



Dr. Tianming Liu

FACULTY SPOTLIGHT

Dr. Tianming Liu: Director of the Cortical Architecture Imaging and Discovery Lab

The Cortical Architecture Imaging and Discovery (CAID) Lab's (<http://caid.cs.uga.edu>) research mainly focuses on the discovery of structural and functional architectures of the cerebral cortex via brain imaging and computational modeling.

The CAID lab mainly uses multi-scale, multi-modal imaging data as the information source, and develops a wide range of computational approaches to build models and develop theories. Specifically, the CAID lab has four research themes: 1) Axonal pushing theory of cortical folding, which aims to dissect the structural and functional connections between cortical gyri and sulci. 2) DICCCOL: Dense Individualized and Common Connectivity-based Cortical Landmarks, which aims to discover and validate large-scale cortical landmarks. 3) Brain networks, functional interactions, and dynamics, which aims to detect the dynamically changing higher-order functional interactions among structural connectomes. 4) Neuromediomics: the interface of brain imaging and multimedia, which aims to bridge semantic gaps in multimedia representation and analysis via brain imaging.

In addition to managing the CAID lab, Dr. Tianming Liu recently received a five-year NIH R01 grant to develop and validate neuroimaging biomarkers for early diagnosis of Alzheimer's disease. This is a collaborative grant with researchers at UNC Chapel Hill and Duke University. He also received a three-year NSF grant from the NSF Neural Engineering Program to explore the functional interactions between cortical gyri and sulci. These projects along with other current projects will keep him and his group busy at the lab for a good while.

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Department of Computer Science
415 Boyd Graduate Studies Research Center
The University of Georgia
Athens, GA 30602-7404



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COMPUTER SCIENCE NEWS

UNIVERSITY OF GEORGIA • SUMMER 2014



Dear friends and alumni,

Greetings from the computer science department at the University of Georgia! FY14 was an exciting year for our department. We are pleased to announce that the Bachelor of Science in Computer Science degree program is now accredited by the Computing Accreditation Commission of ABET. At the graduate level, enrollment exceeded 130 graduate students.

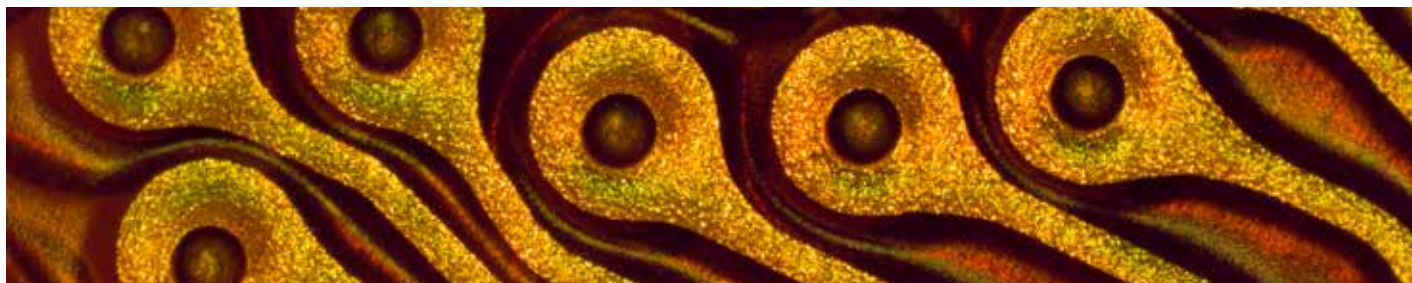
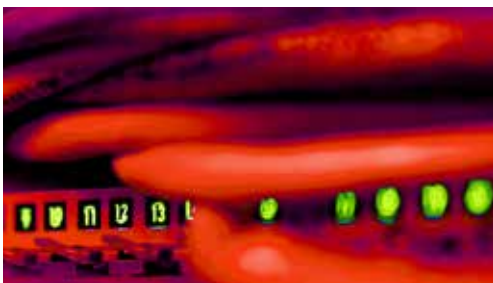
The faculty added to their ranks in fall 2013 also, welcoming a new lecturer, **Dr. Brad Barnes**. We recruited two new faculty this year. The first is **Kyu Lee** as an assistant professor of computer science in the area of network security, and the second **Shannon Quinn**, is a joint assistant professor with the cellular biology department in the area of biological imaging and brain mapping. The latter position is funded from UGA's interdisciplinary hiring initiative. Kyu Lee will join us in fall 2014 and Shannon Quinn will join us in spring 2015.

