COLLABORATION AND OUTREACH ACTIVITIES AT CSI

Special Programs

Dr. Eric Wong of the Computer Science (CS) department runs an NSF-funded Course, Curriculum, and Laboratory Improvement (CCLI) project on software testing and software security. In the context of this project, Dr. Wong has developed several course modules on software testing and software security for sharing with other institutions. Currently, the project has four external collaborators adapting and using this curriculum. These include Dr. Natarajan Meghanathan of Jackson State University (a minority serving institution), Dr. Junhua Ding of East Carolina University, Dr. Sudipto Ghosh of Colorado State University, and Dr. William Slater of Collin College. In addition, the project has several other internal faculty members involved in the educational activities within the scope of the project. As an example, Dr. Wong teaches courses on this topic at Collin College as guest lecturer and Dr. Veerasamy conducted a 2-day workshop on the topic at Jackson State University during February 7-8, 2013. For more information about this project, please refer to the project web site at http://paris.utdallas.edu/ccli/.

In addition, Drs. Sarac and Wong of the CS department at UT Dallas are currently working on organizing a Research Experience for Teachers (RET) program that aims at training and educating high school computer science and technology teachers on mobile security and social network security domains. The program will include a 10 week RET summer program where teachers will work with Drs. Sarac and Wong as well as several PhD students on hands-on research topics in the area. The expected outcome is to equip teachers with the necessary domain knowledge to transfer it to their classes in their schools. We will also provide technical and curricular support to high school teachers in transferring the knowledge to their students during the academic year. The department submitted a grant proposal to NSF’s RET program to fund this activity starting in summer 2014.

Regarding curriculum sharing with K-12 schools, Dr. Veerasamy developed and shared a curriculum on Alice programming with Harmony School of Innovation at Carrollton, Springridge Elementary School in Richardson, and JL Long Middle School in Dallas. In addition, Dr. Veerasamy and several graduate students in our department are conducting after school programming clubs in Harmony School of Business and Harmony Science Academy Garland where they introduce programming concepts using hands-on approach and popular tools like Scratch, Logo, Alice and JavaScript tools. Dr. Sarac of CS is also working with the administrators of Harmony Public Schools (HPS) Dallas Cluster in introducing cyber security-related courses into a new pathway program that HPS systems is planning for two of their high schools in their Dallas cluster. http://www.utdallas.edu/k12/clubs/

Reciprocity of credits

The School of Engineering and Computer Science has a process where transfer students from other institutions including minority institutions and two-year community college students can transfer their credits to our degree programs. Undergraduate advisors are involved in transcript evaluation and course transfers for academic classes taken in such schools. In addition, the School has articulation agreements with Collin College and Richland College, the two main community colleges in the area, for directly transferring course work for the students from those colleges to UT Dallas Engineering School. Please see:
Sponsorship/organization of cyber defense workshops and cyber security exercises by UT Dallas

The Computer Science Department at UT Dallas organizes an annual Texas Security Awareness Week (TexSAW) event that includes student-oriented cyber defense workshops and competitions. Starting in October 2011, each year, we invite students from higher education institutions across the state of Texas to participate in this activity. During the first day of the event, students are offered three 2-hour hands-on workshops on (1) web security, (2) exploit development, and (3) penetration testing. During the second day of the event, students participate in a half-day cyber defense competition where they put their newly learned skills into practice. During the 3rd TexSAW event in October 2013, we had about 50 students participating in the event from a dozen higher education institutions across the state of the Texas. [http://csi.utdallas.edu/events_chronology/event1_2013.html](http://csi.utdallas.edu/events_chronology/event1_2013.html)

Participation in cyber defense exercises by UT Dallas

UT Dallas’ Computer Security Group (CSG) is a student club founded and run by the students pursuing cyber security related degrees in the Computer Science Department. CSG is mostly run by students who are currently supported by federally funded scholarship programs in cyber security including DoD IASP program and NSF Cybercorp© SFS program where Dr. Sarac serves as PI. Dr. Sarac also serves as the faculty mentor of CSG. Among several different educational and training activities, students in CSG group actively participate in various cyber security competitions. According to ctftime.org, the team currently ranks 96th out of over 3000 CTF teams globally and ranks as the 13th US team in the list. Below is a sample list of the competitions that the group participated during the past three years:

