

# multicast

UNIVERSITY OF ROCHESTER **COMPUTER SCIENCE DEPARTMENT** NEWSLETTER

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## Empowering Tech Savvy Young Girls

### While Changing their Perceptions of Computer Science

For one week this summer, a group of young girls was given the opportunity to see computer science in a new light, in an all-female environment. As part of the Rochester Scholars Jr. summer program, 8 middle school girls participated in "Girl Power! A Girls' Introduction to Computers" from August 1-5. These young women arrived with many of the common preconceived notions of the typical computer scientist. It was the goal of the week-long course to change these perceptions, expose the girls to creative uses of computer technology, give them opportunities to meet women working in dynamic computational fields, and encourage them to keep their options open while they continue through their studies in high school and beyond.

Much credit for the structure and flow of the course can be given to Kim Meek, the instructor for the class, who is a faculty member at a local high school and teaches Math, Intro to Computer Science and Advanced Placement Computer Science. After researching different approaches to teaching the material to girls versus boys, she discovered a significant article by the American Association of University Women Educational Foundation Commission on Technology, Gender, and Teacher Education entitled "Tech-Savvy: Educating Girls in

the New Computer Age" (2000). A thorough study into methods of teaching technology to girls, it exposed the problems with the current violent video game culture, the lack of creativity in the course material, and the male dominance that discourage girls from becoming interested at the early levels. "The commission makes it clear that girls are critical of the computer culture, not computer phobic," said Sherry Turkle, professor of sociology at MIT and co-chair of the commission. "Instead of trying to make girls fit into the existing computer culture, the computer culture must become more inviting for girls." The Rochester Scholars Jr. class took it one step further. We created a supportive all-girls environment to spark their interests and gave them hands-on experiences to keep them wanting for more.



*Girl Power! students dismantle a computer for the first time*

Throughout the week, Kim Meek introduced them to logical problem solving, creative activities like ALICE-a graphical programming environment, research areas such as human visual perception using virtual reality, computational linguistics and simple programming. The highlight of the week was tinkering time. They dismantled a computer that had a mystery piece missing, identified all the internal parts and their functions, and figured out what part was missing by process of elimination and a little assistance. For most boys, taking apart machines is a common activity, but none of these young women had ever seen the inside of a computer. They were frenetic as they

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# Faculty News and Notes

Michael L. Scott's textbook, *Programming Language Pragmatics, Second Edition*, was released by Morgan Kaufmann Publishers, 2006 (available October 2005).

Mitsunori Ogihara was named to another term as chair of the department.

Lane A. Hemaspaandra visited Japan as a JSPS Invitational Fellow.

Mitsunori Ogihara will be joining the editorial board of *International Journal on Foundations of*

*Computer Science* (Publisher: World Scientific Press) beginning January 1, 2006.

The paper "Preemption Adaptivity in Time-Published Queue-Based Spin Locks," by B. He, W. N. Scherer III, and M. L. Scott won the Best Paper Award at the Twelfth Annual International Conference on High Performance Computing, Goa, India, to be held in December 2005.

David C. Knill has been appointed Professor of Computer Science.

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opened the case and saw the wires, circuit boards and devices inside. Their desire to understand all the parts and the inner workings of the computer kept them working right through their afternoon break.

Another meaningful part of the week was discussing the advice that 75 professional women computer scientists gave them. They worked through pages of comments and highlighted those that reoccurred. Advice like "Challenge yourself," "Nail science & math skills," and "Don't be hindered by gender stereotypes," gave them solid guidance for future decisions including high school course selection, and possible career ideas. They were shown many new fields they didn't know existed before, and they understand that in their lifetime, nearly every field will have a computational aspect to it.

Morgan Bauer, who attended the Girl Power! class, responded to our question "Did Girl Power! influence any decisions you might make about course selection or future careers?" Her response: "Thanks to Girl Power! an entire new world has been opened up for me. I have always wanted to do something with physical therapy and so that's what I always concentrated on. After this wonderful program I have numerous careers in mind for me now that I never even knew existed before!"

As a method of evaluating the success of the course, we did an assessment exercise on the first morning, and again on the last afternoon. On the first morning, students were to draw a picture of a typical computer scientist, and list personality traits (see Figure 1). On the final day, the girls completed a survey. When one of the students answered the question "Who could be a computer scientist," we knew the class had been a success when a young woman responded, "A regular, normal person can be a computer scientist." Imagine that!

Did we meet the goals of the class? Did we change perceptions, expose students to creative uses of computing, empower them to study math & science and keep their options open through high school and college? You bet we did! Eight girls at a time!