One final word about the gracious generosity shown to the department by our advisory board; we are especially grateful for the exceptional support and advice provided to our department by the board. We are counting on the Board for their continued support to help us move to the next level of academic excellence. Special thanks go to Anne Albright for establishing the Lynn C. and Audrey O. Albright Endowment Fund; to Marty Hahn for establishing the Hahn Family Scholarship Fund; and to Lori Kittle for donating 25 Apple iPads.

Regards,

Thiab Taha, Professor and Head

P.S. For more information and updates on our department, please visit our website: www.cs.uga.edu. You can follow us on Twitter or like us on Facebook (links on our website). In addition, you can support the department with a gift. Please see the "Giving" section of this newsletter or follow the Show Your Support link on our website to donate. Thanks for your support!



ACADEMIC PROGRAMS

At the undergraduate level, the department of computer science offers the Bachelor of Science (B.S.) in Computer Science as well as a minor in computer science. The department's enrollment in the Bachelor of Science in Computer Science program increased over 23%, with 441 students declared as majors at the start of the fall 2013 semester. As evidence of the quality of this degree, the program was recently accredited by ABET (www.abet.org). Recent graduates from the B.S. in CS program have accepted employment at outstanding companies such as Microsoft, Amazon, General Motors, Manhattan Associates, Epic Systems, and The Home Depot.

At the graduate level, the department offers three graduate degrees with varying emphasis such as preparing students for professional employment by imparting practical skills (MAMS), providing foundational knowledge for future study, research and professional enhancement (M.S.), and building expertise in a specific area of computer science for careers in research and academia (Ph.D.). MAMS is the Master of Applied Mathematical Sciences

program. M.S. and Ph.D. are the familiar Master of Science in Computer Science and Doctor of Philosophy in Computer Science programs. For more information about our graduate program, please go to our website.

Funding for graduate students is obtained in a number of ways. Outstanding graduate students are nominated for university-wide assistantships funded by the Graduate School. Qualified students are offered Graduate Teaching Assistantship (GTA) and Graduate Research Assistantship (GRA) awards, enabling them to assist faculty in the instructional and research missions of the department.

Graduate student thesis and dissertation research appears in peer-reviewed journals and conference proceedings, and graduate students engage in real-world professional and research training through internships in industry and research laboratories during the summers. The graduate programs have been very successful in placing students in the software development industry, government research laboratories, and industrial research and development laboratories. On the lighter side, graduate students have opportunities for social interaction with each other and with the faculty through the monthly social hour and the annual graduate student picnic held during the fall semester.

AWARD HIGHLIGHTS

Ph.D. students have been getting plenty of recognition recently. **Amna Basharat** and **Sahar Voghoei**, received funding to attend the 2014 CRA-Women Graduate Cohort Workshop in Santa Clara, CA. Michael Cotterell received the National Security Agency Mathematics and Computer Science Student Scholarship, 2014. **Aryabrata Basu** (along with Dr. Kyle Johnsen from Computer Systems Engineering) won the Best Poster Award at the 2013 IEEE 3DUI Conference. The THINC lab's ontology alignment tool, Optima+, developed by doctoral student **Uthayasanker Thayasivam** (and Dr. Prashant Doshi) tied for second place in a key track at the Annual Ontology Alignment Competition, OAEI 2012, among 21 tools.

Jennifer Rouan, one of our outstanding M.S. graduate students, recently received the 2013 Google Anita Borg Memorial Scholarship (article can be read at this link). Jennifer is a research assistant at the CUDA teaching center under the supervision of Dr. Thiab Taha.

