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.

Last year, the department’s proposal for creation of a new graduate certificate Program in cybersecurity was approved by the university. This program is primarily intended for professionals who already hold an undergraduate degree and are looking to improve their knowledge or take the first step towards a master’s degree with concentration in cybersecurity. We researched many cybersecurity programs in the area and are confident that our approach in integrating ethical hacking and digital forensics is unique and will help with the needs of professionals who wish to work in cybersecurity roles.

We plan to establish a new minor in Computer Science and Digital Music in the upcoming academic year. Throughout the years, we have had many students who had double majors in arts and computer science and, with the recent experiments known informally as “CS+X”, we have begun a joint venture with the department of Music, Theater & Film and Fine Arts to explore further areas of collaboration.

In spring 2018, the department established a formal internship and co-op program with SAP America, which has educational links with many other schools in the area, such as Drexel, Villanova, and Temple. The co-op program will officially launch in spring 2019 and is intended for rising juniors who will work two years at SAP (full time and part-time) before graduation. Many thanks to Justin Lynch, a Senior Support Engineer at SAP and a Computer Science graduate from SJU, who played a critical role in helping to establish the SAP co-op program at SJU.

Other exciting news I would like to share with you is that the Departments of Computer Science and Mathematics are currently planning the creation of a new graduate program in data science. The program will be truly interdisciplinary in nature and will aim to bring together various disciplines in the College of Arts & Sciences with strong emphasis on computer programming, machine learning, distributed processing Hadoop & Spark, statistics, and big data. Our goal is to finalize the proposal in spring 2019 and launch the new graduate program in Data Science in fall 2019.

(Continued on next page)
Message From The Chair

(Continued)

An undergraduate Computer Science student, Evan Pomponio, was offered a full-time, summer internship by the U.S. Department of Homeland Security (DHS). This prestigious initiative is designed to give students an opportunity to work alongside cyber leaders and gain invaluable hands-on cyber experience through challenging work projects, real-life scenarios, and mentoring from DSH cybersecurity professionals. Raven Moses, an Information Technology major, won the 2018 Black Engineer of the Year Award (BEYA Leadership Community Award) at a ceremony hosted in Washington, D.C. We proudly commend both Evan and Raven for their impressive achievements.

Our undergraduate students continue to participate in ACM’s International Collegiate Programming Contest. Last November, two teams represented the Department in ACM’s 2017 contest which was attended by teams from many universities and colleges in the Northwest Division. Many thanks to Professor Dr. Wei Chang, their mentor and coach, and also to our Computer Science Club officers who helped recruit and coach students for the contest.

The induction ceremony for the UPE Computer Science Honor Society was held in April 2018. We are very proud of the new graduate and undergraduate members who were inducted into the society because of their outstanding academic accomplishments.

If you are a former student reading this newsletter, we would love to hear from you. Thanks for visiting!

“The only journey is the one within.”
~Rainer Maria Rilke

Department News Bytes

• On Tuesday, February 6th, Christina Butler, Career Counselor from the Career Development Center (CDC), made a presentation to all majors in the department. She provided advice on obtaining internships and permanent employment; resume building; the benefits of networking and how to make connections; Career Fair tips; and the role that CDC plays in a student’s life while at SJU and as an Alumni. This presentation was highly informative and well received by the students! (See Page 10 for details).

• The department has established a Cybersecurity Certificate Program, which will begin in the Fall, 2018, semester. This will be a five course, online program.

• The Computer Science Department is collaborating with the Department of Music, Theater, & Film (MTF) for a new interdisciplinary minor in Computer Science and Digital Music.

• CS has partnered with SAP America to form a summer internship program for undergraduates majoring in Computer Science and/or Information Technology. Each spring, top students are selected and interviewed by SAP for an internship position over the summer. The department is also working with SAP to establish a co-op program.