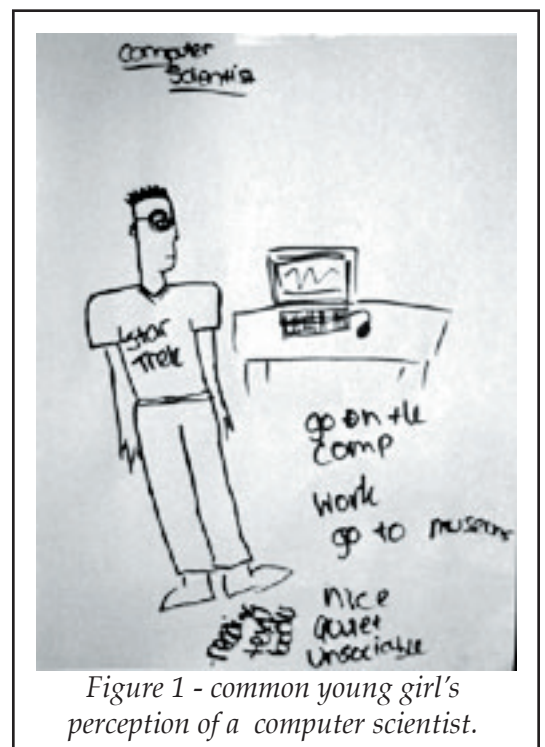


Figure 1 - common young girl's perception of a computer scientist.

## *Theorist Joins URCS Faculty*

### *Meet Daniel Stefankovic*

Daniel Stefankovic has joined the faculty of Computer Science at UR as an assistant professor. Daniel received his Ph.D. from the University of Chicago in computational topology. His research work centers around topics with combinatorial content, including algorithms with connections to mathematics, Markov chains and, most recently, phylogenetic tree reconstructions. In the next ten years, Daniel would like to see answers to the famous questions (e.g., is  $P \neq NP$ , is there an  $O(n^2)$  algorithm for matrix multiplication, is there a polynomial-time algorithm for graph isomorphism, etc.). New concepts and models make theory attractive and useful (e.g., NP completeness, PCP theorem, streaming model). He looks forward to seeing complete surprises on this front. Daniel also anticipates the development of software for a computer algebra system. He would like to see better algorithms, systems and hardware support (e.g., reconfigurable processor arrays, huge integer arithmetic coprocessors, etc.).

Stefankovic chose a position at UR because of the size of the department and a favorable balance between teaching and research responsibilities. In Daniel's spare time, he enjoys spending time with his wife Ivona and 3-year-old daughter. The family enjoys hiking and biking and is beginning to explore Western New York as time permits.



## **LeBlanc Leaves UR for Miami Post**

Tom LeBlanc, professor and former chair of Computer Science, left his most recent position as Vice Provost and Dean of the Faculty of the College in July to become Executive Vice President and Provost at the University of Miami.

LeBlanc came to Computer Science in 1983 after completing his Ph.D. at the University of Wisconsin, Madison. His research work centered on the parallel program development process, performance tuning and debugging. LeBlanc advised ten Ph.D. students before taking the position of Dean of the college. Some of his students are now tenured faculty or working in industry both in the United States and abroad.

As chairman from 1990-1996, Tom brought the department through some tough financial times when the university cut departmental budgets significantly. During his chairmanship, his close ties with friends and colleagues in Brazil created a relationship that brought us several graduate students on fellowships from the Brazilian government. Tom enjoyed brushing up on his Portuguese and was often found around the department conversing with the Brazilian students in their native language.

Though Tom will miss his weekly hockey games, his golf game will get year-round practice in the southern Florida climate. LeBlanc and his wife, Anne, have two sons, Brian, a student at Rice University, and David, a student at the University of Rochester.



*Thomas J. LeBlanc*

# Faculty Research Profile

## *Chen Ding: Memory Hierarchy Management*

Chen Ding's research lies in the area of memory hierarchy management, at the intersection of program compilation, memory management, and increasingly self-adaptive systems. Ding focuses on modeling and exploiting large-scale, run-time patterns in program executions, which he calls program behavior. His research includes foundational work (computational models of locality, reference affinity, and program phases) as well as practical techniques for using formal models to improve performance, control memory size, save energy, and most recently, support behavior-based parallelization.

Most data-intensive applications, ranging from mathematical, scientific, and engineering computing to database and information processing, spend most of their execution time waiting for memory. Large-scale memory usage is a product of all program code and data, so it is less amenable to traditional modular design and analysis. Manual memory management and optimization, on the other hand, create major difficulties for software development, maintenance, reliability, and security. As programs are increasingly composed from libraries and run with interpreters and virtual machines, techniques that can identify and exploit high-level composite or emergent patterns from low-level code are needed. To this end, Ding has been pursuing a behavior-based approach, which, by profiling a few runs of an application, finds large-scale behavior patterns and uses them for off-line whole-program transformation and on-line adaptation.

A basic concept in behavior analysis is *reuse distance*, which has been used in cache and virtual memory design for 35 years. In 2003, Ding invented an approximate but *asymptotically faster* algorithm, which makes it computationally feasible for fine-grained program analysis. In this new context, reuse distance opens a number of fundamental issues, such as direct modeling of program behavior, development of a formal foundation, and application to specific programs.

