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.

In spring 2020, we worked on launching two new interdisciplinary minor programs: one in Computational Engineering (with Physics and Mathematics) and the other in Data Science (with Mathematics). A few students have already joined the two programs and we are hoping that, in time, we will be able to expand the minors into stand-alone programs. Work is also in progress to expand our online graduate offerings in all concentrations and our Cybersecurity programs. Our new 4+1 M.S. Program was finally approved by the University and several of our current graduating seniors will start their in fall 2021.

In addition to their teaching duties, our CS faculty engage in performing research as well as preparing proposals for various governmental and educational grants. Several faculty from Physics, Education, Chemistry, and Computer Science were awarded a grant from the National Science Foundation (NSF), entitled “Mentoring, Research, Leadership, and Community to Increase Undergraduate Retention and Graduation in STEM”. We are grateful to Dr. George Grevera from Computer Science for his contributions in securing this grant.

Our partnership with SAP is growing stronger every year. Last fall, representatives from SAP interviewed several sophomores for co-op positions over summer. In addition, they visited the campus to interview our juniors for summer internships, as well as graduating seniors for full-time employment. In summer, one of our rising juniors, Alexandra Coyle, started her two-year co-op position at SAP. (Continued on Page 2)
Over the 2020 spring semester, Dr. Wei Chang performed research with Haoran Hu, a visiting student. They wrote a conference paper entitled “On the Mitigation of Controllable Event Triggering Attack in WSNs”, which was accepted by the 2nd International Workshop on Smart City Communication and Networking.

The departments of Computer Science, Mathematics, and Physics offer a new interdisciplinary minor in Computational Engineering & Applied Physics for the undergraduate Computer Science Program. This minor is intended for students who wish to study development and application of computational models and simulations, coupled with high-performance computing, to solve complex physical problems arising in engineering analysis and design (computational engineering) as well as natural phenomena (computational science).

Welcome back to student workers Jessica Atoo (IT Major) and Tiffany Levine (CS Major). A warm welcome to the following new student employees: Emma Boyd (CS Major) and Lleyton Winslow (CS Major).

The following students were awarded a Graduate Assistant position for the 2020 fall semester: Jin Danni, Minshu Dubey, Lailei Forouraghi, Abby Wu, and Joe Zhu.

Upon graduation, Brittany Hartwell-Miller accepted a position at Vanguard.

“Without great solitude, no great work is possible.”
~ Pablo Picasso
Dr. Forouraghi and graduate student Jiajie Zhu have been working with two biologists from Arizona State University’s School of Biological and Health Systems Engineering on a joint machine learning project. The work involves construction of mathematical models to investigate genetic circuit design, which is a powerful technique in synthetic biology with real-world applications in biomanufacturing and biosensing. The results of their first phase of joint research will soon be submitted for publication: J. Zhu, Q. Zhang, B. Forouraghi and X. Want, “Applications of Machine Learning Techniques in Genetic Circuit Design,” to be submitted October 2020. The work will continue throughout the fall semester.

Congratulations to the following students inducted into Upsilon Pi Epsilon on April 20th via Zoom: Samuel Andaloro, Christina Diaz, Dustin Dinh, Dylan Dinh, Luba Grynyshin, Danni Jin, Kara McLaughlin, Sarah Strickland, Megha Ukkali, Jiahui Wu, Jiajie Zhu.

Last semester, CS majors Sarah Strickland, Alexandra Coyle, Evan Pomponio, and Tiffany Levine, along with Mentor/Professor Mrs. Mary Krueger, hosted a TechGirlz event at Level 13 Gaming studio in West Chester. These students led middle-school students in investigating how companies use Data Mining Tools to analyze the reviews and comments the public makes on the companies’ products. The middle-schoolers built World Maps and Trees that were extracted from online reviews for different products. They then analyzed the results and made suggestions on how to improve a product. TechGirlz is a non-profit that inspires middle-school girls to explore the possibilities of technology to empower their future careers. TechGirlz is accomplishing its mission through the creation of free, fun, interactive “TechShopz”, led by industry professionals, leaders, and students.

John Holliday, a first-year Computer Science graduate student concentrating in Artificial Intelligence, is a Software Engineer for Prudential in Newark, NJ. John works on front-end software, specifically Angular and Java.

Due to the COVID lock-down, the first Virtual UPE Induction Ceremony was held on April 30th. Congratulations to the following inductees: Samuel Andaloro, Christina Diaz, Dustin Dinh, Dylan Dinh, Luba Grynyshin, Danni Jin, Getong Liu, Kara McLaughlin, Sarah Strickland, Megha Ukkali, Jiajui Wu, Jiajie Zhu.

In April, the Class of 2020 presented their Senior Projects virtually via Zoom. See pages 4 & 5 for additional details.

