

Salem State University  
College of Arts and Sciences

Department of Computer Science

# **ANNUAL REPORT**

**Academic Year 2014-2015**

**June 2, 2015**

Computer Science Department Annual Report is linked closely to the goals of the Strategic Plan of the College of Arts and Sciences.

## 1. Teaching and Learning

- New academic programs and courses, including three contributing to general education.
  - A new Master of Science in Computer Science is in the making. The department had an initial blueprint from several years ago. However, the work was paused due to lack of faculty resources when we lost two Computer Science Program faculty members (one tenured faculty member to retirement and one tenure-track faculty member to a job offer from another educational institution). Not until Fall 2014 when two new tenure-track Computer Science Program faculty joined the department, good progress has been made on the development of the new Master program. Led by Dr. Hatfield, the MS-CS Task Force group (Komalpreet Kaur, Sotirios Kentros, and Beifang Yi) met almost on a weekly basis throughout the year. The writing of the program proposal has started and is in progress. In consulting with the Dean of the Graduate School, the group made a decision of developing a Graduate Certificate in Fundamentals of Computer Science prior to the Master program. The proposal for the Certificate program is to complete in Fall 2015. In Spring 2015, the first four new graduate core courses passed the Graduate Education Council. The department can offer these new graduate courses starting Spring 2016. Currently the MS-CS Task Force group is working on the Graduate Certificate proposal. More new course proposals were divided assigned among the four group members.
  - A new undergraduate program of BS in Information Technology is in the making. Good progress has been made on the proposal. During the past year, the proposal was updated to reflect recent changes and will still be updated before submission in the coming year. The plan is to first develop the program in phases where few courses will be proposed for approval from the University Curriculum Committee. The plan is described as below.

**Phase I:** Before March 1, 2015 deadline, four course information documents (CIDs) were submitted to curriculum committee for review. These documents are under review right now. Once approved, these four courses will be offered in Spring 2016.

**Phase II:** The second phase is to submit another set of 4 to 6 courses to curriculum committee before November 1, 2015 deadline. These courses then can be expected to start from Fall 2016 after approval.

**Phase III:** After this, the third and possibly the last phase of CID submission will be done before March 1, 2016 and also a proposal for the submission of the whole program will be submitted after that.

- Sheila Shea and Manish Wadhwa each successfully proposed a First Year Seminar course. In Fall 2014, they successfully offered those courses.
- Adjunct faculty Ben Levin proposed a new general education course, ITC183 – Computer Frenetic. This course provides students another option in the category of Contemporary Society. This new course successfully passed the UCC and will be offered, for the first time, in Spring 2016.
- Highlight creative collaborative projects/research between students and faculty

The year-long process of identifying, designing, and implementing the required capstone project provides multiple opportunities for faculty mentoring students on collaborative projects and research. A list of these projects can be found on: <http://cs.salemstate.edu/dept/index.php?page=160>. Several projects resulted products that help to make some tasks around the Salem State University run more efficiently. The following are three projects accomplished this year.

- A project was built to assist Center for International Education (CIE) at Salem State University with its housing rental services. It allows property owners to post available rentals and allows students to search for off campus rentals. It is aimed at helping CIE to run its rental service more efficiently.
- This project involves the design and development of an interactive, dynamic, and database-driven application that releases the time-consuming and paper-based administration of Salem State University Annual Occupational Therapy Research Conference. This project implemented a full spectrum of functionality including conference setup (by conference administrators), registration (conference attendants), signing up for workshops (conference attendants), and taking online surveys (by attendants).
- In this project, an online web application for Academic Advising Scheduling was designed and implemented. This application will help both faculty and students during academic advising. This application will replace low efficient paper sign-up sheets.
- Mention any evidence of student learning (Licensure exams, for example or student capstone projects)
  - The Computer Science program continues to require a capstone/research project as a practicum to majors' academic experiences. Incorporation of the major's Capstone Project Day with SSU's Undergraduate Research Symposium was investigated – it was decided that the volume of Computer Science major presentations (12-15 in a typical semester) combined with the technical requirements of the presentation format that Computer Science

requires rendered the idea of full incorporation with the Undergraduate Research Symposium impractical. Individual students wishing to participate in the Undergraduate Research Symposium receive scheduling / presentation accommodations that allow them to fully participate in both experiences – Three CS majors chose to participate in the Undergraduate Research Symposium this year.