Chen's group has developed three behavior models with increasing generality and adaptivity. The first is *whole-program locality*, where they showed for the first time that a profiling-based method could predict the change in memory performance in executions that were many orders of magnitude larger than the ones used in training. The second is *reference affinity*, which is the first trace-based model of

hierarchical data locality. It found array and structure field organization (among an exponential number of choices) that was consistently better than the layout given by the programmer, compiler, or statistical clustering. A prototype has been implemented in the IBM production compiler. The third is *program phase analysis*, which combined wavelet analysis, grammar compression, and binary rewriting and enabled irregular programs (e.g., N-body simulation, adaptive mesh, sparse matrix) to repeatedly reorder their data at run time based on the input, the environment, and the state of computation.

Behavior-based program analysis was motivated by Chen's thesis work. Using global and dynamic techniques, his prototype compiler reduced memory traffic four-fold over the best industry compilers at the time. The techniques helped Intel obtain a 12% average speed improvement on Itanium2 for 14 SPEC2K floating point benchmarks and helped him design faster algorithms for sorting and tree search.

Since 2003, an increasing number of distance-based techniques have appeared in major computer systems conferences, including first techniques for

*Chen Ding is an assistant professor in the Department of Computer Science, University of Rochester. He received his Ph.D. from Rice University. He is the recipient of an Early Career Principal Investigator award from the Office of Science of the U.S. Department of Energy, and a CAREER award from the National Science Foundation.*

predicting performance across architectures and predicting cache interference among parallel threads, improved OS support for interactive applications (e.g., Apache Server), and improved Linux paging, which used the longest last reuse distance instead of earliest last access time for page replacement (as in LRU). Distance is rapidly becoming as versatile a tool for behavior analysis as dataflow, dependence, and type are for program analysis.

Ding's group is currently pursuing two directions. The first is behavior models for multi-core chips,

## *Recent Ph.D. Theses*

**Nathan J. Blaylock**

*Towards Tractable Agent-Based Dialogue*  
Saarland University, Computational Linguistics and Phonetics

**Matthew R. Boutell**

*Exploiting Context for Semantic Scene Classification*  
Rose-Hulman Institute of Technology, Dept. of Computer Science & Software Eng.

**Bo Hu**

*Cast Shadows in Augmented Reality Systems*  
U. Rochester, Center for Visual Science

**Grigorios Magklis**

*Increasing Energy Efficiency in Adaptive Architectures*  
Intel Labs, Barcelona Research Center

**Brandon C.S. Sanders**

*A Theory of Quasi-Static Object Discovery*  
(unaffiliated)

**Joel R. Tetreault**

*Empirical Evaluations of Pronoun Resolution*  
University of Pittsburgh, Learning Research & Development Ctr.

**Rahul Tripathi**

*Complexity of Concrete Problems and Test Languages*  
University of South Florida, Dept. of Computer Science & Engineering

**Yutao (Julie) Zhong**

*Distance-Based Whole-Program Data Locality and Reference Affinity Hierarchy*  
George Mason University, Dept. of Computer Science

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which have both shared and private cache. The second is behavior-based programming, where a user “re-programs” an existing application at the behavior level even though the user knows nothing about the code and data structure. Their prototype has enabled preventive garbage collection, memory-leak detection, and (12X speedup on an open-source English parser through) behavior-based parallelization.

Chen believes that in the long run, a program may analyze and interact with other programs

(and itself) at the behavior level. If modules are composed by behavior patterns rather than by code and data, they may be more adaptive and scalable in size, performance, and dependability. Questions are open on whether a module can exert enough control through behavior analysis on another module, whether a module can anticipate the behavior of others including their failures, and whether a program may evolve beyond the comprehension and the control of its designer.

## *Graduate Alumni News and Notes*

**Altman, Art (MS '87)** lives in San Carlos, CA and works for the Electric Power Research Institute in Palo Alto, and would enjoy hearing from URCS D grads who live in Northern California.

**Bianchini, Ricardo (PhD '95)**, now an Associate Professor at Rutgers, is spending the 05-06 academic year on sabbatical at EPFL in Switzerland.

**Brucks, Mark (MS '83)** has left Applied Research Labs (related to the University of Texas) and joined J3S, a small startup that works mostly for the Navy. He's still in Austin, TX, where Susan works for the school district (instructional technology).

**Carceroni, Rodrigo (PhD '01)** has moved from his position at the Federal University of Minas Gerais in Brazil to a post-doctoral fellowship at the University of Pennsylvania.

**Cierniak, Michal (PhD '97)** has taken a job with Google.

**Cooper, Paul (PhD '89)** is now General Manager of the space robotics division for MDA in Brampton, Ontario (where the robotic arm for the space shuttle was developed).

**Denber, Michele (MS '80)** reports that she has earned her commercial pilot's license and multi-engine rating, and that she waves every time she flies over the UR Computer Science Building on final to runway 28.

**Dibble, Peter (PhD '90)** is still at TimeSys Corporation in Pittsburgh, where he is Maintenance Lead and Editor for RTSJ Version 1.0.1 (see [www.rtsj.org](http://www.rtsj.org)), and he says he's enjoying a recent book co-authored by Neal Gafter (PhD '90).