• A Computer Science Industry Advisory Board (IAB) was recently established. The IAB members consist of the following CS alumni:
  ◇ Royce Fu, Deutsche Bank
    Assistant Vice President
  ◇ Patricia Hasson, Lockheed Martin
    Software Engineer
  ◇ Justin Lynch, SAP America
    Senior Support Engineer, Digital Business Services
  ◇ Patrick Stump, GSK
    Programming Director,
    RD Projects Clinical Platforms & Sciences
Information Technology major, Raven Moses, won the 2018 Black Engineer of the Year Award (BEYA). At a ceremony in February hosted in Washington, D.C., Raven was awarded the BEYA Leadership Community Award for her efforts in making outstanding contributions to STEM education through a commitment of volunteering, interacting, and engaging on campus and in her local community. BEYA is a yearly conference hosted by Lockheed Martin, The Council of HBCU Engineering Deans, and U.S. Black Engineer & Information Technology Magazine. This conference gathers top science, engineering, math, and technology professionals and students from every part of the country where they network and recognize students and innovators who have made a great impact.

“I want to thank my nominator, Mark N. Russ, for nominating me and my mother for being extremely supportive of me. This award is a catalyst for me to continue to be an advocate for students within the STEM field.”

Raven is also the founder of A.I.D. STEM at SJU, which was created to connect STEM students and build a network for intellectual collaboration and encouragement. A.I.D. STEM provides resources and hosts workshops and guest speaker events throughout the academic year.

This application will be used as a tool to keep track and build statistics around your daily activities. We will use user-entered data to build statistics for each specific user, storing their information in a secure database. This app will collect financial and time-related data, which will keep track of your spending and time management in a secure manner. After collecting users’ data, our application will then be able to create graphical representations of data that is specific to each user. In addition to graphical outputs, users will also be able to view statistics based on the two previous categories mentioned; such as average, maximum, and minimum values. Overall, as technology becomes more advanced, the interest in data collection has been on the rise, allowing applications like LifeStats to provide an interesting way to view daily habits in numbers.
EZ CLUB: BUDGET & EVENT MANAGEMENT FOR COLLEGE ORGANIZATIONS
Joseph LeTendre, Patrick Quirk, Angelynn Rodriquiz

The main purpose of this web application is to create an easier way for clubs to organize their funding. Here are two main uses for this web application. The first is for expense tracking. This would allow for clubs to enter items into their budget and keep track of their funds. The second feature would also allow clubs to create reports, see historical data on how a club has spent money in past years, and organize data for fund requests. This expense tracking feature will lead to better decision making and better budget management for clubs. The web application would also allow for better communication within the club itself. This would be done by having features that allow students to see a members' list, send emails to all members, and a calendar to see event dates and create new ones that can be linked to the budget. This application used CodeIgniter as a framework for the application, along with PHP, HTML, MySQL, XAMPP, and Google Cloud Hosting.

CHIP THE PET DETECTIVE
Emily DeMarco, Brandon Jackson-Shorts, Andrew Less

Chip the Pet Detective is a web application for use by teachers with students at the elementary age level. Through research, we found that teachers struggle with why certain students do better or worse at different times of the year. The purpose of this application is to ask students questions about their personal lives, which may help to identify potential problems with their grades. The answers to the questions will be analyzed and compared to the students' grades. This information will be presented to the teacher in a visually appealing way so they can identify students that may need more help.

While this application will be an educational and helpful tool for teachers, it is also intended to be a fun activity with an attractive design for students. An investigational story is attached to the survey questions so that students will find it intriguing to take the survey. We applied a regression algorithm to simple student data and found four questions that were affecting students' grades. Teachers can use that data to look at how students responded to those four questions and then compare it to their grades. If so, teachers can be proactive in providing additional support to their students who may be at risk for academic decline.
We developed a CRUD web application that is used for product-based and appointment-based systems. It allows for employees of the business to log-on and manage services, products, and their schedule. The employees are also able to view upcoming appointments. The managers are able to log-in, have access to all employee features, and also have different employee management options. For example, they are able to perform CRUD operations on employees and view their schedules. The application will be accessible by any platform that has an internet browser, such as a desktop PC and mobile device.

