Welcome to the Department of Computer Science. I am very proud of our department and its contributions to the overall mission of the University. Led by experienced educators, our undergraduate and graduate programs continue to grow and prepare our students for dynamic careers or higher education in the fields of Computer Science and Information Technology.

The Department has been experiencing an increase in undergraduate enrollment that comes from the growing attention Computer Science has been receiving on the national level. Our new Information Technology (IT) program has also been gradually growing in response to the market’s ever-increasing demands for IT professionals.

Our new faculty member Dr. Wei Chang, with expertise in the areas of mobile computing and cyber security, offered a new course in secure mobile computing in Spring 2017. He will teach another new course, entitled Introduction to Ethical Hacking, in Fall 2017. In Spring 2017, we offered Big Data and Web Analytics, a new course which covers topics such as NoSQL databases, Google Cloud Platform and BigTable, Hadoop, Pig, etc.

The Computer Science students and faculty continue to be involved in research. Two graduate students are currently working on publishing a paper on their innovative application of NoSQL databases using Hadoop’s distributed computing environment; and an undergraduate student investigated applications of neural networks in malware detection.

Our undergraduate students continue to participate in the ACM’s International Collegiate Programming Contest. This November two teams, coached by Professor Mary Krueger, represented the Department at the ACM’s 2017 contest.

Many of our students gained work experience over summer by interning at technical companies in the area while earning credit. Last summer, a number of our undergraduate and graduate students interned at companies such as Lockheed Martin, AXA Insurance, QVC, Starship Health Technologies, and TCG Capital, Under Armour, and PJM Interconnection. We are currently working with SAP by participating in their Early Talent Program. The hope is that our undergraduates will be able to take advantage of summer internships and job opportunities at SAP.

If you are a former student reading this newsletter, we would love to hear from you. Thanks for visiting!
The CS Library bookcase area has been a huge success! Due to some additional donations, the inventory has grown and a variety of topics can be found. All students are encouraged to stop by and pick up a complimentary bookmark and borrow a book!

Dr. Wei Chang has developed a new course for the fall semester, entitled Introduction To Ethical Hacking.

Many thanks to Dr. Jonathan Hodgson, Professor Emeritus, for his donations to the department. Due to his continued generosity, we were able to host three distinguished Guest Speakers over the academic year.

Dr. Suzan Köknar-Tezel stopped by the department for a quick visit! She was recently in the area for her son’s wedding, which was in Washington, DC. She and her husband, Ahmet, are enjoying retirement!

Through alumnus Justin Lynch (B.S. / 2011), the CS department recently established a relationship with SAP Corporation. They are constantly seeking young talent for internship and full-time positions. Experience with JAVA and SQL is preferred.

A cohort of students from Shanghai Normal University has been accepted into the MS Computer Science Program for the fall, 2017, semester.
2017 UPE INDUCTIONS

The 2017 Upsilon Pi Epsilon (UPE) 13th Annual Induction Ceremony was held on April 6th in the Presidents’ Lounge, followed by a luncheon for family, friends, faculty, and staff.

UPE is an honorary society whose membership consists of outstanding undergraduate and graduate students in the computing disciplines and was first organized at Texas A&M University in 1967. In 1997, UPE was admitted as a member of the Association of College Honor Societies. Since 2004, the Department of Computer Science has been a member of the UPE Lambda Chapter of Pennsylvania.

After the ceremony, alumnus Dr. Brian O’Neill briefly addressed the inductees about his experiences at SJU and insights into what he learned along the path to earning his PhD. (Please see “Alumni Network” on the last page for further information about Brian)

Congratulations to the following 2017 UPE Inductees:

Faculty
Dr. Wei Chang

Graduate Students
Asma Albarakati
Fatema Alkhalaf
Jumanah Alshehri
Jingyu Wang
Tao Xie

Undergraduate
Nicholas Boyd
Patrick Quirk

Student Screen Shots

- Junior Kevin Shank spent the spring semester studying in Scotland at the University of Edinburgh.

