Department of Scientific Computing

Fall 2014

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SC signs collaboration and exchange agreement with Vienna university

The University of Vienna and Florida State University recently signed a collaboration agreement to extend and deepen professional relationships and other scientific research and education. The agreement is a formal commitment to enhance the association that has been steadily building between the schools for many years between FSU's Department of Scientific Computing and UV's Department of Anthropology.

The agreement was forged by SC professor Dennis Slice, who has been working and teaching at the University of Vienna since 1999 on research in paleoanthropology, evolutionary psychology, primatology, and a number of other fields. This collaboration has been a successful and prolific arrangement, producing over a dozen articles, posters, presentations, and one book. Slice's primary associate and colleague in Vienna is Katrin Schaefer.

"I am very excited about the realization of the Memorandum of Understanding with FSU and Honorary Professor Dennis E. Slice. Professor Slice and the Department of Anthropology have been in close scientific contact for the last 15 years, and the formalization of this relationship is a success per se," said Shaefer, professor of anthropology at the University of Vienna and the agreement's co-signatory. "We can now more effectively combine his expertise in the statistical analysis of GMM and other data and ours in evolutionary psychology and behavioral anthropology resulting in innovative approaches and solutions to hot topics such as the face of the car and its cross-cultural perception. "

The Memorandum of Understanding is the latest step in a long series of movements that extends the relationship between the schools to a more formal, institutional level. "As the first steps toward realizing the potential of this agreement, I expect two students from Vienna to come and work in my lab in the spring of 2015," said Slice. "These two students, Barbara Seitler and Julia Fusinato, will gather and analyze data on aspects of facial form associated with perceptions of trustworthiness. They are completing part of this study in Vienna, and their visit to Florida will allow them to collect more data for cross-cultural comparisons to determine if the perception of trustworthiness differs between Austrians and Americans - at least between FSU and University of Vienna students."

Main building, University of Vienna campus

Schaefer, too, anticipates the possibilities of a more formalized affiliation and stated,

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Professors Dennis Slice and Katrin Schaefer photographed at the University of Vienna in 2013.

"We are excited to be able to jointly look into the perception of trustworthiness in human faces, and again on a cross-cultural perspective, this time in the US and Europe. Apart from the relevance for basic research, there is an array of industrial applications tied to this topic. On a mid-term perspective, we hope to get a critical number of students and scientists not just interested but also funded to commute between the two places and realize the many ideas we have been discussing over the past years."

Past collaborations between Slice, Schaefer and other university constituents have been made informally, without a written agreement. Having this agreement in place will extend the relationships to encompass other activities and potential relationships, such as the development of study abroad courses, field schools, and perhaps, the exchange of degree candidates, faculty and scholars between the institutions.

Besides being a rich source of intellectual collaboration, the FSU-University of Vienna relation has served as a singularly valuable gateway through which interactions with other students and researchers throughout Europe have burgeoned and thrived.

"Because of my connection with the University of Vienna, I have taught workshops and classes and given lectures in Italy, Germany, Switzerland, Croatia, Hungary, Slovakia, France, and Italy, and I am currently working on collaborative work on protective apparel with the idea of establishing a Center of Excellence for protective equipment in Zagreb, Croatia, facilitated by and in collaboration with the University of Vienna. The MOU will provide FSU with formal presence in these activities."

For more information on the University of Vienna, go to http://www.univie.ac.at/en/.

To find more about Slice, his lab and morphometrics go to http://morphlab.sc.fsu.edu. You'll find information about a wide array of topics, including the current members of the Slice lab.

For more on the Department of Scientific Computing, go to http://sc.fsu.edu.

Dai accepts postdoc following graduation

Recent Scientific Computing graduate Heng Dai successfully defended his doctoral coursework and dissertation research under the mentorship of Associate Professor Ming Ye. Dai is the only person to complete the requirements for the Ph.D. for the fall term in the department. His dissertation is entitled "Uncertainty Quantification for Groundwater Reactive Transport and Coastal Morphological Modeling." Dai's doctoral research was undertaken following his completion of a master's thesis on the response of barrier islands to storms and sea-level rise. Dai's dissertation committee included Ming Ye, Professor Directing Dissertation and departmental committee members Anke Meyer-Baese, Tomasz Plewa, and Dennis Slice. Stephen Kish served as university representative. Dai defended on November 5, 2014.