1. Seven UT Dallas students placed 45th out of 178 team in Codegate Pre-quals in Spring 2011, a global cyber competition held by South Korea.
2. In 2011, ten UT Dallas students competed as a team in Hack.lu, a German CTF held as part of the annual Hack.lu conference. They placed 42nd out of 108 teams.
3. In 2011, around a dozen UT Dallas students competed as a team in pCTF, a cyber competition held by Carnegie Mellon University. They placed 43rd out of 589 teams.
4. In 2011, three teams of four-students from UT Dallas participated in CSAW, NYU-Poly CTF. UT Dallas students placed 24th in prequals globally and placed 8th out of US based undergraduate teams. One of the teams participated in the finals in New York and placed 7th out of 12 US based teams.
5. In 2011, around 20 UT Dallas students led by Dr. Lin participated in UCSB iCTF event.
6. In 2012, the team ranked 15th out of 235 teams in ForbiddenBITS CTF event.
7. In 2012, two CSG teams participated in the finals at NYU-Poly CSAW and ranked 8th and 12th out of 15 finalist teams.
8. In 2013, CSG team ranked 22nd out of 321 teams in HackIM event.
9. In 2013, CSG team ranked 25th out of 124 teams in Ghost in the Shellcode competition event.
10. In 2013, CSG team ranked 17th out of 1387 teams in NYU-Poly CSAW qualifications.

For a full list of the cyber security competitions participated by CSG, please see [https://ctftime.org/team/333](https://ctftime.org/team/333).

Sponsorship/organization of workshops for K-12 schools by UT Dallas

The CS department also organizes several programming clubs all the way from 3rd graders to adults. These clubs include Scratch Club (from 3rd graders to adults); Logo Club (from 3rd graders to adults); Alice Club (from 6th graders to adults); JavaScript Club, Java and Advanced Java Clubs (from 6th graders to adults).
For Spring 2014 schedule and for more details about the content of these clubs, please refer to the program web page at [http://www.utdallas.edu/k12/clubs/](http://www.utdallas.edu/k12/clubs/).

**Sponsorship/organization of workshops for college students at UT Dallas**

Dr. Wong of CS conducts an NSF sponsored summer Research Experience for Undergraduates (REU) program on software safety and software security. This is a 10-week program where 10 students are recruited nationally to participate in this program to conduct research in the software security and software safety topics. The program provides a very good research experience for the participants and often involves industry involvement from defense contractor companies such as Raytheon, Lockheed Martin Aeronautics Company, and EDS/HP. For more information about this program and related research projects and teaching materials, please refer to the project web site at [http://paris.utdallas.edu/reu/index.html](http://paris.utdallas.edu/reu/index.html).

As mentioned above, within the context of our annual TexSAW event, we organize three 2-hour workshops on hands-on cybersecurity topics including (1) web security, (2) exploit development, and (3) penetration testing. During the 2013 TexSAW event, we had 50 students participating in this event from over a dozen Texas colleges and universities including minority serving colleges/universities (such as UT San Antonio and UT El Paso) and two-year community colleges (such as Richland College and Collin College).

**Shared events**

The TexSAW event mentioned in part 1.c above included an afternoon session where the PIs of the CAE institutions in DFW metroplex area including UT Dallas, University of North Texas, University of Dallas, and Southern Methodist University shared their ideas and experiences in developing successful cyber security education programs for other higher education institutions interested in starting such programs. This event provided a platform for those who are interested in starting similar cyber security education programs to make connections with CAE institution PIs and establish relations. The audience consisted of educators from area high schools and North Texas colleges and universities in addition to people from industry. See [http://csi.utdallas.edu/events_chronology/event1_2013_conference_schedule.html](http://csi.utdallas.edu/events_chronology/event1_2013_conference_schedule.html).