“We are all now connected by the internet, like neurons on the brain.”

~ Stephen Hawking
Working in the world of Big Data with enormous training sets that can easily contain petabytes of data slows down the performance of traditional machine learning systems. Thus, new technologies and approaches are needed to efficiently perform complex and time-consuming data analytics without having to rely on expensive super machines.

This presentation provides a brief insight into how a distributed machine learning system can be created to efficiently perform Big Data machine learning using classification algorithms. Specifically, performing predictive analytics on different numbers of worker nodes and performing both in-memory processing and on-table scans were used to utilize the computing efficiency of flexibility of Apache Spark. The conducted experiments, which were run multiple times on several instances that reside on the Elastic Computer Cloud (EC2) of Amazon Web Services (AWS), demonstrated how to parallelize executions, as well as to perform in-memory processing in order to drastically improve a learning system’s performance. To highlight the advantages of the proposed framework, two very large data sets and three different supervised classification algorithms were used in each experiment.

“If we knew what it was we were doing, it would not be called research, would it?”

~Albert Einstein

Advancement in technology, along with huge volumes of data in recent years, has led to immense progress in predictive analysis. In order to effectively process large volumes of data, Artificial Intelligence (AI) and Machine Learning (ML) methods are very much in demand along with robust tools and programming environments, such as R’s. One of the frequently used ML models are Decision Trees (DT), which are commonly used in a wide range of application domains, such as diagnosis, cognitive science, optimization, expert systems, engineering, etc. Decision trees help in forming accurate classifier models by providing a deep understanding of the structure of the problem. DT’s are heavily used in industry because of their ability to elucidate the extracted knowledge.

During my research, I have focused on understanding concepts of AI, along with ML, followed by a deep dive into R and, specifically, DT. I also explored the concepts in Hadoop and SparklyR for distributed computing.

In this paper, I presented the results of some research on available data which showed that Decision Tree algorithms are very useful in any area irrespective of domain. In conclusion, based on my data analysis and research, it is concluded that R is a very useful and user friendly tool for predictive analytics to be used in conjunction with DT’s which are among the most common types of classifiers of data.
The following students participated in the annual Celebration of Student Achievement, held on March 22nd in the Doyle Banquet Hall: Nicholas Boyd, Antonio Cozza, Jonathan Rapp, and Mike Riveria.

Junior Caitlyn Dougherty will spend the fall 2018 semester studying in Rome.

Evan Pompino and Anna Marie Berezovski are reviving the official Computer Science Club!

Ameen Hai has published a paper with Dr. Forouraghi, entitled: “On Scalability of Distributed Machine Learning with Big Data on Apache Spark”. Ameen presented this paper at the 2018 International Congress on Big Data Conference, June 25-June 30, 2018, in Seattle, WA.

On May 14th, Greg Jones, a Junior majoring in Computer Science, began his internship at the Under Armour Corporate Headquarters, located in Baltimore, Maryland. He will be working with Management implementation, CMDB cleanup, and categorization of configuration items. In addition to this, he will be kicking off a project for the new Armour Desk. Greg also interned for Under Armour during the summer of 2017.

Congratulations to IT Major Raven Moses for winning the 2018 BEYA Leadership Community Award. Please see Page 3 for details.

The following students participated in the 2018 Sigma Xi Research Symposium held on April 20th: Emily DeMarco, Brandon Jackson-Shorts, Andrew Less, Joseph LeTendre, Patrick Quirk, and Angelynn Ridriquez.

In December, Nicholas Boyd received the Dean’s Research Travel Award in recognition of being chosen to present his work at the IEEE MASS2017 Conference on Mobile Systems in Orlando, Florida.

