News&Notes

Dear Friends,

This past July, I became the sixth chair of the Department. The entire Department, and certainly I, thank the outgoing chair, Anselmo Lastra, for his service and leadership. Anselmo presided over the department during what were extraordinarily challenging times. The 2008 economic downturn hit the State, the campus, and the Department quite hard; its effects are still being felt. Nonetheless, under Anselmo's leadership, we have emerged a revitalized department, ready to embark on the next 50 years of teaching, research, and service. Thank you Anselmo!

In August, we wished Brian White a happy retirement with a celebration in his honor. Brian retired in June after 27 years working in the Department and 19 as its IT Director. That the Department remains on the cutting edge of technology is due in large part to Brian's leadership. We wish him all the best.

As many of you know, this year we are celebrating the 50th anniversary of the Department's creation. What was a bold experiment in 1964 has led to the development of a world class academic unit that, through it's more than 3,000 graduates, has helped shape the computing landscape today. To celebrate, we held an open house in Chapel Hill in October, as well as alumni reunion events in Palo Alto, Seattle, and Washington, DC. And this is just the beginning! Please continue to visit www. cs.unc.edu/50th to stay in touch with the Department. We hope to see you all at our 50th Anniversary Celebration Gala on May 2nd-3rd or at one of our other remaining 50th Anniversary events.

In honor of our 50th Anniversary, we recently announced The Toolsmith Endowment Fund, which will build a sustainable discretionary funding base for the Department. We greatly appreciate the support provided by our alumni, and I encourage you to read more on page 13 and consider making a contribution.

Chair of the Department

In this issue

1964 ❖ *2014*

The University of North Carolina
Department of Computer Science

The Department of Computer Science is proud to be celebrating the 50th anniversary of our founding in 1964. In this issue of the News & Notes, you can see photos and a recap from the 50th Anniversary Kick-off Event on October 18, read excerpts from Dr. Peter Calingaert's "Growth of a Department", see the lineup of speakers for our 50th Anniversary Distinguished Alumni Speaker Series, and learn about a new way to ensure 50 more years of computer science at Carolina.

Coverage of the Department's 50th Anniversary begins on page 8. Don't forget to visit cs.unc.edu/50th to stay connected with the department and find more information about upcoming 50th Anniversary events like the Celebration Gala on May 2-3, 2015.

TAYLOR RECOGNIZED WITH INVENTOR OF THE YEAR AWARD

Dr. Russell M. Taylor II, a research professor in the Department of Computer Science, was recognized by the UNC Office of Technology Development (OTD) with its 2014 Inventor of the Year Award.

Taylor, a joint professor in the Department of Computer Science, the Department of Physics and Astronomy, and the Curriculum on Applied Sciences and Engineering, was recognized for his contribution to innovation at UNC. He was honored at the Celebration of Inventorship, an annual event hosted by the Office of Technology Development to celebrate UNC

innovators who have had patents issued during the previous calendar year.

Following the presentation of the Inventor of the Year Award, Taylor shared an overview of his work and his experience in commercialization of technology, including wisdom gained through his involvement in several technology start-ups, including 3rd Tech and Rheomics.

Taylor's research interests include scientific visualization, haptic display, virtual words, and interactive 3D computer graphics. He serves as co-director of the Computer-Integrated Systems for Microscopy and Manipulation NIH Resource (CISMM) and visualization lead on the Models and Data Analysis Initiative (MADAI).

REITER NAMED IEEE FELLOW

IEEE (the Institute of Electrical and Electronics Engineers), the world's largest professional association dedicated to advancing technological innovation and excellence for the benefit of humanity, recently honored Professor Michael K. Reiter in their IEEE Fellow Class of 2014.

IEEE Fellow is a distinction reserved for select IEEE members whose extraordinary

accomplishments in any of the IEEE fields of interest are deemed fitting of this prestigious grade elevation. IEEE Fellow is the highest grade of membership and is recognized by the technical community as a prestigious honor and an important career achievement.

Reiter was recognized for his contributions to computer security and fault-tolerant distributed computing.

MAIMONE HONORED WITH INAUGURAL TIMOTHY L. QUIGG AWARD
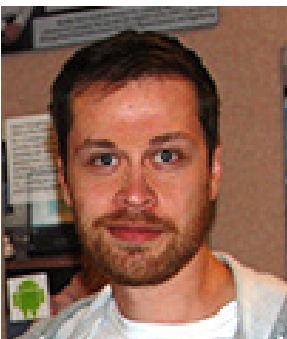
Graduate student Andrew Maimone was recognized with the Timothy L. Quigg Student Inventor of the Year Award for 2013-2014.

The award, created in 2013 in honor of retired Associate Chairman for Administration, Finance, and Entrepreneurship Timothy L. Quigg, is given yearly to the student judged as showing the highest entrepreneurial spirit in the department, through inventorship or new enterprise. Recipients receive a cash prize of $500 and have their names engraved on a permanent plaque in Sitterson Hall.

During the 2013-2014 academic year, Maimone had papers accepted by the 2013 International Symposium on Mixed and Augmented Reality (ISMAR), the 2014 International Symposium of the Society for Information Display (SID), and the 2014 Conference and Exhibition on Computer Graphics and Interactive Techniques (SIGGRAPH).

You can read more about Maimone's research in the online version of the News & Notes, which is available at: www.cs.unc.edu/NewsAndNotes/Issue52/

Timothy L. Quigg, the award's namesake, served 22 years in the UNC Department of Computer Science before retiring at the end of May 2013.

LIN ELECTED TO IEEE BOARD OF GOVERNORS
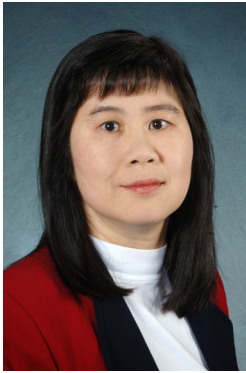
Dr. Ming Lin, the John R. & Louise S. Parker Distinguished Professor of Computer Science at UNC, has been elected by the IEEE Computer Society membership to the Society's Board of Governors.

Candidates on the ballot are selected by the IEEE-CS Nominations Committee or by petition and are then voted on by IEEE members. Lin was the second-highest vote-getter for the 2015-2017 term on the Board of Governors with 3,418 votes.

The Board of Governors sets the direction and determines the strategy for the Computer Society, and provides guidance at the policy level to all Society organizational entities. Lin will begin her three-year term on the Board on January 1, 2015 along with six other new appointments.

