forensic Pathology" and remains on the editorial board of the American Journal of Forensic Medicine and Pathology. He has recently published several peer-reviewed articles on forensics and is presenting in two workshops at the upcoming American Academy of Forensic Sciences meeting. He and his wife, Cindy, will soon celebrate their 22nd anniversary, and they love Greenville and spending time enjoying the water, either at the N.C. coast or the Chesapeake. (*billoblog@billoblog.com*)

Gopal Gupta (Ph.D. 1992), currently professor and head of the computer science department at the University of Texas at Dallas, was named the Erik Jonsson Chaired Professor in fall 2011. Gopal continues to do research in logic programming. (*gupta@ut.dallas.edu*)

Greg Bollella (Ph.D. 1997) was recently promoted to Architect at Oracle America, Inc., and moved back into Oracle Research Labs after five years on the product side. (*greg.bollella@oracle.com*)

Daniel Aliaga (Ph.D. 1999), along with his family, just returned from a one year exciting sabbatical to Zurich, Switzerland, where he was a visiting professor first at ETH Zurich Department of Agriculture and later at ETH Zurich Department of Computer Science. He says they enjoyed visiting over a dozen countries while he learned about urban planning and modeling from several international agencies and experiences. Since January 2012, he is back at Purdue University, resuming his duties as Associate Professor of Computer Science. (*aliaga@purdue.edu*)

Ramesh Raskar (Ph.D. 2002), associate professor of media arts and sciences at MIT, and his Media Lab team have created an ultrafast imaging system that can capture light itself as it passes through liquids and objects. The camera can acquire visual data at a rate of one trillion exposures per second. You can read more about the project at *http://web.mit.edu/newsoffice/2011/trillion-fps-camera-1213.html*. (*raskar@media.mit.edu*)

Chris Dwyer (Ph.D. 2003) was promoted to associate professor with tenure last year at Duke University, and was elected a senior member of IEEE and ACM. He was also elected a Kavli Fellow by the National Academy of Sciences. He and his wife, Andrea, have three children: Ian, age 5, Olivia, age 3, and Sophia, age 19 months. (*dwyer@ece.duke.edu*)

Bill Baxter (Ph.D. 2004) left the UNC-alum heavy team (**Brandon Lloyd** (Ph.D. 2007), **Nikunj Raghuvanshi** (Ph.D. 2010), and **Avneesh Sud** (Ph.D. 2006)) he was on at Microsoft Research in March 2011,

and joined the Google Maps team in Seattle. He's been working on the GPU-based "MapsGL" project that launched as an experiment in October 2011 (you can see the little "Experience MapsGL" teaser if you visit maps.google.com in a browser that supports WebGL). He says to not feel sad about him losing all that UNC-alum camaraderie, however, as at Google he's working with CS alums **Brian Cornell** (M.S. 2007) and **David Gallup** (Ph.D. 2010), and **Rahul Raguram** (Ph.D. student) was there over the summer. (*wbaxter@gmail.com*)

Jun (Luke) Huan (Ph.D. 2006) was recently promoted to associate professor with tenure in the EECS department at the University of Kansas. (*jhuan@ittc.ku.edu*)

Seon Joo Kim (Ph.D. 2008) joined SUNY (State University of New York) Korea as an assistant professor in January 2012. (*seonjookim@gmail.com*)

Serdar Cakici (M.S. 2011) began working for Measurement Incorporated in Durham, N.C., in January 2012. (*cakici@cs.unc.edu*)

Undergraduate Alumni

John Root (B.S.M.Sci. 1994) recently joined Camstar Systems in Charlotte, N.C., as a senior software engineer. Previously he was a senior IT systems analyst at Genworth Financial in Raleigh, N.C. (*jroot3@yahoo.com*)

Michelle Pritchard Turner (B.S.M.Sci. 1996) is an associate director at ICON Late Phase and Outcomes Research in Los Angeles, Calif. She and her husband, Matt, have two-year-old twin daughters named Ava and Coco. (*mlpritchard@yahoo.com*)

Jed Lau (B.S.M.Sci. 1998) is in the process of launching his startup, Memoir Tree (*www.memoirtree.com*), which provides an iPhone app to record family history. (*jedlau@gmail.com*)