**Fuentes, Olac (PhD '97)** was married in December 2004 to Tamar Solorio, and he has moved from Mexico to Texas, where he is an Assoc. Prof. in the Computer Science Dept. at the University of Texas in El Paso.

**Han, Yenjo (PhD '94)** is still in California, working at Writers Street LLC, a company that helps kids online with writing.

**Heliotis, Jim (PhD '84)** writes that his older daughter Sasha graduated from Rochester Institute of Technology with a degree in photography, and is now getting her career started in New York City.

**Hoebel, Lou (PhD '98)** has been promoted to Manager of the Enterprise Architectures Laboratory at GE Global Research Center (Niskayuna, NY). His group is working on projects ranging from NLP to logistics to SOAs for AFRL, NBC, GE Healthcare, and others. He spends his leisure time biking in the mountains of the Northeast.

**Litman, Diane (PhD '85)** has been promoted to Full Professor at the University of Pittsburgh, and recently received the Speech Communications Best Paper Award from the European Assoc'n. for Signal Processing for a paper she co-authored.

**Marengoni, Mauricio (MS '95)** is now at the Universidade Presbiteriana Mackenzie in Sao Paulo, Brazil.

**Markatos, Evangelos (PhD '93)** was recently promoted to Full Professor at the University of Crete. He is also Head of the Distributed Computing Systems Lab at ICS-FORTH (in Heraklion, Crete).

**McCallum, Andrew (PhD '96)** has been selected as a UMass Amherst Lilly Teaching Fellow for the 2005-2006 academic year. Acceptance into the Lilly program is highly competitive, with about 30 applications received each year for only eight awards.

**Michael, Maged (PhD '97)** and **Shumin Guo (MS '96)** have a baby daughter, Christine, who recently turned one and a half, and their son Daniel started kindergarten this fall.

**Müller, Jim (MS '94)** has completed his post-doc at Stanford U. Medical Center and is now at Google in California.

**Parthasarathy, Srin (PhD '00)** was promoted to Associate Professor at The Ohio State University. His paper won the best research paper award at VLDB2005. Personally, the twins (Visvam and Anutam) have been getting into all kinds of mischief and have started toddler school.

**Pinheiro, Eduardo (MS '01)** has received his PhD from Rutgers, taken a position with Google in California, and gotten married to a fellow Brazilian, Izabel Martins.

**Ringer, Eric (PhD '00)** is now on the CS faculty at Brigham Young University. He writes that he organized the ACL 2005 Workshop on Feature Engineering for Machine Learning in Natural Language Processing, and that all four of his children are now in school.

**Riopka, Terry (MS '95)** has finished a post-doc at Lehigh University in Bethlehem, PA and is now in Boston, working for Aware, Inc.

**Russell, Dan (PhD '85)** has recently moved to Google. He writes that his job is incredibly exciting and that the average age at Google is 28, making him "a true grey beard" there. He also says he's working with FOUR other Jerry Feldman advisees on his immediate team.

**Schudy, Bob (PhD '82)** is now an Associate Professor in the CS Department at Boston University's Metropolitan College, which he says "gives me the opportunity to return to my first loves, teaching and research." His son Warren is starting the PhD program at Brown, and his son Devon works at eIQnetworks (where Bob worked until recently).

**Shani, Uri (PhD '81)**, still with IBM Haifa Research Lab, writes that he is the happy grandpa of his first grandchild, born early this year.

**Shopiro, Jonathan (PhD '80)** writes that he is now legally blind and is a certified massage therapist. "Life is a lot different than it was before," he says, "but I'm still having fun."

**Slayden, April (MS '02)** says her big news is that she's getting married this December to Jeff Mitchell (from Magnolia, MS). She's still working for HP Labs in Palo Alto, and they will be making their home in the Bay area.

# Machine Learning Meets Neuroscience

## Neural Decoding in its Infancy

As with many women in the field of computer science, Virginia de Sa, Ph.D. '94 is hoping that her work in neural encoding will one day improve the human condition. She began the process of understanding the computational aspects of the human brain as a student of Dana Ballard. She continues this journey with her own advisees as an assistant professor in the Department of Cognitive Science at the University of California, San Diego.

Virginia's current research projects are at the intersection of machine learning and computational neuroscience. Along with her current advisees, most projects are focused on understanding the circuitry underlying the computational properties of neurons in early visual cortex. Her research group is using machine learning to better understand the patterns in the recorded data. In addition, they have machine learning projects involving integrating multiple sources of information that are continuing her research from Rochester. The group is also using machine learning to better decode EEG recordings for brain computer interfaces (BCIs). BCIs provide a way of reading out brain intention without requiring motor output. One of many challenges is improving the recognition of patterns in the brain waves. Their future direction in this project will be to improve the quality of the feedback that is given to the user during training. By improving this, they hope to speed up learning and possibly help the user to produce more easily distinguishable brain waves. In the future, they will be branching out more to include psychophysics as another technique for learning about the brain. In particular de Sa will be looking carefully at the differences in how the different sensory modalities deal with time.