A number of other students received awards as well, namely, the UGA Outstanding Teaching Assistant Award went to **Kyle Krafka**, **Michael Scott** and **Arash Jalal Zadeh Fard**. We were very proud of **Kyle Thompson** for being selected as the Gates Millennium Scholar recipient for the 2012-2013 academic year. In addition, three students received the Outstanding Undergraduate Student Award: Matthew Saltz, Hao Peng, and Trever Hohorst. Note that Matthew's award was highlighted with distinction.

Special congratulations go to Team SecDawgs for their recent outstanding achievement. Coached by **Dr. Kang Li**, Team SecDawgs placed third in an International Internet Security Competition, iCTF, among 100 teams. The team is composed of twelve CS students.

Also in 2013, three faculty members received recognition from their peers within the department. The Outstanding Faculty Service Award went to **Dr. Hamid Arabia**



for all the time and energy he puts into the external relations committee among his other service activities. **Dr. Kang Li** was awarded the Teaching Excellence in Computer Science Award. The Outstanding Faculty Research Award went to **Dr. Roberto Perdisci** for his outstanding contribution to the research mission of the department. Of special note was the awarding of the Franklin College of Arts and Sciences M. G. Michael Award for Excellence in Research to **Dr. Perdisci** and the Creative Research Medal Award from the Office of Vice President for Research for **Dr. Tianming Liu**. Congratulations and way to go Roberto and Tianming!

RESEARCH HIGHLIGHTS

Research within the department is entering an exciting phase. The current research activities are the broadest and deepest in the history of the department. Research areas within the department include Algorithms and Combinatorics, Artificial Intelligence, Bioinformatics, Brain Imaging and Neuroscience, Data-Intensive Computing, Computational Intelligence, Computational Science, Computer Vision and Image Processing, Databases and Distributed Information Systems, Human-Computer Interaction, Modeling and Simulation, Networks and Security, Parallel and Distributed Computing, Real-Time Systems, Robotics, and Semantic Web and Semantic Web Services.

The department has strengths in all the research areas listed above. Those with the highest levels of recent funding include Artificial Intelligence, Bioinformatics, Brain Imaging and Neuroscience, and Networks and Security. The department is also particularly strong in collaborative research with other colleges, departments, institutes, and centers, including genetics, physics, biochemistry and molecular biology, plant biology, cellular biology, psychology, statistics, the College of Education, the College of Engineering, the Institute of Bioinformatics, and the Institute for Artificial Intelligence.

The effectiveness and productivity of faculty in the department continues to improve as evidenced by increasing levels of research funding, publications, citations, and memberships on conference program committees, journal editorial boards, and funding agency panels. Given the recent reductions in federally funded research dollars available from agencies such as NSF and NIH, the departmental trend of increased externally funded research is significant. Very recently, several new grants were funded causing a significant uptick in research funding for 2013 and 2014, a substantial increase over all previous years.

Several research publications authored by our faculty are very influential and highly cited (e.g., 62 papers have over 100 citations each). In addition, the faculty serves on numerous editorial boards for academic journals and organizing committees for major research conferences. Some members have given keynote addresses, received best paper awards, obtained patents on their research, and served on standardization committees (e.g., W3C). The impact of the department's research continues to grow.

In fact, the members of our faculty are very active in research. **Dr. Prashant Doshi** received grant awards from NSF and ONR. **Dr. Eileen Kraemer**, in collaboration with colleagues at the IOB, received additional funding for an existing grant from the University of Pennsylvania, sponsored by the NIH. **Dr. Krys Kochut** and **Dr. John Miller** received funding from a joint project with colleagues at the CCRC funded by NIH. **Dr. Kang Li** and **Dr. Roberto Perdisci**, collaborating on joint projects, received grants from NSF and the Intel Corporation; plus Dr. Li received an NSF grant for another project. Amazingly, **Dr. Tianming Liu** was awarded four grants from NSF and NIH. **Dr. Lakshish Ramaswamy** had an NSF grant awarded. **Dr. Thiab Taha** was awarded two grants from NSF. And, **Dr. Don Potter** received a grant award from the Georgia Power Company.



Dr. Kang Li



Dr. Roberto Perdisci



Dr. Prashant Doshi