The CCLI project of Dr. Wong mentioned earlier above involves shared courses with four other universities/colleges participating in this project. [http://paris.utdallas.edu/ccli/](http://paris.utdallas.edu/ccli/)

**Shared research**

UTD conducted extensive collaboration on joint research project funded by NSF, AFOSR, ONR, ARO, NIH and others. Here are example projects and links to some of the papers. The universities as well as names of professors and students from other universities are in bold.

AFOSR MURI: A Framework for Managing the Assured Information Sharing Lifecycle 2009-2013; With University of Maryland Baltimore County, Purdue University, University of Illinois Urbana Champaign, University of Michigan and University of Texas San Antonio.

Tim Finin, Anupam Joshi, Hillol Kargupta, Yelena Yesha, Joel Sachs, Elisa Bertino, Ninghui Li, Chris Clifton, Gene Spafford, Bhavana M. Thuraisingham, Murat Kantarcioglu, Alain Bensoussan, Nathan Berg, Latifur Khan, Jiawei Han, ChengXiang Zhai, Ravi S. Sandhu, Shouhuai Xu, Jim Massaro, Lada A. Adamic: Assured Information Sharing Life Cycle. [ISI 2009]: 307-309

Link: [http://csi.utdallas.edu/Paper_Links/05137331.pdf](http://csi.utdallas.edu/Paper_Links/05137331.pdf)

(This is the project overview. Several papers have resulted from this project)
NSF TC: Large: Collaborative Research: Privacy-Enhanced Secure Data Provenance 2011-2016: University of Texas San Antonio, Purdue University
Link: sdm08.pdf
(this paper was instrumental in writing the proposal and winning the NSF grant)

NSF TWC: Medium: Collaborative: Policy Compliant Integration of Linked Data" 2012-2015: University of Maryland Baltimore County, Massachusetts Institute of Technology
Link: http://www.utdallas.edu/~hamlen/hamlen12deb.pdf

NSF TC: Small: Collaborative: Protocols for Privacy-Preserving Scalable Record Matching and Ontology Alignment 2010-2013 With Purdue University

ARO A Game Theoretic Framework for Adversarial Classification 2012-2015 With Purdue University

NIH “Technologies to Enable Privacy in Biobanks” 2009-2013 With Vanderbilt University,
Link: J Am Med Inform Assoc-2013-Kuzu-285-92.pdf (there is now a follow-on grant from NIH between Vanderbilt University and UTD.)

Community Outreach

The CS department at UT Dallas organizes various outreach programs for local schools. In Fall 2013 semester, Dr. Sarac of CS together with the volunteer graduate students in CSG club (https://csg.utdallas.edu/) started a cyber security training program for high school students to prepare them for Air Force Association’s Cyber Patriot competitions. During the Fall 2013 semester, we trained three cyber patriot competition teams from the Dallas metropolitan area. We plan to continue this program for future years as an outreach program in cyber security education to high school students in the area. In addition, Dr. Page of CS runs a competitive programming training program where he works with computer science teachers of several area high schools to identify promising students and runs computer programming training courses for high school students. Several high school teachers also participate in these courses along with their students.

As mentioned in part 1.a, Drs. Sarac and Wong of CS department are currently working on organizing a Research Experience for Teachers (RET) program that aims at training and educating high school computer science and technology teachers on mobile security and social network security domains. The expected outcome is to equip teachers with necessary domain knowledge to transfer it to their classes in their schools.
We also plan to provide technical and curricular support to high school teachers in transferring the knowledge to their students during the academic year. In this context, during Fall 2013 semester, Drs. Sarac and Wong visited three area high schools including Liberty High School of Frisco Texas, Hilcrest High School of Dallas Texas, and Allen High School of Allen Texas, and delivered guest lectures on social networks and their security and privacy implications to high school students.

The CS department also organizes several programming clubs all the way from 3rd graders to adults. These clubs include Scratch Club (from 3rd graders to adults); Logo Club (from 3rd graders to adults); Alice Club (from 6th graders to adults); JavaScript Club, Java and Advanced Java Clubs (from 6th graders to adults). For Spring 2014 schedule and for more details about the content of these clubs, please refer to the program web page at http://www.utdallas.edu/k12/clubs/.

In addition, the Computer Science facebook page is another way in which we advertise the activities that are scheduled. https://www.facebook.com/UTDCSDept.