Mokshita Madan and Vidyashree Dotihal Thirumalaraao attended FemmeHacks 2018 on February 2nd-3rd. This is an annual collegiate hackathon, hosted by the University of Pennsylvania’s Women in Computer Science. It is designed to encourage women in programming. Mokshita reports: “Our experience was ultimate—we had an amazing time at FemmeHacks. We worked with two Temple students. Our project was based on creating a website for mental health that uses Sentiment analysis for a patient that enters a text message (converts voice message to text using Google’s Speech to Text API) and sends a message to a counselor based on analysis using Twilio API. The event lasted for around 12 hours on Saturday and attracted 80-100 women developers. It was a great experience sharing knowledge and ideas with people from different colleges, companies, and backgrounds. This hack really encouraged us to think out of the box for ideas, as people were really equipped with innovative minds. In total, it provided us a good exposure and encouraged us to participate in such events. We would highly recommend this event to other students.” Also pictured are Linda Kirsch and Mylat Kassa from Temple University.

Yang Xu was accepted into the Alpha Epsilon Lambda National Honor Society (AEL), the nation’s only graduate interdisciplinary honor society. The ceremony was held on Tuesday, May 15th in the Cardinal John P. Foley Campus Center.
Nicholas Boyd has been on the Dean’s List for several semesters and is a Chapter Officer of Upsilon Pi Epsilon, the Computer Science Honor Society. Nick participated in Temple’s REU Program in summer 2017, where he researched the topic of crowdsourcing and developed a musical framework by implementing crowdsourcing techniques that change with active listeners. Nick wrote and published a comprehensive research paper which he presented at the IEEE Conference on mobile systems in Orlando, Florida, in summer 2017. Nick will pursue his career as a software engineer at Lockheed Martin.

Ameen Abdel Hai graduates with a concentration in Web and Database Technologies and his academic performance in his graduate studies has been exemplary. Ameen’s year-long master’s project was in the areas of machine learning and big data. He published and presented his work at IEEE’s Big Data Conference in June, 2018, in Seattle, Washington. In addition to his outstanding work as a Graduate Teaching Assistant and a researcher, Ameen has been involved in and committed to various initiatives in the department to raise awareness regarding the importance of Computer Science education. In spring, 2018, Ameen was inducted into SJU’s chapter of Upsilon Pi Epsilon, which is the International Computer Science Honor Society.

“Achievement builds character”.
~ Tom Landry
CS Special Report

SPRING ART EXHIBIT
Drexel Library
Post Learning Commons, 2nd Floor
This display includes two sets of drawings from Kathleen Vaccaro’s Fall 2017 Drawing I course.

CHAGALL TRANSCRIPTIONS
The colorful pastel drawings are the students’ own interpretations of artworks by Chagall. Stop by and enjoy the “Chagall Wall!”

STUDENT ART WORK SELECTIONS
The charcoal and graphite drawings are a mix of drawings that the students chose themselves. Kathleen had a wonderful time working with this group and is proud of what they accomplished as artists and students.

Participating Artists: Justin Aungst, James Bohlinger, Joshua Bosher, Christina Butler (Career Development), Bridget Cerciello, Anastasoa Foa. Terese Fasy (Computer Science), Caroline Glavin, John Henry, Nicole Marchese, Elizabeth Mirra, Nathaniel Patterson, Nicholas Vernacchio.

SPRING 2018 EVENTS
Friday/Saturday, February 2-3
Femme Hacks, hosted by University of Pennsylvania

Tuesday, February 6
Guest Speaker: Christina Butler

Tuesday, February 13
Vanguard Networking Night, hosted by A.I.D. STEM

Thursday, February 15
Career Fair
   Campus Philly STEM Recruitment Event

Tuesday, March 6
Delaware Bio Science & Technology Career Fair

Tuesday, March 8
Guest Speaker: Raymond Novak

Thursday, March 22
Celebration of Student Achievement

Monday, April 2
FBI Visit / NYC

Tuesday, April 10
CAS Virtual Networking Event

Thursday, April 12
Upsilon Pi Epsilon Induction Ceremony

Thursday, April 19
Computer Science Club Meeting

Friday, April 20
Sigma Xi Research Symposium

Tuesday, April 24
Senior Project Presentations

Thursday, April 26
Graduate Research Presentations
   Celebration of CS Students / Pizza Lunch