- First-year graduate student Mokshita Madan attended FemmeHacks 2017 on February 24 and 25. FemmeHacks is an annual collegiate hackathon hosted by the University of Pennsylvania’s Women in Computer Science, designed to encourage women in programming. Mokshita’s team won third prize with their “Techie Guard” project! Briefly, Techie Guard senses computer vibrations. If your laptop is left unattended and someone tries to take it away, the computer immediately sends a message to your phone. The event lasted for 12 hours on Sunday and attracted approximately 70-80 women developers. “It was a great experience to share knowledge and ideas with people from different colleges, companies, and backgrounds.” Mokshita also said it provided her with good exposure and encouraged her to participate in future events. She highly recommends this event to other students!

- The following students participated in the 2017 Sigma Xi Research Symposium, held on April 21st: Louis Dignam, Colin Deckert, Seth Fields, Justin Lujan, Sean Monahan, and Stephen Stanley.

- Ting Hu has a summer internship at Brown’s Super Store, located in Westville, New Jersey.
The following students participated in Student Achievement Day, held on April 27th: **Brian Ching, Anthony DellaPia, Nina Kopy, Victor Logan, Peter Pham, and Christopher Snider.**

- Over the summer, **Tingjun Cui** will intern at Kim Yeung Ling, PC, located in Philadelphia.
- **Nick Boyd** was accepted into the Research Education for Undergraduate Students Program (REU). REU is sponsored by the National Science Foundation and hosted by Temple University. Over the summer, Nick will be living on Temple’s campus for eight weeks while doing research on mobile security. This is a unique opportunity, as the program draws outstanding undergraduate students from all over the country. For further information about the program, please visit: [https://cis.temple.edu/~avinash/TUREU/index.html](https://cis.temple.edu/~avinash/TUREU/index.html).

- **Zijian Zhang** has a summer internship position at NY Immigrations Services, LLC in Leonia, New Jersey.

**DUCK DONUTS’ DATABASE**

*Anthony DellaPia, Nina Kopy, Victor Logan*

This database is based off a franchise restaurant called Duck Donuts. Duck Donuts is only open for business during the summer. This project is a user-friendly analytical database that sorts the average number of purchases on an item per week. Also, this database will be able to help Duck Donuts with their financial situation and determine how to save money. For example, by being open from 7:00 a.m. until 7:00 p.m., sometimes Duck Donuts is spending more money to pay employees than they do earning any profit from customers. This database breaks down when it is a good time to close in order to save more money over a period of time.

**EYE ON IT ➔ The Smart Cane**

Developed by the French Company Dring, the Smart Cane is able to track normal activity by the user and report any unusual activity, such as falls. If a problem is detected, the cane will send the user’s location by text or email. This cane will greatly help those who live alone or have trouble moving around unassisted.
The NFL season lasts 17 weeks with 30 teams. Our project will be a website that hosts user-made pools. Users will use on site credits to buy into a pool. In this pool, each user who has bought into the pool will choose one team every week that they have not yet chosen. Once they choose this team, they may not choose the team again for the rest of that season for that pool. If that team wins, that user earns the same amount of points as that team scored. If the team the user chose loses, the user scores zero points. At the end of the season, the user with the most points wins the pool. The total credits used to create the pool (each user’s buy-in) will be divided up fairly between the first three places (top 3 scoring users).

A lot of the project involved back-end data storing and front-end user interface. Therefore, we chose to work with PHP in order to easily fetch data from our back-end SQL database and display it on our front-end interface. We also used Javascript and jQuery to make our site more dynamic and user friendly. We implemented Bootstrap to aid in creating a visually appealing design. Due to the fact that the NFL season is over, we decided to handle testing our site with a simple algorithm that can simulate the season week by week and assign points in each pool accordingly. We also looked at similar fantasy sports sites, such as Yahoo and ESPN to see if there were features from those sites that we could implement, or areas of those sites that we could improve.

The Artificial Immune System (AIS) is an artificial intelligence approach to computer security which draws its inspiration from the human body’s biological immune system. It uses standard AI approaches to determine if a file is malicious or not, based on a detector set used for comparison.