Sunil Nagaraj (B.S. 2004) joined Bessemer Venture Partners as a venture capitalist investor in April 2011. He invests in consumer internet companies and would love to hear from you if you're into startups (even if you're not looking for an investment -- just to help out). (*sunil@bvp.com*)

Erik Andersen (B.S. 2007) is a Ph.D. student in Computer Science and Engineering at the University of Washington. His team in UW CSE's Center for Game Science recently received the NHK Japan Prize in the Best Work in Primary Category (The Minister of Education, Culture, Sports, Science and Technology Prize) for their game Refraction: Teaching Fractions through Gameplay. The NHK Japan Prize is an international competition for educational media, and Erik traveled to Tokyo in October 2011 to receive the prize. While an undergraduate at UNC, Erik worked with Ming Lin and Dinesh Manocha in the GAMMA group. (*eland@cs.washington.edu*)

ALUMNI PUBLICATIONS

Kathryn Britton (M.S. 1977) is co-author, with Marie-Josée Shaar, of a new book: Smarts and Stamina: The Busy Person's Guide to Optimal Health and Performance, published in August 2011. The book includes 50 activities for working toward better sleep, food, mood, and exercise habits. Smarts and Stamina was published by Positive Psychology Press. You can find out more at *http://www.smartsandstamina.com/the-book/* (*britton.kathryn@gmail.com*)

Gopal Gupta (Ph.D. 1992) published the following papers:

N. Saeedloei, G. Gupta. Coinductive Constraint Logic Programming. *Proc. of Functional and Logic Programming.* To appear.

G. Gupta, et al. Infinite Computation, Co-induction, and Computational Logic. *Proc. 4th International Conference on Algebra and Co-algebra in Computer Science* (invited paper). Springer Verlag, pp. 40-54.

N. Saeedloei, G. Gupta. Verifying Complex Real-time Systems with Coinductive CLP(R). *Proc. Languages, Automata Theory and Applications* (LATA). 2010. Springer Verlag, LNCS. pp. 536-548.

In Memoriam

John William Hughes passed away on November 18, 2011. He worked with the UNC Department of Computer Science for more than ten years in the 1980s-90s as a research associate. His primary work, with the GRIP project, was the restoration and maintenance of the Argonne Remote Manipulator and Sarcos hydraulic robot. He also helped to set up and maintain the original Graphics and Image Lab. John left the department in June 1995 to begin a position at Sarcos Corp. in Salt Lake City, Utah. He was a master mechanic; there was almost nothing he could not fix. In addition to his time at UNC, John worked at a variety of positions in Kansas, Virginia and Utah utilizing his mechanical skills. He was a graduate of Kansas State University, and a lifelong learner who loved to read and expand his knowledge. He was also a loving husband and proud father, and is survived by his wife, Dana, and his son and wife, Michael and Asha.

FAMILY MATTERS

Mary Joan Jordan Florence (B.S.M.Sci. 1985) married William C. Florence on July 7, 2011, in New Orleans, La. Gaining two teenagers in addition to her own two younger children, they all happily reside in Hickory, N.C. (*maryjoan@associatedhardwoods.com*)

Jed Lau (B.S.M.Sci. 1998) and his wife, Elisa, welcomed Emerson Wong, in October 2011. (*jedlau@gmail.com*)

Joshua Steinhurst (Ph.D. 2007) and his wife, Barbra, welcomed Ruth Evelyn in October 2011. (*jsteinhu@gmail.com*)

Jeremy Wendt (Ph.D. 2010) and his wife, Heather, welcomed Noelle Grace in October 2011. She joins older brothers John, age 7, and Liam, age 2. (*jeremy.wendt@gmail.com*)

James Branigan (M.S. 2003) and his wife, Hannah, welcomed Harper Ada in November 2011. (*james.branigan@gmail.com*)

Brian Cornell (M.S. 2007) and **Christina (Villarruel) Cornell** (M.S. 2008) welcomed Ezri Ana in December 2011. (*brian@cs.unc.edu*)

Lynda Yang (B.S. 2008) and **Brad Talton** (B.S. 2008) were married on January 1, 2012, at the Carolina Inn in Chapel Hill. (*lwithay@gmail.com*)