Lin was named an IEEE Fellow in 2012 for her contributions to real-time physics-based interaction and simulation for virtual environments, robotics, and haptics.

ANDEREGG EARNS CAMPUS IT AWARD

The University of North Carolina at Chapel Hill has recognized Murray Anderegg's excellent support with an Information Technology Award. Anderegg was one of 11 individuals and three teams to receive a 2014 IT Award.

Anderegg receives the award for the second time in three years, having also been recognized in 2012.

The IT Awards, initiated in the spring of 1992 and first given in April 1993, were created in order to publicly encourage and acknowledge support efforts of information technology personnel. Nominated by their peers, winners of this award are recognized by upper level management for their work in positions which rarely occupy the limelight.

Bill Graves said of the first IT Awards, "The staff involved in information technology are tireless in their efforts to provide a state-of-the-art technical environment for this campus. Such dedication deserves public recognition since much of their work is behind the scenes and not always obvious to those who benefit from their efforts."

The IT Award comes with a plaque and a congratulatory letter from the Chancellor.

LEMING NAMED GOLDWATER SCHOLAR

Matthew James Leming was awarded a 2014 Goldwater Scholarship. Leming, a computer science and Russian language and literature double-major, conducted research in neuroimaging at UNC and worked on artificial intelligence in St. Petersburg, Russia, on a Class of 1938 Fellowship.

The Barry M. Goldwater Scholarship and Excellence in Education Program provides up to $7,500 per year for educational expenses to sophomores and juniors who intend to pursue careers in mathematics, the natural sciences, or engineering.

Leming was the only UNC-Chapel Hill student to receive the scholarship for 2014. He was one of only 283 recipients nationwide from a pool of 1,166 nominees. Jason Reed, associate professor of biology and head of UNC's Goldwater Scholarship selection committee, praised Leming's research as an undergraduate as well as his career goals.

"Leming is an exceptionally able and public-spirited scientist. He is ambitious to use his computational ability to understand the workings of the brain."

COMPUTER SCIENTIST AND FASHION ENTREPRENEUR

UNC Computer science alumnus Calvin Young (B.S. 2010) is making a name for himself in the fashion industry and as an entrepreneur. Young is the co-founder and CTO of an online women's consignment store named Twice.

Even while Young was a student at UNC, he knew he would start his own company. After graduation Young went to work at Google, where he met Noah Ready-Campbell, his future business partner. After less than a year, Young and Ready-Campbell left to start their own business, but they did not find the right business idea immediately. They initially tried a few different business ideas before coming up with the idea for Twice.

After studying trends in the marketplace, they noticed an increasing trend in companies founded on the idea of collaborative consumption. Collaborative consumption is an economic model based on sharing, trading, or renting products and services. Other examples of some successful startups built around this idea are Uber & Airbnb. Young and Ready-Campbell noticed there was not a leading apparel company built around this principle yet. They decided their goal for their company would be to create a Nordstrom-like shopping experience for high-quality and lightly-used women's clothes with an Ebay price range. Young and Noah-Ready began testing for Twice in November 2011 and by January 2012 they launched their website. Two years after the initial website launch, Twice employs 200 people in the San Francisco area. In 2014 the company announced a huge new investment totaling $23 million from a variety of investors, led by $18.5 million from Jeff Jordan of Andreessen Horowitz.

Twice buys clothes mailed in from women around the nation who are cleaning out their closets. Those who are interested in selling to Twice can request a prepaid shipping bag. The company compensates sellers by check, store credit, or PayPal, and sellers have the option to donate any clothing not accepted by Twice to Goodwill. Once the clothes come in and are inspected, they are then cataloged by a software custom-designed by Young, and the images are listed on the company website for sale.

Designing the custom software was one of the biggest and most fun challenges for Young. Every single garment that comes into Twice is unique and must be cataloged by brand, size, type, color, material, and measurements. To help expedite the process of getting each image online as fast a possible, Young created an image software that utilizes computer vision techniques to detect garments, remove the background, rotate, zoom in or out, and adjust the lighting, all automatically.

Twice has already become one of the leading online retailers of women's lightly used clothing. When asked about the future, Young says they hope to expand their company beyond fashion and into other areas, including second-hand electronics and other things that can be found around the house.

You can visit the company website at liketwice.com.

UNDERGRADUATE PAIRS CODING WITH SOCIAL ENTREPRENEURSHIP

Jake Bernstein isn't your average undergraduate student. The junior computer science major is a Morehead-Cain scholar at UNC and a member of the Chancellor's Student Innovation Team. He also participates in Carolina Outreach and in the Richard A. Baddour Carolina Leadership Academy as part of the Rising Stars Program. He has volunteered at events like B'ball for All, a basketball clinic for children in the autism spectrum, and Maze Day, an annual event hosted by the Department of Computer Science for visually impaired children. He is a member of the fencing team at UNC.

Even before Bernstein arrived in Chapel Hill from his home in St. Louis, Missouri, he stood out among his peers.

At 15 years old, Bernstein and his sister Simone, two years his elder, founded VolunTEEN Nation, an organization that encourages teenagers and young adults to be active in community service. He says that he was driven to found a non-profit helping middle and high school students find community service endeavors after he was turned away from opportunities that required a minimum age of 18.

At 16, he and his sister were named to Forbes Magazine's "Top 30 Under 30" social entrepreneurs list.

"With VolunTEEN and with different projects I've done," Bernstein says, "I've always been interested in helping kids on the autism spectrum and with other disabilities because of the friends and neighbors I had growing up. Seeing just how few opportunities there were for them to engage in things like sports and computers was just incredible. They had so few of the opportunities that everyone else had."

At UNC, Bernstein was immediately drawn in by the opportunities provided by computer science as well as the unique learning environment. He co-founded Communigift, an online giving platform that offers donors a convenient and meaningful way to give and serves as a software tool for organizations participating in Adopt-a-Family and product-based donation programs.

He spent this past summer in San Francisco working with a tech start-up called PayNearMe as part of the True Entrepreneur Corps program, where he was able to combine his social entrepreneurship experience with the coding skills he has developed at UNC.

Bernstein encourages his fellow students to take advantage of available resources, recalling that it was much easier to start Communigift than VolunTEEN Nation. He also urges his peers working on behalf of non-profit organizations or UNC-Chapel Hill student groups to take advantage of pro bono resources offered uniquely to those with non-profit status.

"Working at Carolina," he says, "I'm working with three of the most brilliant people I know. You have not only a network of professors and resources, but you have an incredible amount of students to work alongside you."