After graduating, Dai accepted a postdoctoral associate position in the Energy and Environment Directorate's Hydrology Group at Pacific Northwest National Laboratory (PNNL) in Richland, Washington. PNNL's Energy and Environment section seeks to discover efficient sources for renewable energy, to provide scientific solutions for legacy nuclear waste, and to use grid modernization, hydropower research, buildings, and appliances to create a safer environment and a cleaner future.

For more information on U.S. national labs, go to energy.gov/national-labs.

To find more about Pacific Northwest National Laboratory, go to pnnl.gov. The lab focuses on research and development related to waste management, environmental restoration, global environmental change, energy and national security.

For more on the Department of Scientific Computing, go to http://sc.fsu.edu.

Doctoral graduate Heng Dai standing at the entry to Pacific Northwest National Laboratory in Richland, Washington

SC undergrad attends international conference

Scientific Computing senior Brittany Morgan

Scientific Computing senior Brittany Morgan was recently awarded a scholarship to attend one of the premier conferences for women in science and technology in the world.

"I hadn't heard of Grace Hopper before - it was Haleh [Ashki] who emailed all the women in the department and encouraged us to apply. After she sent the link, I looked at the conference website and was very interested, so I applied for the scholarship. I applied in maybe March or April and we got decisions in July. I was waiting all summer. They put out a deadline, and I logged in the day they advertised to see what the decision was, but they received so many applicants, they had to extend. They had a message that said they were delayed so I had to wait a little longer. There were 8,000 people there – more than they ever expected. They had to rearrange things to accommodate everyone."

The Grace Hopper Celebration of Women in Computing is the world's largest gathering of women technologists. The conference is held annually, and honors the contribution and legacy of Grace Murray Hopper, Ph.D., a computer scientist and Rear Admiral in the US Navy. Hopper was a pioneer in computing; she popularized the idea of machine-independent programming languages, and invented the first compiler for a computer programming language. This year's conference was held October 8-10 in Phoenix, Arizona.

Morgan received a generous, all expense paid scholarship – flight, registration, hotel, any other travel plus meals. The conference sponsor, the Anita Borg Institute, made reservations for Morgan and other scholarship recipients at one of the conference hotels. "I had a roommate from UCF. I think they might have put us together because we're both from Florida."

On arrival, Morgan and other conference newcomers attended an opportunity lab for students to talk to prospective employers. Oak Ridge and other national labs were there, and Morgan spent time talking to organizations that would use her research and math skills. The next day, she attended workshops that match her career interests, and spent time directly interacting with the speakers and other participants. One of the most fascinating workshops was the one on biometrics, and during the sessions, it became clear that the skills she's learning in her classes are highly relevant and desirable.

"Biometrics was really cool; all the things they're developing are crazy fascinating. One of the things they're working on is ear recognition, so when you hold the phone up to your ear, the phone recognizes that it's you. You don't need a password, and no one else can use your phone without your permission.

"There was one data mining workshop with a speaker from Twitter who was a data scientist. It was cool because her talk was about how celebrities tweet, and she was talking about the clusters. She said she used K-means algorithms and I knew exactly what she was talking about because I use K-means in my classes. I tweeted at her after the workshop and she favored it. I really had a great experience."

Find info and see photos from the 2014 conference and event specifics for the 2015 conference at gracehopper.org and www.facebook.com/gracehoppercelebration.

New grad students, post docs & staff

JEHANZEB CHAUDHRY joined Florida State University as a post-doctoral associate in September 2014 and is working with Prof. Max Gunzburger in the field of reduced order modeling. Prior to that he was at Colorado State University as a postdoctoral researcher in the lab of Prof. Donald Estep. He completed his graduate studies in the scientific computing group at the University of Illinois at Urbana-Champaign.

Chaudhry earned his Ph.D. in Computer Science with a certificate in Computational Science and Engineering under Prof. Luke Olson. His dissertation focused on developing and analyzing stable finite element methods to solve implicit solvent models for biomolecular systems.