Chris Weigle (Ph.D. 2006) and **Michele Clark Weigle** (Ph.D. 2003) welcomed Luke Allen in January 2012. He joins big brother Nathan, age 3. (*mweigle@cs.odu.edu*)

Cory Quammen (M.S. 2006), senior software engineer, and his wife, Sandy, welcomed Elise Astrid in February 2012. She joins older sister Linnea, age 2. (*cquammen@cs.unc.edu*)

Department News, continued from page 5

Undergraduate Students

Two computer science major student-athletes received prestigious honors for the 2011-12 academic year. Senior **Kevin Nadeau**, a computer science and mathematics double major from Austin, Texas, who is a member of the UNC Fencing team, was named both an Athletic Director's Scholar-Athlete and a Tar Heel Leader of Distinction. Senior **Rebecca Crabb**, a computer science major from Omaha, Neb., who is a member of the UNC Women's Soccer team, was named an Athletic Director's Scholar-Athlete. An Athletic Director's Scholar-Athlete is selected from each varsity squad, representing the best of academics and athletics, and the Leader of Distinction award is the highest recognition bestowed by the Richard A. Baddour Carolina Leadership Academy following a rigorous evaluation process.

Two computer science undergraduates were inducted into Phi Beta Kappa in fall 2011: **Kathryne Hawthorne** is a junior computer science and information science double major, and **Roger Que** is a senior computer science major.

UPCOMING EVENTS

UNC Science Expo - April 14, 2012, on the UNC campus. Free and open to the public. The Department of Computer Science will be showing demonstrations of past and current research.

Symposium on Computational Geometry (SOCG) 2012 - June 16-21, 2012. http://socg2012.web.unc.edu/

14th Real-Time Linux Workshop - October 18-20, 2012. https://www.osadl.org/RTLWS-2012.rtlws-2012.0.html

RECENT SPONSORED RESEARCH AWARDS

CAREER: Estimation Methods for Image Registration. PI: Marc Niethammer. National Science Foundation.

CAREER: Motion Assistance for Medical Robots. PI: Ron Alterovitz. National Science Foundation.

Interactive Large-Scaled, Heterogeneous Crowd Simulation. PI: Dinesh Manocha. KAUST - King Abdullah University of Science.

Large-scale Indexing. PI: Jan-Michael Frahm. SRI International (Prime: Air Force Research Laboratory).

Real-Time Visual SLAM for Humanoid Robots. PI: Jan-Michael Frahm. Honda Research Institute USA, Inc.

Scalable Statistical Visualization Components. PI: Russell Taylor. Sandia National Laboratory.

Brandenburg, continued from page 4

these publications were honored with "best paper" awards. Today, Brandenburg is a tenure-track faculty member and head of the Real-Time Systems Group at the Max Planck Institute for Software Systems.

Brandenburg is the third computer science graduate to receive the award. Brad Davis (Ph.D. 2008) received the 2009 award for his dissertation titled "Medical Image Analysis via Fréchet Means of Diffeomorphisms," under his advisor Sarang Joshi. Liangjun Zhang (Ph.D. 2009) was the recipient of the 2010 award for his dissertation titled "Efficient Motion Planning using Generalized Penetration Depth Computation," under his advisor Dinesh Manocha.

RECENT PUBLICATIONS

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News&Notes

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A new research centre that will develop innovative forms of advanced 3-D communication was unveiled Nov. 9 at Singapore's Nanyang Technological University (NTU). The BeingThere Centre is a transnational effort spearheaded by NTU, Swiss Federal Institute of Technology Zurich and UNC's Department of Computer Science, as well as the Media Development Authority of Singapore. The centre is headed by three co-directors: Markus Gross, professor and director of the Computer Graphics Lab, ETH Zurich; Nadia Magnenat-Thalmann, professor and director, Institute for Media Innovation, NTU; and Henry Fuchs, Federico Gil Distinguished Professor, UNC-Chapel Hill. *Above: Research Professor Greg Welch interacts with the avatar of Chairman Anselmo Lastra in the foreground while the real Anselmo Lastra controls the avatar in the background at the BeingThere Centre grand opening.*