The great discoveries Ginny hopes happen in her lifetime would include those that help people in a significant way. Though her interests do not fit neatly into any one field, she looks forward to one possible great discovery/invention that overlaps with several of her interests: a very high bit rate brain-computer interface to allow locked-in ALS patients to interact with the world after they lose all voluntary motor control. Currently the bit rates for such systems are quite slow. Improvements will require advances in understanding brain physiology as well as advances in machine learning, signal processing and human-computer interaction. Similarly, if there is a better understanding of the brain, with computer-brain interfaces it may be possible to help people with sensory deficits to more fully experience the multi-sensory world.

Beyond her work, Ginny enjoys movies, tennis, and running. These days she spends more time running after her two-year old daughter than on the track. As a young mother, Ginny knows the difficulties in meeting the requirements of the tenure process while raising a family. The University of California is taking some steps in the right direction by giving reduced teaching loads after the birth or adoption of a baby as well as extending the tenure and review cycles. They are even starting to implement a half-time system for assistant professors. De Sa sees this as a positive step for the retention of women in academia in any field. Within computer science specifically, however, Ginny has read many theories about the lack of women in the field (and in many other sciences). She has yet to be convinced that any of these theories accurately identify the problem and the solutions needed to bring more women into the computational fields.



Virginia de Sa '94

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**Ed Smith (PhD '82)** has been working (days) for Lunar Logic in Eugene, OR, the company that does the iLrn web site for Thomson book publishers. The rest of his time is devoted to theatrical performance and to a comedy troupe he recently founded. Watch for his first dvd!

**Smithline, Neil (MS '89)** has been promoted to Sr. Staff Engineer at BEA Systems, and wonders how kids grow up so fast. His (boys) are now 10 and 12.

**Tan, Wenzhao (MS '05)** is now living in Seattle and working for Microsoft in Redmond.

**Watanabe, Yuki (PhD '84)**, who is with Ameritrade in New York City, writes that his two-year-old son Hans has excellent social skills but seems to value defiance more than obedience ...

**Veenstra, Jack (PhD '95)** is at Google but not in New York, as was listed incorrectly in the last newsletter. He's in California, and he and his wife have two children, a daughter who recently turned four and a son who just turned one.

**Zhang, Zuohua (PhD '03)** has completed her post-doc at the Institute for Neural Computation at UCSD and is now working for Fair Isaac Corp. in San Diego.

**Zimand, Marius (Ph.D. '96)** reports that he received the European Assoc'n. in Theoretical CS ICALP Best Paper Award 2005 for his paper "Simple extractors via constructions of cryptographic pseudo-random generators," presented at ICALP 2005 in Lisbon.

## *High Rollin' in Redmond*

When Steve Marx arrived on campus as a freshman in the fall of 1999, he was part of the biggest class in our department's history. The success of the dotcom industry brought throngs of students into our program, but it wasn't long before Steve set himself apart from the freshmen class. In his first year here, he developed an algorithm that he presented at the 2000 Western New York Image Processing Workshop. He was a workshop leader for CSC 172 the following year, a member of Strong Jugglers, and a performer with the Midnight Ramblers a cappella group. At the end of his third year, he graduated with many graduate courses under his belt and a healthy dose of research experience.

His successful job search led him to Microsoft in Redmond, WA where he accepted a position as a software design & test engineer. Microsoft, being the meritocracy that it is, rewarded Steve well for his debugging successes, and soon Steve was moved to a newly created group called the Code Excellence Team. He found that one of the biggest challenges in this position was influencing a change in coding techniques with the front line coders, when his team had no direct supervisory authority over them. Without such a chain of command, he now has found many ways to be persuasive enough to convince programmers to follow the Code Excellence methods. With engineers, the most convincing proof is hard data, such as dollars or time saved, or fewer bugs detected by correct coding methods. Creating a cultural change can be quite an undertaking, but Steve feels that the Code Excellence Team is making steady progress toward a bottom up improvement in the quality of the code throughout Microsoft's operations.

Marx says one of the most surprising things about his work life after college is that it isn't as different as he thought it would be. Microsoft's flexible work hours and casual attire policy make it seem more like a continuation of college than many 9-5 jobs. One change, however, is that he now has a boss who is more hands-on than any faculty advisor ever was. He does credit his interaction with faculty and graduate students for his ability to hold his own with his co-workers. He currently has a Ph.D. who reports to him. Marx said that the vertical integration of undergrads/grads/faculty at UR gives him the confidence to hold his own with those more educated than himself.

This has been an exciting year for Steve's extracurricular life. Not only did he buy a house and joined a co-ed a cappella group, "The Acoustix," but he has also had a lucrative year with his other hobby, poker. After qualifying first in an on-line game through Pokerstars, Steve was entered into the World Series of Poker in Las Vegas in July.