"There was a Friday class last year called Tools of the Trade that I went to several times, and those classes were extremely helpful in my job. I would encourage anyone to take a class like that to help prepare themselves for the workforce because there are a lot of different things that you don't see in your CS classes that you use in the workforce."
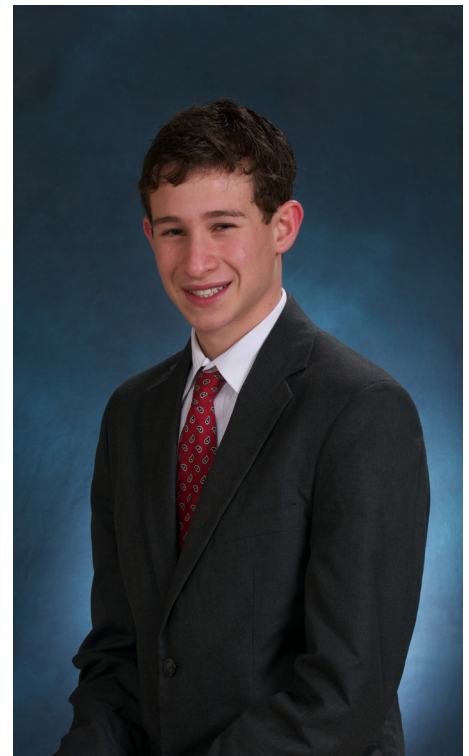
As for the future, Bernstein is eager to combine the hard and soft skills learned in class with another summer's worth of valuable experience. He also looks forward to the new challenges that have accompanied the launch of Communigift in November 2014 and the growth of VolunTEEN Nation under new management.

"VolunTEEN is being led by a lot of ambassadors who've done a great job. I'm happy to say that it has continued to succeed since I've come to college. Communigift is going full speed ahead. Look out for it as we launch and try to get as many families adopted as possible. We're looking at partnering with several organizations in North Carolina as well as in California and a few other places throughout the country, so I couldn't be more excited about that."

MIDAG CELEBRATES 40 YEARS

The Medical Image Display and Analysis Group (MIDAG) will celebrate its 40th anniversary this academic year concurrently with the department's 50th anniversary.
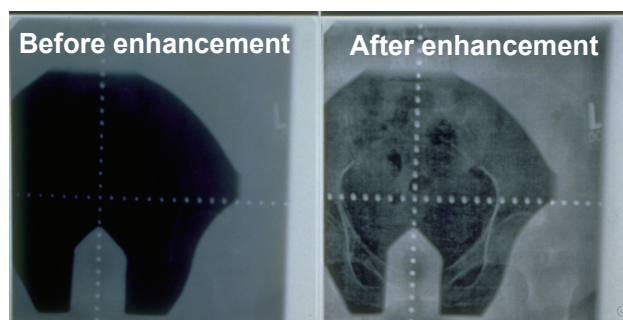
How did a research group so dependent on collaboration between departments in different scientific disciplines come to be?

MIDAG's roots can be traced all the way back to Massachusetts General Hospital in the mid-1960s, where Harvard University doctoral student Steve Pizer was working on the world's first dissertation in medical imaging. His work on scintigraphic image restoration for diagnostic tests in nuclear medicine led to an invitation to present at the Second International Conference on Information Processing in Medical Imaging.

Even though IPMI 2 never came to be, its planning stages resulted in an agreement between Pizer and Andrew Todd-Pokropek that Pizer would take a year-long sabbatical at University College Hospital in London. His work with Todd-Pokropek in London led to the realization that restoration improvements were being nullified by inadequate approaches to medical image display. It was then that Pizer decided to re-focus his research efforts onto medical image display. When he returned to UNC in 1974, he sought out interdepartmental collaboration to form what is now MIDAG.

With Gene Johnston and Ed Staab having recently joined the UNC Radiology Department from Vanderbilt, Pizer found two UNC faculty members with whom collaboration would afford unique opportunities for multidisciplinary advancements.

Early collaborations focused on two-dimensional medical image display, which continued into the 21st Century. Adaptive contrast enhancement research proved, for perhaps the first time, that increased care in the mapping of intensity between the recorded and displayed results had a significant positive impact on the accuracy of diagnostic or therapeutic decisions. This approach to research by first examining the techniques became a cornerstone of the MIDAG philosophy.

MIDAG research into standardization of electronic displays led to the adoption of international ACR-NEMA standards for transmission of medical images, which greatly improved the ability of radiologists and medical physicists to decode output images.

Another important area of two-dimensional MIDAG research was human vision. Visual psychophysics, the study of the relationship between visual stimuli and physiological sensation and perception, provided a groundwork for better understanding how medical images are interpreted.

When Henry Fuchs joined the Department of Computer Science in 1978, an additional focus of MIDAG research emerged: three-dimensional display.

Using the varifocal mirror, Fuchs, Pizer, and Duke neuroradiologist Ralph Heinz determined that three-dimensional visualization had merit, but not without occlusion, or the hiding of elements that shouldn't be visible in order to de-clutter the image.

Important contributions from MIDAG doctoral student Marc Levoy led to the invention of new methods of rendering through ray casting, as well as the application of those methods in radiation treatment planning under the leadership of UNC Radiation Oncology's Julian Rosenman.

Pizer likes to recall that ray casting and splatting, two methods of three-dimensional rendering, were both invented by members of the UNC Computer Science team (Marc Levoy and Lee Westover, respectively) and that MIDAG was among the first research groups to undertake work in the field of three-dimensional rendering.

This pelvic portal image provides an example of the benefits of contrast enhancement techniques
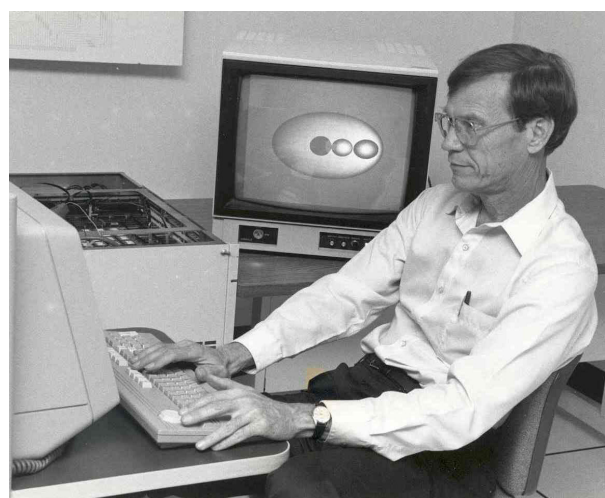
Demonstration of a ray casting machine

MIDAG 40th Anniversary Celebration

The UNC Medical Image Display and Analysis Group, an interdepartmental research group founded by Dr. Steve Pizer, celebrated its 40th anniversary with a reception on the evening of October 18th, 2014 and a day of talks on October 19th.