The way the detector set is created presents the biggest difference between different AIS algorithms. Positive Selection Algorithms create the detector set as a set of self sequences which are pulled from benign files. Negative Selection Algorithms create the detector set as a set of non-self sequences by removing self sequences from malicious files. In order to determine which type of detection algorithm is more efficient, it is necessary to compare the two.
JSS SERVICE ASSISTANT FOR DICK’S SPORTING GOODS

Seth Fields, Justin Lujan, Stanley Stephen

Dick’s Sporting Goods offers various services for sports equipment. The process for submitting a service in the store often requires the customer to wait until an associate is free to help them. We want to make this process as efficient and expedited as possible.

Our contact at Dick’s Sporting Goods expressed his need for a service scheduling system, similar to their “buy online and pickup in store” system. He described a system where people can schedule services from their own computer to make the process more efficient.

We made a prototype of a system that would comply with our contact’s request. We developed a web-based application where customers can go online, submit a new service, and simply drop off the equipment once the request has been accepted. This essentially eliminates any waiting time for the customer when submitting their equipment for service. Without access to the Dick’s Sporting Goods internal network, our results were limited; however, we were able to make our contact satisfied with the system we presented to him.

We believe that our project could make a difference and could make Dick’s Sporting Goods a more efficient company at the store level, as well as make their customers more satisfied and engaged.

WEBSITE DEVELOPMENT THROUGH INTERACTIVE EXPERIENCE

Brian Ching, Peter Pham, Christopher Snider

This project was created as an effort to conceptualize the mental process of the development of websites in the form of an interactive experience. The process in making a legitimate website in our age of widespread technological resources involves a number of different languages and thorough analysis of the final project.

The main goal of this project is to allow that idea to be experienced by others who are unfamiliar or inexperienced in the field of computer science to become exposed to the feeling or idea of coding a website in the form of a video game. The game is made using the Unreal Engine, which is based in C++.
Dr. Jie Wu

Dr. Jie Wu is the Associate Vice Provost for International Affairs at Temple University. He also serves as the Chair and Laura H. Carnell professor in the Department of Computer and Information Sciences. Prior to joining Temple University, he was a program director at the National Science Foundation and was a distinguished professor at Florida Atlantic University.

His current research interests include mobile computing and wireless networks, routing protocols, cloud and green computing, network trust and security, and social network applications. Dr. Wu regularly publishes in scholarly journals, conference proceedings, and books. He serves on several editorial boards, including IEEE Transactions on Service Computing and the Journal of Parallel and Distributed Computing.

Dr. Wu was general co-chair/chair for IEEE MASS 2006, IEEE IPDPS 2008, IEEE ICDCS 2013, and ACM MobiHoc 2014, as well as program co-chair for IEEE INFOCOM 2011 and CCF CNCC 2013. He was an IEEE Computer Society Distinguished Visitor, ACM Distinguished Speaker, and chair for the IEEE Technical Committee on Distributed Processing (TCDP). Dr. Wu is a CFF Distinguished Speaker and a Fellow of the IEEE. He is the recipient of the 2011 China Computer Federation (CCF) Overseas Outstanding Achievement Award.

Algorithmic Crowdsourcing And Applications in Big Data

Abstract

This talk gave a survey of crowdsourcing applications with a focus on algorithmic solutions. The recent search for Malaysia flight 370 is used first as a motivational example. Fundamental issues in crowdsourcing, in particular incentive mechanisms for paid crowdsourcing and algorithms and theory for crowdsourced problem-solving, are then reviewed.

Several applications of algorithmic crowdsourcing applications are discussed in detail with a focus on big data. The talk also discussed several ongoing projects on crowdsourcing at Temple University.
Marguerite Callahan  
*Lockheed Martin*

With over 25 years in the IT industry, Marguerite has been at Lockheed Martin for 18 years and has been involved in many development efforts with increasing responsibility.

Her current role as Lean-Agile Coach helps Lockheed Martin tackle the large software development projects in the age of technical accelerations, where everything is changing so you must allow for flexibility in the software development process but still meet all requirements.

“Software is a great combination between artistry and engineering”.