He finished 35<sup>th</sup> out of 5619 entrants, and won \$274,000! Steve is part of the growing trend in computer types using logical, mathematical and strategic skills to win at on-line poker. He approaches the game as if he were the computer, and uses pattern matching, randomization, probability and arithmetic to gain his competitive edge. The game all changes with face-to-face play, however. In Las Vegas, with professional players among the contestants, social skills, body language, acting ability, and willingness to take a risk factored in. Steve prefers the on-line game to a crowded, smoky Las Vegas casino. At home, there are no lines at the rest rooms and the snack bar is always open.

One piece of advice that Steve would pass along to URCS undergraduates is to be prepared to be a lifelong learner. According to Steve, it takes some time on the job to realize what your weak areas are, and what you'll need to do to be on par with your co-workers. You'll have to pick up the books and learn on the fly, which is also a skill you should have mastered at UR. Though our program gives you good theoretical preparation and teaches you to think & problem solve, there are aspects of software engineering used in entry-level programming jobs that are not part of our core curriculum. Each employer will have the "company" way to write code that will be a learning process. Master these skills quickly, and you'll maximize your potential, he says. With any luck you'll be looking for a financial planner and a tax accountant just like Steve!





# Undergraduate Alumni News

**Anderson, Darrell '96** - "I'm a Senior Engineer at Google, and won a Google Founders' Award. All in all things are terrific!"

**Bakas, Yoel '01** - "Renee and I moved down to Atlanta about 3 months ago because a Regional Sales Specialist position opened in the South East. It has been a GREAT move although I miss the Ocean since I now teach SCUBA (on the side of course). I have found a nice shop to teach out of here in Atlanta and most of the students do their checkout dives in the Caribbean or somewhere where there is an Ocean."

**Bakken, Luke '98** - "I'm still working for Getronics. I have recently switched jobs to be the sole developer and support person for the database component of their MosaicOA banking software which is in use by many banks all over the world. It has been a fun experience learning such a large new codebase."

**Barnett, Elliot '97** - "I work at a small network storage company called Maranti. We develop a network storage controller. I am the director of, well, a lot of things. I run all of configuration management (build/release of the product, code management, tools development, gatekeeping, infrastructure process development, etc.), customer support and service, and technical publications."

**Bent, Russell '00** - "I received my PhD from Brown in May 2005 and I will be taking a position at Los Alamos National Labs."

**Bhopale, Seema '04** - "I have joined with Dr. Thomas Graeber in his systems biology proteomics lab. My project is to figure out the active cellular pathways in glioblastoma multiforme (malignant brain tumor) in hopes of finding new drug targets for this terrible, terminal disease. It is a lab in the UCLA Dept. of Molecular and Medical Pharmacology, but you'll be pleased to know that I am fully utilizing my CS degree as well as the biology one. One of the greatest thing about the lab is that they use a variety of techniques, a strong part of which is developing software for the analysis of proteomics research."

**Bijlani, Rahul '02** - "I recently moved to Houston, TX to begin a career in investment real estate brokerage with Marcus & Millichap. My market is hospitality-i.e. I represent buyers/sellers of hotels in Texas. This is my dream job and I love the South, so I will probably settle down here."

**Brill Albright, Ingrid '02** - "I got married on April 27th, 2005 to Shane Albright and we honeymooned in beautiful Hawaii. We bought our first house together in October and love it. I am still working at NASA-Goddard in Maryland, in flight software for various projects, and am enjoying it."

**Carlberg, Jason '03** - "I am now a Software Development Engineer at CSG Systems, Inc. here in Omaha."

**Chambers, Nathanael '02, '03 (MS)** - "with my wife Amy, I have recently purchased a home in Pensacola, FL. I'm still working at the Institute for Human Machine

Cognition."

**Chang, Allison '01** - "I'm still working for the City and County of Honolulu as a programmer."

**Clever, Jacob '03** - "Karen Raupp '04 and I were married in 2004 and we now have a baby boy, Owen Wesley Clever who was born Feb. 16, 2005. I am currently in my second year as a part-time MBA student at Bentley College concentrating in Management of Operations and Technology. I am still employed with BAE SYSTEMS of Nashua, NH in the Operations Leadership Development Program and will be starting a new rotation within the program as a Mfg. Production Supervisor in July."

**Denny-Brown, Derek '96** - "I went, I wandered, and in the end...I returned. I'm still at Microsoft, still working on XML. I'm a development lead, a developer that manages other developers."

**Easwaran, David '04** - "I completed my first year of law school at The Ohio State University."

**Fruh, Andrew '03** - "I finished my first year of grad school in RIT's computer animation MFA program. I'm still happily working full time for Truth-n-Beauty as well."

**Gerega, Aaron '99** - "I'm still working at Lockheed Martin in Syracuse. Kelly Murlick and I got hitched in Key West back in April and Lockheed is sending us to Rome, Italy as soon as our Italian work visas clear. We should be over there for about two years."

**Goldstein, Gregory '01** - "I'm back in Syracuse, working at Global Instrumentation LLC in Manlius. I'm working on software for EKG equipment."

**Heavey, Brendan '02** - "I'm currently a year into the graduate program in Biostatistics at UB. I'm also working in the Cardiology Department doing the database work for an NIH funded clinical trial."