The reception took place in the Great Room at Top of the Hill Restaurant and Brewery. Several MIDAG collaborators and Computer Science faculty spoke to a gathering of MIDAG collaborators, alumni, and friends.

On October 19th, current collaborators and MIDAG alumni presented research on a variety of topics. Recordings of these talks will be made privately available. Anyone interested in accessing the presentations from the MIDAG 40th Anniversary should contact Dr. Stephen Pizer at pizer@cs.unc.edu.

Image analysis would become a very large part of MIDAG's research in the 1980s. MIDAG research in the area of object representation using medial geometry contributed to the representation of anatomic objects in the real world medially via the "m-reps" structure.

Fast-forward to the 2014-2015 academic year, when the UNC Medical Image Display and Analysis Group will be celebrating its 40th Anniversary. Its current membership includes the Departments of Computer Science, Biomedical Engineering, Radiology, Surgery, Psychiatry, Radiation Oncology, Mathematics, Biostatistics, Statistics, and Neurology, as well as the Schools of Dentistry and Information & Library

Science. Considering the relative youth of many of the disciplines involved in MIDAG research further underlines the impressiveness of both the longevity and the significant level of contribution that MIDAG has made over the past 40 years.

Embracing the philosophies set down by department heads such as Frederick P. Brooks, Jr. (Computer Science) and Ed Chaney (Radiation Oncology), the research group has flourished and continued to grow and contribute to medical advances despite the notoriously long time required to take a medical breakthrough from concept to implementation.

50th Anniversary Kick-off Event

The Department of Computer Science officially kicked off the 50th Anniversary year on October 18th with a full day of activities.

Alumni, current and former staff and faculty, and friends of the department were treated to a lecture by Dr. Fred Brooks, founder of the department. Dr. Brooks's talk was followed by a panel discussion of pivotal moments in the department's history, which featured former chairs Drs. Fred Brooks, Steve Weiss, Jan Prins, and Anselmo Lastra with the current chair, Dr. Kevin Jeffay, as moderator. The morning session was wrapped up with remarks from Dick Sites.

Guests were treated to a lunch of Carolina barbecue under a Carolina blue sky before returning inside to Sitterson Hall and Brooks Building for research demonstrations and lab tours.
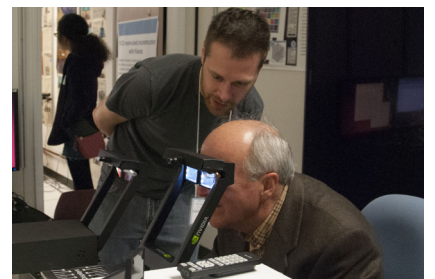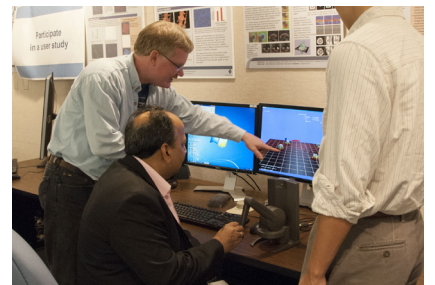
If you weren't able to join us at the Kick-off, you can view a recording of the morning's proceedings online at cs.unc.edu/50th.

Please visit www.cs.unc.edu/50th to update your contact information and make sure you don't miss any of our 50th Anniversary Celebration events during the 2014-2015 academic year.

Remember to mark your calendars for the culmination of all of our anniversary events, the 50th Anniversary Celebration Gala in Chapel Hill on May 2-3, 2015.
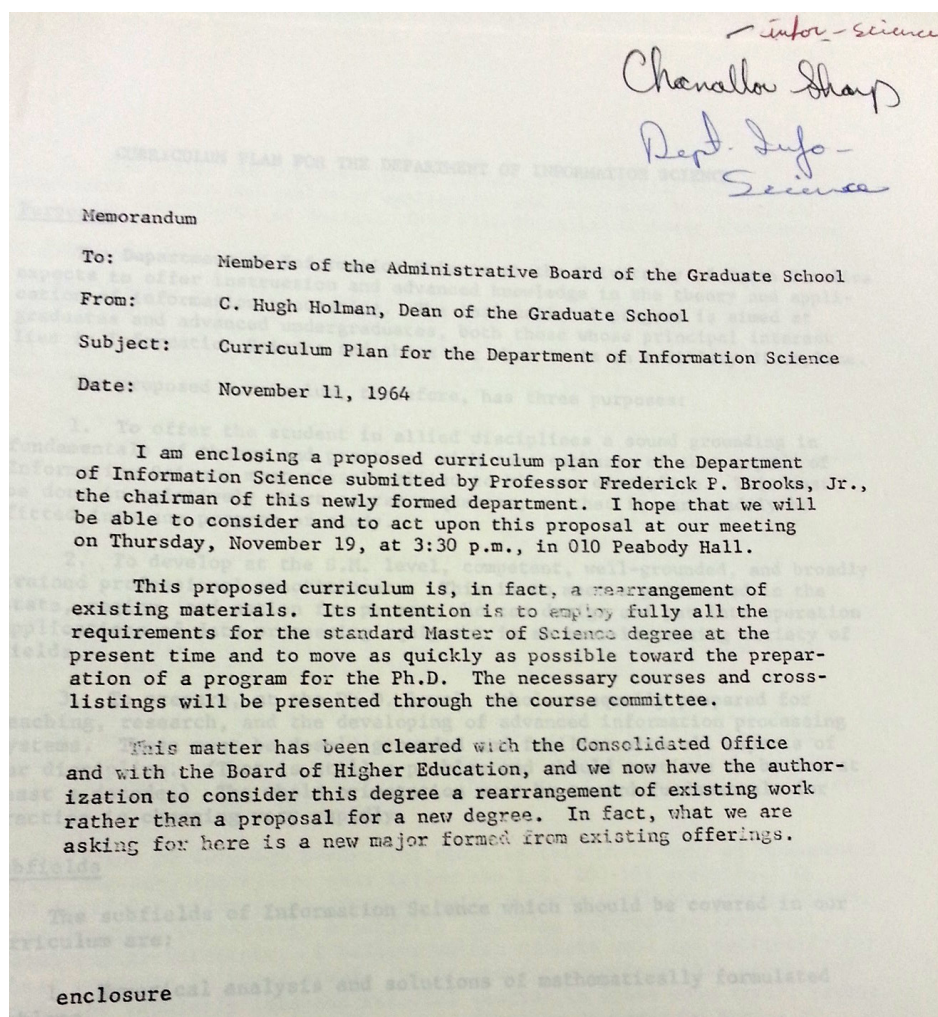
Artifacts from the history of the Department of Computer Science

Dean Raymond H. Dawson
College of Arts & Sciences
South Building
Campus

Dear Dean Dawson:

Chancellor Sitterson has given his approval to the shortening

of the name of the Department of Computer and Information

Science to the Department of Computer Science.