Tuesday, May 15
Undergraduate Student Award Ceremony

Friday, May 18
Graduate Student Award Ceremony

Saturday, May 19
Commencement

“The world is but a canvass to our imagination.” ~Henry David Thoreau
Christina Butler is a career counselor and marketing specialist at the Career Development Center at St. Joseph’s University. She has worked at SJU for almost three years. Christina attended West Chester University for her Master’s Degree in Higher Education Counseling and Penn State University for her Bachelor’s Degree in English. She lives in West Chester, Pennsylvania, with her husband.
The 2018 Upsilon Pi Epsilon 14th Annual Induction Ceremony was held on Thursday, April 12 on the 5th Floor of McShain Hall. The ceremony was followed by a luncheon for students, family, friends, faculty, and staff.

UPE is an honorary society whose membership consists of outstanding graduate and undergraduate 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.

Congratulations to the following 2018 UPE Inductees:

**Graduate Students**
- Bdoor Althobaiti
- Nicolas Eldering
- Ameen Hai
- Mokshita Madan
- Yang Xu

**Undergraduate Students**
- Elizabeth DiFilippo
- Nicholas Senatore
- Allison Smith

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• Nick Boyd received offers from SAP, the U.S. Navy, and Lockheed Martin. After much thought and consideration, he decided to accept a position as a Software Engineer at Lockheed Martin, located in King of Prussia, PA.

• In June, Emily DeMarco started her employment at Axalta Coating Systems in IT Rotational Programming.

• Andrew Less has accepted a position as a Java Developer at Vanguard.

• Ameen Hai will join the CS Department as an Adjunct in fall, 2018. Subsequently, he will pursue his PhD in Computer Science.

• Jonathan Rapp has accepted a position at Accolade, located in Plymouth Meeting, PA. Jonathan interned for Accolade during the summer of 2017.

• Julie Osborne has received full funding to pursue her Master’s Degree at the University of Rhode Island, Department of Computer Science & Statistics.

• Shelley Donaldson has accepted a position as a Junior Software Developer at RedJack in Washington, DC.

• Scott Billman has accepted a full-time position as an Information Security Analyst on the Corporate Security Team at Universal Health Services (UHS). Scott interned part-time at UHS during the spring 2018 semester.
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**EYE ON IT → 3D Chest**

71-year old patient Peter Maggs had his chest rebuilt by the use of 3D printing technology! Due to a tumor that had grown to the size of a tennis ball, Maggs had to have three ribs and half of his breastbone removed. The operation was eight hours long and took place in Wales.

“Today’s accomplishments were yesterday’s impossibilities” ~ Robert H. Schuller
Julia (Fox) Gerlach (B.S./2007) and her husband, Joe, welcomed baby Michael James Gerlach into the world on January 19, 2018. Congratulations!

Shengqi Gong (M.S./2015) and his wife, Jin (M.S./2015), were hired as Web Developers at Softrip Travel Solutions, located in Ft. Washington, PA. Both are featured in the group picture on the company’s homepage (https://www.softrip.com/).

Elham Jaffar (M.S./2016) and Sonia Parikh (M.S./2016) wrote a paper, entitled “An Automated Educational Tool for Big Data Analysis Using Hadoop”, and it was accepted at the International Conference on Computer and Applications. Elham also reports she is working full time as an Application Analyst with Johns Hopkins Aramco Health Care and SBM (the general representative of IBM) in Saudi Arabia and she is taking some courses with Udacity to improve her IT skills. She promises to visit the department the next time she is in the country!

Ather Shariff (M.S./2015) was admitted into the ADA 25 Advancing Leadership Fellows, a Chicago based leadership training program for people with disabilities. He and 19 other fellows will spend one year training those with disabilities and networking with other ADA members.