**Inamdar, Peenak '00** - Pete writes from Brooklyn, "I am doing well. Ever in New York City or want to visit, feel free to stop on by, 917 232 6756."

**Jonsson, Justin '03** - "I moved to NJ to live with my girlfriend, and took a job at a different hospital (you may recall I worked at Strong Memorial doing IT work). So I started doing application system support (glorified help desk) here at Atlantic Health System on October 11, 2004, but after 5 months I moved into a web programming/development role."

**Ku, Jason '01** - Jason writes from London "Busy at work, and I really miss Nick Tahou's! I kind of found a British version, but it involves fish, chips, and mushy peas...not quite the same, but it's probably giving me the same calorie count!"

**Lehr, Michael '01** - "I obtained my Master's in Engineering in Computer and Information Science at Univ. of Pennsylvania, with a focus on Computer Graphics and Computer Vision in May '05. I recently accepted a position at Sarnoff Corp in Princeton NJ as a Computer Vision-Image Processing Engineer."

**Leung, Hector '00** - "I am working for Northrop Grumman at Air Force Research Laboratory at Rome,

*(Undergraduate News continued from page 9)*

NY."

**Li, Yanjun '02** - "I am an assistant to a successful Chinese businessman. Mainly doing consulting work, or acting as the middleman, either giving our expertise or pulling two ends together and making things work. It's very interesting as it gives me a much more in depth view of how China works and how its culture affects business decisions."

**Linsky, Kenny '05** - "I got a position with Hewitt Associates as a Business Systems Analyst in Norwalk, Connecticut."

**Luis, Cristina '01** - "I have received my Navigator Wings from Joint Specialized Undergraduate Navigator Training on June 24, 2005. After much more training I'll be a navigator on the HC-130 combat search and rescue plane, stationed at Davis-Monthan AFB, Tucson, AZ."

**Mackenroth, Adam '96** - "I am now the proud father of a baby boy. He was born July 27, 2004."

**Moldover, Jonathan '99** - "I am still working as a game programmer at Frog City Software. We're doing a game for Xbox now (formerly just PC) which is cool. My Frisbee team, Kaos (Santa Cruz) made it to nationals last year, finished 11th... pretty cool. Working on starting a new rock 'n roll band, name TBD, world domination to follow shortly."

**Meeks, Eric '03** - "Currently I now work as an independent consultant for the Department of Defense where I write database programs that are now in use at Defense Depots across the country and soon to be around the world."

**Moore, Justin '05** - "I finished a big trip around Europe; visited London, Rome, Barcelona, the Riviera, Crete, and mainland Greece. That was great, I had the opportunity to see many places that were amazing. It also gave me enough of a break from work that I am actually motivated to get into a research program (Columbia University) right away."

**Mufti, Yasser '99** - "I have been at Microsoft in Seattle for about 4 years."

**Norwood, Jonathan '04** - "I switched from doing QA work for my company (Gestalt) to doing Java development. I'm currently working on the next generation Weapon Target Pairing system for the Air Force."

**Oussef, Karim '04** - "I am attending Boston University Law School starting fall '05."

**Prithviraj, Preethum '05** - "I've been accepted to the year long paramedic program in Cleveland over next year."

**Redick, Bryan '02** - "I'm still at Johnson & Johnson's Ortho Clinical Diagnostics as a senior software engineer."

**Reynolds, Eric '02** - "I am currently working for Strong Memorial Hospital, in the Neurology Department. I have been leading development of internal applications for simplifying and streamlining information gathering and dispersal in regards to patient records and electronic data generated by medical devices. I have been with Neurology

since December of 2004, prior to which, I spent 2 years in desktop support on River Campus with ITS/ATS."

**Robinson, Albert '04** - "This summer I spent five weeks doing archaeology work. The first two weeks were a training program pretty close to Oxford (where I'm in school) in Oxfordshire, digging at a Roman temple and amphitheatre site. After that I headed down to Kenya, where I spent three weeks on a survey project looking for evidence of human occupation over the past few thousand years. The location of the dig is pretty amazing; it's in the northern part of a large area called the Laikipia Plateau, and we were actually digging within the grounds of a large and very expensive guest ranch called the Mugie Ranch."

**Sankel, David '02** - "I've created my own company called Sankel Software. We mostly do contract work, but plan on creating some retail applications next year. My business aims to satisfy any customer's software needs. We've done work ranging from multi-year CAD/CAM projects to Linux seminars. I just got married a couple of weeks ago to Carlana Martin. She majored in Chemical Engineering and Mathematics. We met in our math classes at U of R. I've followed my love to her home town in Spain and that is now where we live."

**Schmid, Jonathan '03** - "I was working as a robotics lab assistant at Drexel University's College of Medicine. I was being trained to work with 3-dimensional mathematics and robot arms, which I used to assist the research on spinal cord injury and motor control here in the Neurobiology Dept. I have finished my work in the lab and I'm now taking classes in physics and math at Drexel."