Sincerely yours,

J. C. Morrow
Provost

jb

cc: Chancellor J. C. Sitterson
    Prof. F. P. Brooks
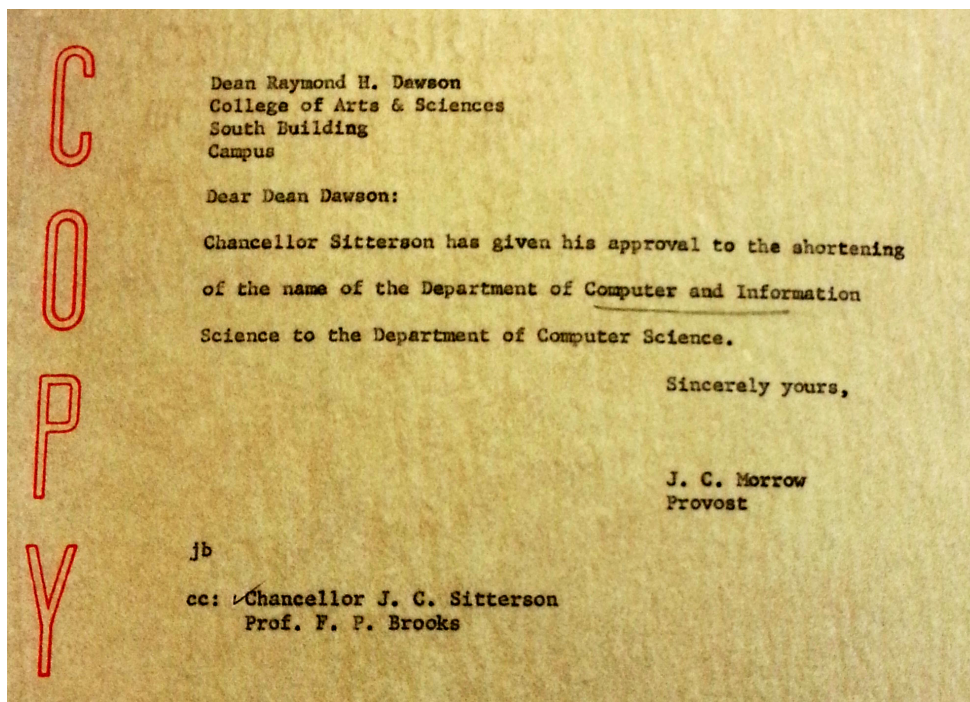
On January 19, 1971, the Department received its current name when Chancellor Sitterson approved a name change from the "Department of Computer and Information Science" to just the "Department of Computer Science." Image courtesy of the University Archives, The Wilson Library, University of North Carolina at Chapel Hill.

You can find more history at www.cs.unc.edu/50th. Be sure to go through the timeline of the Department from 1955 at www.cs.unc.edu/50th/timeline.

This cover letter introduced the curriculum plan provided by C. Hugh Holman to the Administrative Board of the Graduate School in 1964. Image courtesy of the University Archives, The Wilson Library, University of North Carolina at Chapel Hill.

Memorandum

To: Members of the Administrative Board of the Graduate School

From: C. Hugh Holman, Dean of the Graduate School

Subject: Curriculum Plan for the Department of Information Science

Date: November 11, 1964

I am enclosing a proposed curriculum plan for the Department of Information Science submitted by Professor Frederick P. Brooks, Jr., the chairman of this newly formed department. I hope that we will be able to consider and to act upon this proposal at our meeting on Thursday, November 19, at 3:30 p.m., in 010 Peabody Hall.

This proposed curriculum is, in fact, a rearrangement of existing materials. Its intention is to employ fully all the requirements for the standard Master of Science degree at the present time and to move as quickly as possible toward the preparation of a program for the Ph.D. The necessary courses and cross-listings will be presented through the course committee.

This matter has been cleared with the Consolidated Office and with the Board of Higher Education, and we now have the authorization to consider this degree a rearrangement of existing work rather than a proposal for a new degree. In fact, what we are asking for here is a new major formed from existing offerings.

enclosure

HISTORY OF THE DEPARTMENT - 1970-1980

This academic year is the Department of Computer Science's 50th year of service to Carolina. To honor our anniversary, we are presenting excerpts of the department's creation and growth from Peter Calingaert's personal history published in 1994.

1970   With me left to hold the fort, Fred was awarded a Kenan leave of absence. He spent the spring and summer of 1970 in the Netherlands to begin work with Gerry Blaauw on their monograph on computer architecture. Left to my own devices, I blew the recruiting budget by hiring five new faculty members: Martin Dillon, Howard Elder, Jim Foley, Gyula Mago, and Steve Weiss. They appeared for the 1970-71 academic year.

Martin was already in Library Science; we appointed him jointly for four years, and he continued to teach information retrieval for us for another two after returning full-time to Library Science. Howard had completed Ph.D. study at Cornell, and was our first specialist in system software; he soon decided that professional practice was more attractive than academia. After one year he switched to an appointment joint with the Computation Center, and after a second year left to join Bell Labs. Jim came from the Computer, Information and Control Engineering program at the University of Michigan; his research was on computer architecture, graphics, and the application of queueing, simulation, and probability to computer systems. Gyula's interests were in switching and automatic theory and in logical design. He was finishing his doctorate under David Wheeler at Cambridge; we couldn't afford an interview trip, hence hired him sight unseen for a one-year visit with the hope of a regular appointment to follow. It followed indeed. A Cornell student of Gerry Salton

Jim Ross working on a Datel terminal in 1976

(himself another Aiken student), Steve's research was on information storage and retrieval and on natural language processing.

1973   The next few years saw a steady state, with no change in faculty complement until Mehdi Jazayeri's arrival in Spring 1975, as we assimilated the new faculty members, and rethought what we were doing. As part of a University-wide self-study, we published in January 1973 a report in which we stated that it was "educationally unsound to have undergraduates specialize in an area as young and undeveloped as computer science."