- Three Computer Science graduating seniors attended and made poster presentations at the 21st Annual Massachusetts Statewide Undergraduate Research Conference that was held on April 24, 2015 at University of Massachusetts Amherst.
- The programming club provides learning opportunities for students in the Computer Science department. This year, the club's faculty advisor, Dr. Yi took three top students from the SSU programming contest to compete at a regional programming contest.

## **2. Faculty Scholarship and Creative Work**

- Highlight faculty collaboration with research affiliates and visiting scholars, external funding opportunities, and grants.
  - Dr. Sotirios Kentros participated on a collaboration with University of California, Irvine, on “Three-Party ORAM for Secure Computation”.
  - Dr. Sotirios Kentros is working on a DARPA grant proposal with his research colleagues and IBM research.
- Faculty scholarship contributions as an appendix to report

Please see the Appendix for details.

## **3. New Civic Engagement, Internships & Service Learning opportunities**

- Recognize new opportunities for service-learning pedagogies, community partnerships, and civic engagement.
- Highlight new and exciting student internships and/or placements
- Identify any partnerships with community-based organization.
  - The SSU Computer Science Industry Advisory Board (IAB) made up of professionals drawn from the local computing industry. The CS-IAB meets bi-annually and provides CS faculty with the opportunity to discuss possible curriculum enhancements with professionals currently practicing in the fields, and also to entertain suggestions regarding new technologies and/or practices that could be beneficial to students in the CS program. In addition to all these, the board members also work with the department to provide our students internship and placement opportunities.

- The department maintains a good relationship with [JD Software Inc.](#) The company funds our annual programming contest. JD Software also provides opportunities for Computer Science internships and placements. We have many graduates who are working for the company as full-time employees. This year, JD Software also provided internship opportunities to 3 Computer Science students.
- The department made an effort in communicating and connecting to its alumni. We maintain a CS alumni group on LinkedIn. The Computer Science Honor Society UPE worked on hosting its annual “In the Loop” event. “In the Loop” event is an informal talk given by the Computer Science alumni about their experiences within the software industry. Alumni will share their insights into successfully pursuing goals post-graduation. On February 11, 2015, our first “In the Loop” event was held. Currently working for Philips, Computer Science alumnus, Alex Agnello was our guest speaker for the first “In the Loop” event. The event was a great success. Alex discussed his industry experience. He also shared his insights into successfully pursuing goals post-graduation. Students were given lots of opportunities to ask their questions. There were so much discussion going on that students surrounded Alex with more questions and discussions long after the former talk ended. With the huge success of the first event, we will certainly continue “In the Loop” in the future. It is worth mentioning that due to the department effort in connecting with Alex Agnello, he was invited to be on the advisory board of the Dean of College of Arts and Sciences. He accepted that invitation.
- Sheila Shea continued her involvement with the FASST After-School program. She taught computer coding (<http://coding.org>) to mostly Grade 3 students from the Horace Mann Laboratory School on campus. This program

#### **4. Efforts to enhance the diversity of your department**

- The department has a diverse faculty body and a diverse student body. We give diversity important consideration during our recruitment of faculty. A new IT tenure-track faculty was successfully recruited in both minority and women categories.

#### **5. Efforts to enhance the internationalization of the department**

- We have many international students enrolled in Computer Science program. They interact with our domestic students during classes, programming club activities, and UPE honor society activities.
- We have also been hosting international students from Brazil of a program called “Science without boarder” - BSMP. This year, we had hosted 7 Computer/Information Science students from this program. The department provided summer internship opportunity to two of our BSMP students and another BSMP student from University of Wisconsin – Green Bay.

**6. Efforts to develop a stronger internal and external identity for the College of Arts and Sciences. For example, departmental work with marketing, or departmental participation in Admission events.**

- The department participated in the STEM presentation of SSU Open House. During this event, we gave a powerful presentation to the local high school students who are potential Salem State University applicants.