~ Bill Gates
Eleftherous “Lefty” Lazaridis accepted a position as a Data Analyst at Independence Blue Cross in Philadelphia. His parents are visiting from Greece to celebrate his graduation and, while in the United States, they plan to travel to Niagara Falls, Toronto, Boston, and New York City. While attending SJU, Lefty interned for QVC and has received multiple employment offers from companies such as SAP, JP Morgan, QVC, Vanguard, NBC Universal, and, of course, Independence Blue Cross. Lefty’s goal is to work in some of the best companies in the U.S. and he feels will continue on this path!

SPRING 2017 EVENTS

Thursday, February 23
Guest Speaker Dr. Jie Wu, Temple University

Thursday, March 30
Guest Speaker Marguarite Callahan, Lockheed Martin

Saturday, April 1 / Sunday April 2
Admitted Student Day

Thursday, April 6
2017 Upsilon PiEpsilon (UPE) induction ceremony.

Tuesday, April 11
Senior Exam

Thursday, April 20
Senior Presentations

Friday, April 21
Sigma Xi Research Symposium

Thursday, April 27
Celebration of Student Achievement

Thursday, May 4
Reading Day

Saturday, May 20
Commencement

“The best preparation for tomorrow is doing your best today.” ~H. Jackson Brown, Jr.
Brian Higgins (B.S. /1986, M.S./1990) After many years using his SJU Computer Science degree in the software development field, Brian recently made a career change into a Senior Quantitative Analyst role at TD Bank. In his new position, he is also using his SJU Mathematics minor to develop regression-based financial models and the programs used to implement the models. These models help the bank forecast balances for mortgages, loans, credit cards, and deposits. With the financial models, the bank tests the effect of different economic scenarios on its balance sheet to comply with the Dodd-Frank Bank Stress Testing laws created in response to the economic crisis. To facilitate his career move in 2013, Brian earned a M.S. in Financial Engineering from Stevens Institute of Technology. In addition, Brian reports he is doing well and living in Newtown, Pennsylvania, with his wife, Jodi, and son, Patrick.

Brittany (Fasy) Millman (B.S./2007), an Assistant Professor in the Gianforte School of Computing at Montana State University, was recently awarded a NSF grant. This project will develop and research storytelling as a culturally responsive way to engage middle-school American Indian and rural Montana students in learning computer science and computing skills. Instead of creating a new curriculum, the project will infuse computer science across the curriculum which will help students understand that computing skills are relevant across disciplines and are important for a wide variety of professions in the workforce.

The project will use Alice, an object-based educational programming environment that has been successful by encouraging storytelling and engaging middle school students and others who are not normally exposed to programming. By using Alice, students can tell stories by placing objects in virtual worlds they have created and they can then program by dragging and dropping tiles that represent logical structures. By integrating these computational skills, without multiplying the number of topics to be taught, the project will promote a more diverse and comprehensive understanding of the opportunities available to students with an ability to think computationally.

The project will enable development for teachers to meet the requirements of Montana’s Indian Education for All (IEFA) Act, which was mandated by the state legislature in 1999 and remains a difficult requirement for many middle school teachers to incorporate in their classrooms. For further information, you may visit: https://www.nsf.gov/awardsearch/showAward?AWD_ID=1657553&HistoricalAwards=false

Brian O’Neill (B.S./2007) recently paid a visit to the department and addressed the 2017 UPE inductees. Brian is an Assistant Professor in the Department of Computer Science and Information Technology at Western New England University, located in Springfield, Massachusetts. He received his B.S. in Computer Science from St. Joseph’s University in 2007. In December, 2013, he completed his PhD in Computer Science at Georgia Institute of Technology.

His research interests include storytelling, narrative support and understanding, artificial intelligence, AI and games, and human-computer interaction. For his dissertation, he developed a computational model of suspense in narrative, as well as a method for engineering knowledge for narrative intelligence systems using qualitative methods. In 2005, Brian was inducted into Upsilon Pi Epsilon. He is a huge fan of the SJU’s basketball team and he considers himself lucky that he arrived at SJU in 2003-04, during their perfect 27-0 season. He faithfully attended their games all four years and also played drums in the Hawk Band. He is proud SJU alumnus and is a Hawk for life!

For further information about Brian’s research, projects, and publications, please visit his website: http://mars.wne.edu/~bo338376/