The Bachelor of Science in Mathematical Sciences, created in 1971 had five options, one of which was Computer Science. Our intent was to prepare students for graduate study rather than for employment. Many undergraduates entered the option as a prelude to employment, however, because there was no other appropriate program. Enrollment was restricted; students took five semester courses in computer science, four of them jointly with graduate students. In 1975

1974   we adopted an Honors Program under which a student with sufficiently high grades and extra work could receive the B.S. degree with honors or with highest honors. (Why does UNC-CH not have high honors?)

1975   In 1973 Fred had notified Jim Gaskin, dean of the College, of his desire not to be reappointed chairman, and the Department faculty advised the dean to search outside. After various delays, we invited a few candidates to visit in 1974-75, but made no offers.

The year 1974-75 saw intense study of the graduate curricula by a faculty-student committee, and in 1975-76 the faculty debated and revised the committee proposals. We created many new courses and substantially revised the degree requirements. With a
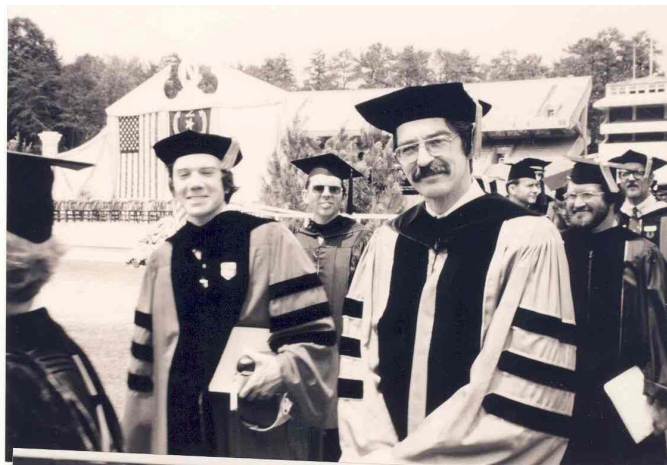
Top: Steve Weiss and Don Stanat at University Day in October 1973; Bottom: John Coloutta, Kathy Yount, Lydia Papanikolaou, Paul Clements, and Vicki Baker at the 1979 Department 4th of July picnic

1978

four years of his presence. While Mehdi was on leave in 1977-78, Steve Bellovin took the year off from his doctoral studies to serve as full-time instructor. I remember one lively and confusing faculty meeting at which nearly half the participants were named Steve.

During the Spring semester of 1978-79, Rik Vantilborgh visited from the Philips Research Laboratory in Brussels. Earlier that same year, we were joined by Henry Fuchs, who had been a student of Robert Plummer in the computer graphics program at Utah before teaching at

1979

the University of Texas at Dallas. Henry filled the void created by the loss of Foley and Wallace, and is with us still; in 1988 he was named Federico Gil professor.

In 1979-80, with Don Stanat on leave at IBM in California, Mehdi Jazayeri in his last year was joined by Carlo Ghezzi, visiting for one year from the Politecnico di Milano. The visit led to the collaboration on their textbook on programming languages. It was also Dave Parnas's last year in our classrooms. Although he continued to hold an appointment, he moved his base to IBM and the Naval Research Laboratories. This period was characterized also by the rise of Unix, networking, and electronic mail. Jim Foley had tried to interest us in the Unix operating system around 1974, but met with substantial opposition. By 1978, however, the tide had turned and an active group of graduate students did the bulk of the work in propelling us into the mainstream of academic computer science computing. Of far-reaching influence beyond the Department was Usenet, the network conceived by Duke graduate students Jim Ellis and Tom Truscott. It was implemented in the last quarter of 1979 by them and our graduate student Steve Bellovin, who wrote the first version of netnews as well as the getdate() subroutine, which lives today. Usenet had been characterized as the "poor man's Arpanet" and first made network news widely available to the academic computer science community.

few adjustments, the new structure served through 1993-94.

A key issue was how to accommodate entering graduate students with disparate backgrounds. We created a set of short "immigration" courses lasting from one to six clock hours, to be offered while classes were starting in the Fall. Upon realizing that it might be difficult to explain our terminology to foreign students, we decided simply to call the offerings "microcourses."

Academic year 1975-76 was the first full year for Mehdi Jazayeri, who had come from Case Western Reserve with strong credentials in programming languages. But it was also the last for both Jim Foley and Vic Wallace. Jim moved to George Washington University; Vic

1976

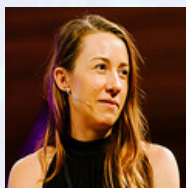became department chairman at the University of Kansas. Our graphics strength was sorely reduced by their departures.

1977

In 1976-77 we were joined by operating systems and software engineering expert Dave Parnas, who kept us all on our toes during the
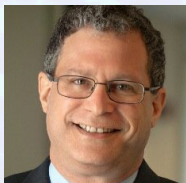
NOV. 14th

JULIA GRACE
CTO at Tindie
Engineering lead at IBM Almaden Research

DEC. 5th

LEE NACKMAN
VP at Hewlett-Packard,
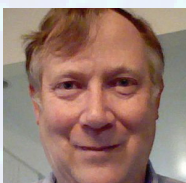Microsoft, & IBM

JAN. 8th

MATT CUTTS
Distinguished Engineer & Webspam
Team Lead at Google

FEB. 23rd

DICK SITES
Senior Staff Engineer at Google
Co-architect of the DEC Alpha

MAR. 23rd

JOHN CRAWFORD
Intel Fellow & Chief Architect for the Intel386,
486 and Pentium Processors

STARTUP PANEL
FEATURING

APR. 8th

PHAEDRA BOINODIRIS
Intrapreneur at IBM
Founder, CEO of WomenGamers.com

MIKE CAPPS
President at Epic Games
President & Founder of Scion Studios

ERIC CARLSON
CEO at Telcontar
Senior VP at Silicon Graphics

AARON HOUGHTON
CEO & Co-founder of BoostSuite
Co-founder of iContact

UNC
DEPARTMENT OF
COMPUTER SCIENCE

JENKINS
WILSON
TAYLOR
& HUNT
PATENT ATTORNEYS

The Toolsmith Endowment Fund

The Toolsmith Endowment Fund was created during our 50th Anniversary year to build a sustainable discretionary funding base for Computer Science at UNC-Chapel Hill. The fund is named to honor a paradigm of computer science research developed by our department's founder, Dr. Fred Brooks. The computer scientist as toolsmith refers to the idea that successful computer scientists create tools and solutions to address the needs and enhance the work of others. In the words of Dr. Brooks, "A toolmaker succeeds as, and only as, the users of his tool succeed with his aid. However shining the blade, however jeweled the hilt, however perfect the heft, a sword is tested only by cutting. That swordsmith is successful whose clients die of old age."