**7. Appendix**

- Department strategic plan, or 1 to 3 year department goals and plans. (Please check a separate PDF document for Department strategic plan.)

The departmental plans for 1 to 3 years are set to closely link to the goals of the Strategic Plan of the College of Arts and Sciences.

- ABET re-accreditation – Fall 2015

Under the leadership of our ABET accreditation coordinator, Joe Kasprzyk, the department has been working very hard in preparing for the ABET re-accreditation visit in Fall 2015. We will be ready for the ABET site visit in October 2015.

- The department will complete the proposals of the new Graduate Certificate in Fundamentals of Computer Science and the new Master of Science in Computer Science.
- The department will complete the proposal of the new BS in Information Technology program
- This is the year that the department will review and update its Strategic Plan.
- The department will continue its efforts in the above reported areas.
  - We will continue to increase the leadership opportunities for students in our UPE honor society chapter, including the “In the Loop” event. We will bring back more alumni to interact with our current students.
  - We will start a new event called Faculty Seminar Series. This series will serve multiple purposes, including
    - To be part of our UPE Chapter activities;
    - To give our students chances to learn something from their faculty outside the classes they teach;
    - To give our faculty opportunities to share their research results and/or research interests;

- To give our faculty opportunities to share any interesting topics with students and other faculty;
  - To increase the communications between student and faculty as well as between faculty and faculty.
- We will continue to increase the activities of the Programming Club
- We will revitalize the Robotic Club to provide more learning experience for students.
- We will increase our efforts in the communication with our alumni and our industry connections to provide opportunities for our students on internships and placements.
- The department will continue and increase our students' participation in undergraduate research as well as state-wide and university events.
- We will explore new opportunities in civic engagement and service learning.

- AY 14-15 Faculty scholarship

### **Mikhail S. Brikman**

#### **Contributions to the professional growth and development of the College community:**

- Participated in the 2015 Salem State University President’s Advisory Committee on the Teaching Load survey.
- During the April 2015 induction to the UPE honor society invited a recruiter to advise CS students on the current job openings/resume building/interviewing tips and to conduct interviews for an existing introductory IT job.
- Participated in the 2015 Assessing Student Engagement at Salem State University survey.
- Participated in the 2015 Task Force for Comprehensive Internationalization at Salem State University survey on international experiences.

#### **Textbook Reviews:**

- 2015 Participated in the Cengage Learning Annual Higher Ed Faculty Survey.
- 2015 Participated in the Jones & Bartlett Learning survey on the Introductory Java Programming course.
- 2015 Participated in the Pearson Higher Education survey on the new generation of digital course materials.
- 2015 Participated in the Cengage Learning annual benchmarking research to explore trends and perspectives in cybersecurity education.
- 2014 Participated in the review of “Object-Oriented Data Structures Using Java”, 3<sup>rd</sup> edition by Nell Dale.
- 2014 A member of the Advisory Board for the Jones & Bartlett Learning “Navigate Board on Online Learning” review of Navigate 2.0, a customized learning management system.
- 2014 Participated in the review of “Program Abstractions in Java” by Eric Roberts.
- 2014 Participated in OC&C Strategy Consultants research into the use of Higher Education primary course materials.
- 2014 Participated in IEEE survey on the current state and future of Engineering, Computing and Technology (ECT) education.
- 2014 Participated in Pearson Higher Education survey on digital course materials.
- 2014 Participated in Pearson Higher Education survey on Internet/Web Programming courses.
- 2014 Participated in Cengage Learning and Book Industry Study Group (BISG) survey about course materials in the higher education market.

## **Bo J. Hatfield**

### **Conferences, Lectures and Meetings:**

- Attended “TDWI Solution Spotlight on Big Data Analytics”, October 7, 2014, Boston.
- Attended “20<sup>th</sup> Annual Massachusetts Statewide Undergraduate Research Conference”, April 24, 2015, Amherst MA.
- Attended ACM Boston Meeting on “Big Data vs. Big Insight – Healthcare Customer Service Case Study with Bernhard Suhm”, March 19, 2015, MIT Room E51-395. Cambridge MA.