Chaudhry's most recent research has been in the area of a posteriori error estimation for multi-scale systems and involves close collaboration with researchers at Sandia National Laboratory. In another research direction, he studies development of quantity-of-interest based least-squares finite element methods. He has published articles in mathematics and engineering journals, has given numerous presentations at mathematics and engineering conferences and taught courses in mathematics and statistics.

Chaudhry is fond of the outdoors and loves hiking, backpacking and exploring nature. Other extracurricular interests include playing squash and collaborations with John Burkardt. More information on Chaudhry's research can be found at http://people.sc.fsu.edu/~jchaudhry/.

Doctoral student JOHN COTHRUN grew up in Seligman, Arizona, in the central portion of Yavapai County. He studied forest management with an emphasis in forest health -- pathology, entomology and other stressors -- and graduated in May 2007 with a Bachelor of Science in Forestry from Northern Arizona University.

Following completion of the BS, Cothurn remained at NAU to continue his studies and research in harvest practices and silvicultural treatments and their effects on public perception and policy making. After completing field research in Northern California, he graduated in May 2009 with a Master of Forestry degree.

In the summer of 2009, Cothrun began working at F4 Tech, a local forestry innovation and natural resource management company. In his role at F4 Tech, Cothrun models tree growth and yields to project future forest conditions, creates optimization models, and designs large timber inventories.

Cothrun uses his free time for his hobbies, which include training in mixed martial arts (kickboxing and Brazilian Jiu jitsu), classic truck restoration and reading.

EVAN CRESSWELL-CLAY decided to pursue the Ph.D. in Computational Science after studying applied mathematics and computational neuroscience as an undergraduate student at the University of Pittsburgh. While at Pitt, he tutored students in algebra, algebra II, trigonometry, differential equations, introductory real analysis, and advanced calculus, and competed in the Mathematical Competition in

Jehanzeb Chaudhry

John Cothrun

Evan Cresswell-Clay

Albert Dearden

SC welcomes new grad students, post docs & staff


Mark Howard


Nicolas Lopez


Isaac Lyngaas

Modeling, an international event with over 1500 schools represented. He was awarded the Bachelor of Science degree in May 2014.

Cresswell-Clay is interested in computational biology, neuroscience, and patterns of activity in networks of neurons. In one research project, he developed an ordinary differential equation model of the dynamics of army size during the Siege of Jaffa, an 18th century battle between France and the Ottoman Empire. Cresswell-Clay presented a portion of his scholarly research in January at the Joint Mathematics Meeting in Baltimore, MD.

Postdoctoral associate ALBERT DEARDEN grew up in Egg Harbor Township, New Jersey, and realized in high school that he wanted to teach physics. He received his degrees at Rensselaer Polytechnic Institute in Troy, New York, and studied computational physics. Dearden continued his studies at RPI, and did research using density functional theory to study physical structures such as nanodots, graphene derivatives, magnetic systems, and bulk materials.

Dearden spent most of his pre-college life either in the woods or on a boat in open water. Though his studies dominate his time, his hobbies include blacksmithing and scuba diving. He enjoys working with animals in any manner. Though he generally tends to keep to himself, he enjoys having visitors stop by for a chat. He will work with Chen Huang.

MARK HOWARD is Scientific Computing's new Academic Program Specialist, and will be taking on the academic advising role for the department. Before coming to SC, he worked in the Office of Faculty Recognition here at FSU. In addition to working with OFR, Mark has also worked part-time in the Florida State Athletic Ticket Office since 2009.

Currently, Howard is a Ph.D. candidate in the Sport Management Department at Florida State. His research interests deal with sport finance and economics related to intercollegiate athletics.

Howard graduated from Dallas Baptist University with an undergraduate degree in Business Administration in 1997, then held various positions at FIS Flood Services in Arlington, Texas from 1997 to 2005. He left FIS in 2005 to pursue a Master's Degree in Sports Administration from Georgia State University in Atlanta, Georgia. Finishing his degree at GSU, he arrived at FSU in 2008.

In his spare time Mark enjoys spending time with his wife Cristina and traveling, and they look forward to welcoming a daughter this December.