To honor the Carolina way of computer science, the Toolsmith Endowment Fund supports undergraduate student projects, graduate student fellowships, course development, and other important and urgent departmental needs. We greatly appreciate the support of the generous donors who made this fund possible.

How to Contribute

To contribute to the Toolsmith Endowment Fund online, please visit https://giving.unc.edu/gift/comp. Please select "The Toolsmith Fund in Computer Science" in the drop down menu.

To contribute by mail, please make a check out to "UNC-CH Computer Science" and indicate "Toolsmith Endowment Fund" on the memo line. Please mail your check to:

Sandra Neely
Campus Box #3175
Department of Computer Science
UNC – Chapel Hill
Chapel Hill, NC 27599-3175

Questions?

If you have any questions about the Toolsmith Endowment Fund or giving to the Department of Computer Science at UNC-Chapel Hill, please contact:

Michael J. Fern, PhD
Associate Chair
Department of Computer Science, UNC-CH
919.590.6077
fern@cs.unc.edu

Kiley Moorefield
Associate Director of Development
The Arts & Sciences Foundation, UNC-CH
919.843-4454
kileyann@email.unc.edu

We greatly appreciate the ongoing support our alumni community provides. Please help us ensure another 50 years of excellence by considering a contribution to the Department.

Thank you!

DEPARTMENT NEWS

WELCOME

New Staff

Fabrienne "Fay" Alexander joined the department as an Administrative Support Associate. Fay comes to us from UNC Nephropathology, where she was also an administrative support associate.

Thanks and Farewell

Brian White retired on June 27 after 27 years working in the department. He received a master's degree from the department in 1987 and has served as IT Director since 1995.

CONGRATULATIONS

Faculty and Staff

Mike Reiter was named one of the IEEE Fellows of 2014. More information can be found on page 2.

Russ Taylor was named 2014 Inventor of the Year by the UNC Office of Technology Development. See page 2 for more information.

Ron Alterovitz co-organized the NSF-sponsored Workshop on Robot Planning in the Real World: Research Challenges and Opportunities. The workshop sought to create a roadmap and identify challenging problems for the field of robot planning with the goal of making robots less reliant on human supervision and more widely deployable in the real world.

Tessa Joseph-Nicholas was recognized by the William and Ida Friday Center with their 2014 Excellence in Teaching Award.

Megan Erlacher was promoted to Accounting Technician after having previously served as Travel Coordinator.

Missy Wood, the manager of the Research Support and Communications team, received the 2014 Catherine G. Perry Staff Excellence Award.

Murray Anderegg received a UNC IT Award. Please see page 3 for more information.

Ming Lin was elected to the IEEE Board of Governors. More information can be found on page 3.

Graduate Students

Andrew Maimone was named the first recipient of the Timothy L. Quigg Student Inventor of the Year Award. More information about Andrew and the award can be found on page 2.

Undergraduate Students

Matthew Leming was awarded a 2014 Goldwater Scholarship. Turn to page 3 for more details.

SPONSORED RESEARCH

ARO Workshop: Cyber Security: From Tactics to Strategies and Back. PI: Michael Reiter. DOD DA Army Research Office.

Danger; Understanding Privacy Risks of Ubiquitous Personal Augmented Reality Head-mounted Displays. PI: Jan-Michael Frahm, Co-PI: Fabian Monrose. DOD DA Army Research Office.

Efficient Numeric and Geometric Computations using Heterogeneous Shared Memory Architectures. PI: Dinesh Manocha. Army Research Office.

Growing the Science of Security through Analytics. PI: Michael Reiter. North Carolina State University (Prime: DOD National Security Agency).

A Multicore Real-Time Mixed-Criticality Framework for Avionics. PI: James Anderson, Co-PI: Sanjoy Baruah. Air Force Office of Scientific Research.

Quantitative Motility Phenotyping of Basal Breast Cancer in a 3D Microenvironment. PI: Amy Oldenburg, Co-PI: Russell Taylor. NIH National Cancer Institute.

RT-SPACE: A Real-Time Stochastically-Provisioned Adaptive Container Environment. PI: James Anderson, Co-PI: Sanjoy Baruah. DOD DA Army Research Office.

SBIR Phase I: Cloud-based Acoustics Simulation Service. PI: Anselmo Lastra. Impulsonic Inc. (Prime: National Science Foundation).

Software Architecture and Support for Image Processing Using Controllers with Graphic Processing Units. PI: James Anderson, Co-PI: Sanjoy Baruah. General Motors Corp.

Suport for the 2015 USENIX Security Symposium. PI: Fabian Monrose. National Science Foundation.

TWC: TTP Option: Small: Collaborative: Scalable Techniques for Better Situational Awareness: Algorigmic Frameworks and Large-Scale Empirical Analyses. PI: Fabian Monrose. National Science Foundation.

Workshop: Robot Planning in the Real World: Research Challenges and Opportunities. PI: Ron Alterovitz. National Science Foundation.

ALUMNI NEWS

M.S. and Ph.D. Alumni

John H. Crawford (M.S. 1977) was inducted as a Fellow of the Computer History Museum "for his seminal work on industry-standard microprocessor architectures", along with Lynn Conway and Irwin Jacobs.

Steve Bellovin (M.S. 1977, Ph.D. 1982) was named the Percy K. and Vida L. W. Hudson Professor of Computer Science at Columbia University and was elected to the Cybersecurity Hall of Fame.

Robert Lewis (M.S. 1981) was the overall Chair for the ACA conference held at Fordham University July 9 - 12, 2014.

FAMILY MATTERS

Joshua Kon (B.S. 2010) and **Caitlyn Losee** (B.S. 2010, M.S. 2012) were married in Denver, CO in September 2013.

Joseph Walters (B.S. 2003) and his wife Shannon welcomed their first child, Harper Faye, in November 2014.

Deepak Bandyopadhyay (Ph.D. 2005) and his wife Kiran welcomed a son Rayanin to their home in January 2014; he joins elder sister Shreya.

Jonathan Robbins (B.A. 2002, M.S. 2004) and his wife Stephanie welcomed their first child, William Alexander, in May 2014.