Diego Sosa (M.S./2015) Upon graduation, Diego began working at TCG Capital, LLC, a financial firm located in Miami, Florida. He was recently offered a Software Engineer position at Bentley Systems, located in Exton, PA, and will return to the Philadelphia area. In February, Diego was married in Columbia. He kindly shared a few exquisite pictures of his special day with his new bride, Nathalie!

Anuja Verma (M.S./2017) is a QA Analyst at TMNA Services, LLC, located in Bala Cynwyd. This involves walkthrough of requirements and function specifications, which are drafted by Business Analysts. Based on these requirements, Anuja drafts test cases, tests web services, using SOAP UI, develops test plans, and evaluates functiona specifications of software products, designs test cases and strategies by gathering and reviewing business requirements; conducts functional, load, and regression testing for successful implementation of QA process; tracks and reports bugs by utilizing standard defect tracking systems; develops procedures for improving and standardizing QA methodology and processes; and performs SQL and database testing.

Send updates to csci@sju.edu.
We enjoy hearing from you!
CONGRATULATIONS TO THE PHILADELPHIA EAGLES!
Super Bowl LII Champions

On Sunday, February 4, 2018, euphoria reigned in Philadelphia when the Eagles won their first Super Bowl. Below, the CS Newsletter Contributors share their thoughts and experiences about the Eagles historic 41-33 victory over the New England Patriots.

The 2018 Super Bowl brought a lot of excitement, not only to the SJU campus but to the city of Philadelphia as a whole. On campus, there was a watch party for the Super Bowl in the Perch where many people sported their favorite Eagles attire to support the Philadelphia football team. The Perch was crowded and full of excitement. When the Eagles won the Super Bowl, many students ran down to City Avenue where they cheered and celebrated and those who were more dedicated even went down into center city. On Thursday, the day of the parade, campus was virtually empty as many people left in the early hours of the morning to go downtown and welcome the Eagles home!

Super Bowl LII is not one I will soon forget. The excitement and pride of the city I’ve lived in my whole life made me feel I was part of something huge, as this city has never won a Super Bowl. Having the underdogs win this race was a huge moment for the city!

~ Jessica Atoo, Information Technology

On the night of Super Bowl LII, my roommates and I invited some friends over for a watch party in our apartment. Prior to the game, we rearranged our furniture to allow more people to gather around the TV. My brother made chili and everyone else that came brought snacks. We ate, cheered, laughed, and overall had lots of fun rooting for the Birds to win. There were many great moments during the game, like the Zach Ertz catch and the Tom Brady fumble, but the greatest moment, in my opinion, was the Philly Special. Considering that the Eagles were the underdogs, the emotions of everyone during the game were at an all time high. Once the Eagles’ victory over the Patriots was official, I immediately called my dad. My dad and I celebrated over the phone together as we were both very excited about this shocking win.

Later that Thursday, my friends and I went to the Art Museum to celebrate the win at the Eagles Parade with what seemed like the entire city of Philadelphia. Even though it was freezing outside, it was great to see the excitement from so many fans in the community. We took lots of pictures, and enjoyed the day off that we had from school. These moments were extremely special to me because the Eagles are a team I have been rooting for since I was a child. Being able to share this moment with my friends at SJU is a memory that I will never forget.

~ Joseph Kessler, Computer Science

Walking through South Philly on the morning of the parade was truly an amazing experience. With dozens of “EAGLES” chants, hugs, and high-fives, the atmosphere was very friendly. While we waited to see the players in the parade, people of all ages were out to watch history. Overall, this victory brought the City of Philadelphia a little closer.

~ Nick Boyd, Computer Science

“Don’t be afraid to fall. Failure is part of life. It’s a part of building character and growing. Without failure, who would you be? I wouldn’t be up here if I hadn’t fallen thousands of times, made mistakes.” ~ Nick Foles, Quarterback