**Siracuse, Sarah '01** - "I remain at my current job of Staff Scientist at BBN Technologies in Cambridge, MA."

**Smith, Jason '05** - "I am working at IIT Engineering in Rome, NY."

**Spears, Steffin '01** - "I am still at the U of R Department of Physics and Astronomy. I have been accepted at the Simon School of Business MBA program and will begin classes this year."

**Tam, Jonathan '02** - "I started a new job in February at a company called Extraprise ([www.extraprise.com](http://www.extraprise.com)), located in downtown Boston. Extraprise is a systems integrator with a concentration on marketing service. My

Please consider the Department of Computer Science and UR in your giving plans. For information on how to make a gift, please contact the University's Gift Office at 585-275-8602 or email us at [giftoffice@admin.rochester.edu](mailto:giftoffice@admin.rochester.edu)

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job as a Marketing Staff Consultant is to help lead a team of software consultants by working with our clients' marketing firm to plan out their needs for data and reporting through one of our software partners (Siebel). The last 2 projects I have been on were working with GE and Pfizer, both onsite and out of my Boston office."

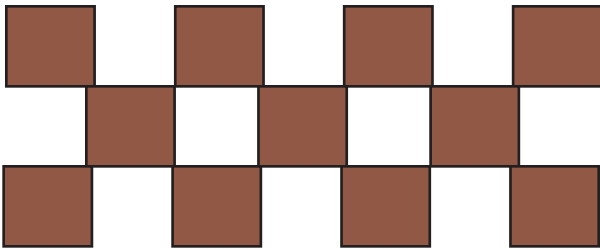
**Thibodeau, Bryan '01** - "I'm still in the Laboratory for Perceptual Robotics at the University of Massachusetts Amherst. "

**Turner, Jenine '03** - "I received my MS in computer science from Brown University in May."

**Van Durme, Benjamin '01** - "I passed my comps (hurray) and is now a second year grad student at URCS. His long-time girlfriend Sara Eleoff (UR alum) just started a pediatrics residency across the street at Strong (double hurray)."

**Viswanathan, Prakash '98** - "I am currently a first year resident at Stony Brook hospital in Internal Medicine. I was working for AMS but quit and went to med school in 2001. I am currently engaged and going to get married this November."

**Wexler, James '03** - "I have been accepted into the Raytheon Advanced Study program. In the fall I will begin attending Northeastern University full-time pursuing a masters degree in computer science. Upon completion I will return to Raytheon Integrated Defense Systems and resume full-time work as a software developer."



*(de Sa, continued from Page 7)*

There are a number of former UR people at UCSD in the Cognitive Science Department (postdoc Jochen Triesch, grad Gary Cottrell, undergrad Matt Tong). Virginia says that UR students are attracted to San Diego because the philosophy is very similar to the former interdisciplinary Cognitive Science Program at Rochester. However, it is a little different from the old Cog Sci Program that existed at UR during her studies. At UCSD there is a department devoted to Cognitive Science (our Department of Brain & Cognitive Science was formed in 1995 and the Cognitive Science Program was discontinued after Ginny left). She says that Cognitive Science as a community at San Diego is a lot larger than Cognitive Science at Rochester.

## *Class of 2005 Graduates*

**Peter C. Barnum**  
**Michael E. Cmar**  
**Marshall R. Crumiller**  
**Istvan Csapo**  
**Peter D. DeRosa**  
**Micha Elsner**  
**Luke J. Guerrero**  
**Daniel M. Horowitz**  
**Eric R. Hughes**  
**Daniel L. Karr**  
**Wan Cheong Li**  
**Kenny Linsky**  
**Benjamin D. Margolis**  
**Dominic M. Marino**  
**Justin T. Moore**  
**Jonathan P. Pearson**  
**Preethum Prithviraj**  
**Andrew M. Regan**  
**Gregory A. Rubin**  
**Richard E. Sarkis**  
**Jivko S. Sinapov**  
**Jason E. Smith**  
**Andrew H. Steinberg**  
**Matthew A. Storch**  
**Christopher F. Tang**  
**Andrew V. Uzilov**  
**Robert D. Van Dam**  
**Vladimir Vanyukov**  
**Andrew S. Vayanis**  
**Matthew J. Vukman**  
**Andrew G. Ward**  
**Jonathan C. Williams**  
**Fan Yap**

There are more people using EEG recordings and more machine learning/computer vision researchers (and very little natural language/planning research). Like Rochester, there is a strong emphasis on vision.

Virginia de Sa's work in computational neuroscience is significant as a purely scientific exercise, but with help from improved neural decoding algorithms and further understanding of the brain's circuitry, the yet-to-be-discovered inventions based on this work could assist disabled and sensory-deprived people to function at a much improved level.

*Send updates to Marty Guenther at [marty@cs.rochester.edu](mailto:marty@cs.rochester.edu)*

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## Multicast

A newsletter from the  
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**Take your mark!** This was the starting line of our first annual River Run, held in September at the department’s picnic at Genesee Valley Park . This soon-to-be yearly event was a non-competitive ~2 mile run (what do you mean there is a clock?), in which over 30 people participated. Awards were presented at the State of the Department meeting in late September.