Department Business Manager **Latasha Mingo** and her husband Roshaun welcomed a daughter, Madison Arie, in September 2014.

Ray Van Dyke (M.S. 1989) was re-appointed Chair of the Greater Washington, DC and Northern Virginia Chapter of the Licensing Executives Society. He was also appointed Co-Chair of the Intellectual Property Committee for the Bar Association of Montgomery County Maryland, and continues to teach his Intellectual Property and Technology course in the Computer Engineering Department at SMU. Ray was also elected to the Board of Directors of the Washington, D.C. Chapter of the ACM.

Bill Oliver (M.S. 1990) was recently elected to the Board of Directors of the National Association of Medical Examiners. He completed the first phase of a National Institutes of Justice grant studying the ability of forensic pathologists to interpret photographs of patterned injuries of the skin. He also spoke at the World Congress on Infant Head Trauma, discussing biomechanical modeling of abusive head trauma, and at the American Academy of Forensic Sciences on inferring 3D shape from 2D wound images.

Ronald Azuma (M.S. 1990, Ph.D. 1995) was part of a large team that created the Leviathan Augmented Reality demonstrations that Intel presented at CES in January 2014. These demonstrations brought to life fantasy creatures from the book Leviathan and transported them into our world, in front of thousands of attendees.

Terry Yoo (A.B. 1985, M.S. 1990, Ph.D. 1996) won the very prestigious Hubert H. Humphrey Award for Service to America. The award was bestowed upon him by the Department of Health and Human Services for his leadership in open science through his work on public software that has become the standard for 3-dimensional biomedical image analysis in both commercial and academic communities.

Andy Wilson (A.B. 1997, M.S. 1999, Ph.D. 2002) was promoted to Principal Member of Technical Staff this year at Sandia National Laboratories.

Jun (Luke) Huan (Ph.D. 2006) was promoted to full professor in the Information and Telecommunication Technology Center at the University of Kansas, effective fall 2014.

Todd Gamblin (B.A. 2002, M.S. 2005, Ph.D. 2009) received a DOE Early Career Award worth $2.5 million over 5 years. One of 35 proposals selected out of 750, Todd's project at the Lawrence Livermore National Laboratory focuses on modeling the performance of simulations on future supercomputers.

Tabitha Peck (Ph.D. 2010) started this fall as an Assistant Professor of Computer Science at Davidson College.

Kelli Gaskill, former Communications Manager, graduated in May 2014 with a Bachelor of Science in Nursing from UNC-Chapel Hill School of Nursing. She served as Communications Manager from October 2002 - January 2013.

Undergraduate Alumni

Sahil Parikh (B.S. 2001) started a cloud-based project management software Brightpod.com from Mumbai, India.

Joseph Barnes (B.S. 2002) finished his Ph.D. in Philosophy at UC Berkeley and will be working for the foreseeable future in Berlin as a Wissenscheftlicher Mitarbeiter (Assistant Professor) at Humboldt Universitaet zu Berlin.

Amy Rae Fox (B.S. 2004) is currently pursuing a dual master's degree (MA/MEd) in Cognitive Visualization at California State University, Chico in collaboration with the University of Koblenz and Landau and Pierre Mendes-France University. She is studying the way that graphical representations of information influence the way humans think, feel, and behave. After completing a master's degree, Amy plans to pursue to doctorate in psychology.

Brad Davis (B.S. 2005) has been promoted to Senior Manager with Red Hat.

Erik Andersen (B.S. 2007) started as an Assistant Professor in Computer Science at Cornell University in August.

RECENT PUBLICATIONS

Russell M. Taylor II and Jonathan Harter, "Random Per-Element Luminance Modulation for Improved Visual Tracking," IEEE CG&A, 2014 (in press).

Hal Canary, Russell M. Taylor II, Cory Quammen, Scott Pratt, Facundo A. Gomez, Brian O'Shea, Christopher G. Healey, "Visualizing Likelihood Density Functions via Optimal Region Projection," Computers & Graphics, Volume 41, 2014, pp. 62-71.

Andrew D. Stephens, Cory W. Quammen, Binny Chang, Julian Haase, Russell M. Taylor II, Kerry Bloom (2013) "The spatial segregation of pericentric cohesin and condensin in the mitotic spindle" Mol. Biology of the Cell. 24(24), pp. 3909-3919.

L. G. Torres, C. Baykal, and R. Alterovitz, "Interactive-rate motion planning for concentric tube robots," in Proc. IEEE Int. Conf. Robotics and Automation (ICRA), June 2014, pp. 1915–1921.

W. Sun, I. S. M. Khalil, S. Misra, and R. Alterovitz, "Motion planning for paramagnetic microparticles under motion and sensing uncertainty," in IEEE Int. Conf. Robotics and Automation (ICRA), June 2014, pp. 5811–5817.

P. Moreira, S. Patil, R. Alterovitz, and S. Misra, "Needle steering in biological tissue using ultrasound-based online curvature estimation," in Proc. IEEE Int. Conf. Robotics and Automation (ICRA), June 2014, pp. 4368–4373.

J. Ichnowski, J. F. Prins, and R. Alterovitz, "Cache-aware asymptotically-optimal sampling-based motion planning," in Proc. IEEE Int. Conf. Robotics and Automation (ICRA), June 2014, pp. 5804–5810.

Luzi S, Melinek J, Oliver WR. Medical Examiner's independence is vital for the health of the American legal system. Acad For Path 2013(1):84-92.

Oliver, WR. The burden of bad metaphors: Putting blinders on how we think about gun violence (editorial). Acad For Path 2013(2):264-269.

Oliver, WR. The ethics of external peer review. Acad For Path 2013(3):272-280.

Let us know where you are and what you are doing so that we can include you in our next issue! Send us information via e-mail to *pubs@cs.unc.edu*; fax it to (919) 590-6105; or mail it to the address above, c/o News & Notes. If you fax or mail your information, please include your e-mail address.

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

Support UNC CS

We greatly appreciate the ongoing support that our community provides. Your gifts allow the department to focus on the needs of our students and our contributions to the field of computer science. To make a donation, please visit our secure portal at https://giving.unc.edu/gift/comp.

UNC | COLLEGE OF ARTS & SCIENCES

Dr. Stephen Pizer (left) and Dr. Jan Prins (right) hood doctoral student Chen-Rui Chou (center) during the Department of Computer Science 2014 Commencement Ceremony. Chou became the 50th doctoral student advised by Dr. Pizer to graduate since he joined the department in 1967.