### **Webinars:**

- Attended “Amazon WorkSpaces - Desktop Computing Service in the Cloud” webinar, Oct. 14, 2014
- Attended “Website Hosting Webinar”, October 21, 2014
- Attended ACM Learning Webinar “Agile Methods: The Good, the Hype and the Ugly”, Feb. 18, 2015
- Attended UBM Webinar “The Changing World of Big Data Security”, April 14, 2015.
- Attended Cengage Learning Webinar “Android Boot-Camp3 Boots Up!” April 29, 2015.
- Attended IBM Security Webcasts “Avoiding Application Attacks: A Guide to Preventing the OWASP Top 10 from Happening to You”, May 6, 2015.

## **Joseph S Kasprzyk**

- SEI webinar "Trends and New Directions in Software Architecture" (May 2015)
- ACM/IEEE local chapter sponsored seminar by Jared Spool "User Interface Design Metrics" (January 2015)

## **Komalpreet Kaur**

### **Publications**

- Komalpreet Kaur, Jerry J Shih and Dean J Krusienski, "Modeling scalp-electroencephalogram responses using asynchronous intracranial responses," Journal of Neural Engineering, 11(3), 2014.

### **Faculty Development Webinars and Seminars**

- Seminar: Big Data vs. Big Insight - Healthcare Customer Service Case Study: MIT, March 19, 2015.
- Webinar: IEEE Webinar on Small Cell Big Gains: Increases Cellular Capacity, March 26, 2015.

## **Sotirios Kentros**

### **Publications and presentations**

- Adaptive Task Allocation, Sotirios Kentros, Chadi Kari, Aggelos Kiayias and Alexander Russell, 35th IEEE International Conference on Distributed Computing Systems, 2015

- A Location-Based Authentication System Leveraging Smartphones, Yusuf Albayram, Mohammad M. H. Khan, Athanasios Bamis, Sotirios Kentros, Nhan Nguyen and Ruhua Jiang, 15th IEEE International Conference on Mobile Data Management, 2014
- Distributed Dynamic Channel Assignment in Wireless Networks, Chadi Kari, Narasimha K. Shashidhar and Sotirios Kentros, International Conference on Computing, Networking and Communications, 2014

#### **Professional Development Activities**

- Attending SEED Workshop 2015, Jun1st-3<sup>rd</sup>, Hands-on Labs for Computer Security Education
- Participating on a collaboration with University of California, Irvine, on “Three-Party ORAM for Secure Computation”
- Finalized and submitted the paper “Adaptive Task Allocation”, with co-authors Chadi Kari, Aggelos Kiayias and Alexander Russell, which was accepted in 35th IEEE International Conference on Distributed Computing Systems. I will attend ICDCS 2015 during June 29<sup>th</sup>-July 2<sup>nd</sup> 2015 and present the paper there.
- Participating as a mentee in the scholarship mentoring program run by the Center for Research and Creative Activities (CRCA) at Salem State University.

#### **Beifang Yi**

#### **Professional development activities**

- Participated in the 2015 annual CCSCNE conferences: serving as SSU programming contest team faculty advisor.

#### **Manish Wadhwa**

#### **Professional Development as a Researcher and Member**

- Editorial Board Member for International Journal of Computer Networks (IJCN) and International Journal of Information Technology (IJIT)

#### **Reviewer of the following Peer Reviewed Journals and Conference Proceedings**

- 2006 – Present ICCCN 2015 TPC Member and Reviewer; Security and Communication Networks, Wiley; IEEE Symposium on Wireless Technology & Application; IEEE Transactions on Wireless Communications (IEEE TWC); IEEE Journal of Communications (IEEE JCM); International Journal of Computer Networks (IJCN); International Journal of Ad Hoc and Ubiquitous Computing (IJAHUC); IEEE Globecom and IEEE ICC AHSN.

#### **Faculty Development Webinars and Seminars**

- Seminar(s): Big Data vs. Big Insight - Healthcare Customer Service Case Study: MIT, March 19, 2015
- Webinar(s): IEEE Webinar on Small Cell Big Gains: Increases Cellular Capacity, March 26, 2015

#### **Gregg Whyte**

- Received training at Cengage IT Educators' National Conference, Phoenix, in March 2015.