A Florida resident and recent FSU graduate, NICOLAS LOPEZ entered the masters program after completing his undergraduate degree in Meteorology. As an undergraduate, Lopez worked at the Center for Atmospheric Prediction Studies where his research focused on validating sea surface temperature and salinity fields in the Hybrid Coordinate Ocean Model.

Lopez is the recipient of the NOAA

Hollings Scholarship, and interned at NOAA's meteorological facility in Boulder and the Naval Research Laboratory in Monterey.

ISAAC LYNGAAS is from Britton, South Dakota and recently graduated (May 2014) with a Bachelor of Science in Mathematics and minor in Computer Science from South Dakota State University. Over the summer, Lyngaas interned at the National Center for Atmospheric Research in Boulder, CO where he used HPC hardware in linear algebra operations.

While at SDSU, Lyngaas programmed mathematical simulations using CUDA and MPI, and presented a report on his research findings. He is an avid programmer, and writes in C and C++ as well as CUDA and MPI. His past research includes the implementation of Domain Decomposition Preconditioners for PDEs.

In his free time, he enjoys golfing, hiking, and reading.

ROSS NEWCOME received dual baccalaureate degrees in mathematics and physics from the Indiana University of Pennsylvania in May 2014. While at IUP, Newcome was a member of the honors college, and played clarinet for three seasons with the IUP Marching Band. Recently he modeled highway traffic in the COMAP MCM competition.

Newcome spent the summer between his junior and senior years at IUP working for the physics department. In that project, he assisted one of the faculty in setting up his Laser Optics Lab. In that project, Newcome learned LabView, and wrote a simple program to interface numerous detectors to measure the power, current, and voltage running through a laser.

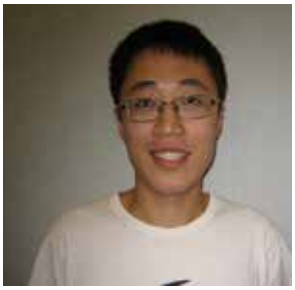
In his leisure time, Newcome builds computers and enjoys playing computer games such as Kerbal Space Program, Dwarf Fortress and Dota 2. He also enjoys hiking, camping, cooking, and helping his dad restore, build and service pipe organs.

ZLATKO SOKOLIKJ hails from Skopje, the largest and capital city of the Republic of Macedonia. Sokolikj decided to participate in a U.S. student exchange program during his final year of high school and spent his senior year at Lely High School in Naples, Florida. He then travelled up state to FSU for a Bachelor of Science in Biochemistry.

As an undergraduate, Sokolikj worked with Igor Alabugin on a photochemistry project that investigated a series of chemical compounds which exhibited anti-cancer capabilities when irradiated with a specific source of light. He continued to study the physical properties of these chemical compounds with Jack Saltiel, specifically, investigating the quantum chemical electronic structure of these compounds. Sokolikj's current research interest is in chemical engineering. Outside of school, he is a cooking enthusiast, interested in both the art and science of cooking. He is well-versed in making traditional culinary dishes of different cultures.

Ross Newcome

Zlatko Sokolikj



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New grad students, continued from page 7

XUEHANG SONG, a new postdoctoral associate, is from China, and studied at Wuhan University located in Hubei, the easternmost part of the nation. Song studied hydrology at Wuhan, receiving bachelor and doctorate degrees in water resources engineering.

As an undergraduate student, Song's research focused on water resource assessment and water conservation reforms in the Hetao Irrigation District of China's Inner Mongolia Autonomous Region. Song completed his undergratuate studies in June, 2009.

Immediately following his bachelors degree, Song was accepted to the doctoral program at Wuhan and began undertaking a wider variety and complexity of research topics. His Ph.D. research experiences include projects in data assimilation applications to saturated-unsaturated flow; field study of groundwater recharge in the north China plain; field study of resident resettlement for Tingzikou water control; program and policy development for countryside potable water and irrigation in central China; and two years of laboratory controlled experiments using the microlysimeter located at Wuhan's Water Resources and Hydropower Engineering Sciences sites.

Song is published in several journals and has prepared and given talks at international conferences. Song is a long-time FORTRAN programmer, and has experience in parallel computing systems among other computing skills. Song is working under the direction of Ming Ye.


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