The following majors have been accepted into the new Computer Science Five-Year BS/MS Program and will begin in fall 2021: Jessica Atoo, Anna-Maria Berezovski, and Evan Pomponio. Many questions are answered in our FAQ Sheet. For additional information, please click here.

Congratulations to the following majors on the Spring 2020 Dean’s List:

**Computer Science & Information Technology Majors:** Samuel Andaloro, Briana Baier, Jeremiah Bastine, Lauren Bello, Anna-Maria Berezovski, Lauren Boyle, Abigail Corbett, Alexandra Coyle, Cornelius Gallagher, Lubov Grynyshin, Brian Harms, Joseph Kessler, Kailey Kravabloski, Andy Mac, Kara McLaughlin, James Miller, Alana Simrell, Sarah Strickland.

**Computer Science Minors:** John Glasser, Alexander Manduca, Suzanne Picciano.

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Lubov Grynyshin / Brittany Hartwell-Miller

myCampus App

Reminiscing back to freshman year, many first years learn about campus events from their Residential Assistants, living on-campus dormitories, Campion flyers, and constant chattering amongst their class. However, the knowledge surrounding campus related events weakens as each year passes after freshman year. The myCampus App will be an Andriod application useful for both freshmen and transfer students to learn about the events on their new campus, as well as upper-classmen who may not have the same resources as they once did as freshmen. While using the myCampus App, a student can enter their university’s name to access an entire portal of campus related information, such as a calendar containing upcoming events (speakers, forums, club sponsored events, concerts, etc). The App will increase student involvement across campus. The user will also have access to all the campus clubs and organizations and have all information regarding the clubs and organizations in one centralized place. The user can view descriptions, prerequisites, and how/when to join each club or organization. The myCampus App would also introduce a virtual activities club fair, so the user can also see who will be at the fair and can quickly learn about the clubs and their interests before attending the activities fair.

Joseph Dougherty / Thomas Repa

Visualization of Mathematical Concepts

This project will implement visual representation of mathematical concepts across topics in Algebra I/II, Pre-Calculus, and Calculus. The main topics included are lines, systems of inequalities, triangles, quadrilaterals, circles, curves, conic sections, and graphs of sine and cosine. The project will include some educational explanations with each topic to aid in learning. These educational blurbs will talk briefly about how to connect the visualization with the math, as well as talk about the importance of the material.

Caitlyn Dougherty / Ryan Granahan

Digital Delivery Service

The goal of this project is to create a digital convenience delivery service tailored to Saint Joseph University students. This will be a web application that allows students to either place or deliver an order. All SJU students can sign up to either deliver or purchase. Students will have the option to select items from any of the student center stores. These include DB Grille Works, York Street Market, and Hawk Wrap, The P.O.D. Market and Saxbys. Students will be able to select these options from any of the SJU on-campus buildings.

Dustin Dinh / Dylan Dinh

2-D Role Playing Game

With this project, we will create a 2D role-playing video game with some elements of a shooter. The user will control a character as they battle enemies by using certain weapons and skills.

“"If everyone is moving forward together, then success takes care of itself.”"

~ Henry Ford
Robert Manis / Madison Scuderi  
**Stock Market Predictor**

The project will use machine learning techniques to accurately predict trends in the stock market. We will look at many of the factors that go into determining a stock’s price and try to find a correlation between these factors and the future price.

David Aydin / Joseph Toczyłowski  
**First Person Shooter / Puzzle Game**

In this project, we will be creating a game using Epic Games’ Unreal Engine. The Unreal Engine is a free-to-use game development engine. We will be using Unreal Engine 4 (version 4.20) to create a First Person Shooter. The game will have an overall main objective with a variation of using different techniques to achieve the objective, such as locked doors only to be unlocked via pressure plates, and enemies you must bypass to continue. A few of these will include puzzles to proceed through the map and enemies to defeat, perhaps even a skill tree to update moves and abilities to level up through the game as well. The enemies in the game will be controlled by an AI behavior tree, which will allow them to patrol areas, as well as react to certain situations.

Abigail Corbett / Christina Diaz  
**Scheduling for Student Instructors**

We will be collaborating with the Office of Learning to help optimize their scheduling process and contribute to the efficiency of scheduling Student Instructors for various courses offered at SJU. We will be implementing a User Interface for the administrator of the schedule, complete with a unique login and simple accessibility. The database will use student availability times to produce a non-conflicting schedule for each Student Instructor.

James O’Boyle / Kayla Roberts  
**Movie-Rating Website**

For this project we would like to create a website that allows users to rate movies they have seen and give reviews they can save to their profile. Utilizing the IMDB API, users will be able to create top ten lists (movies, worst movies, actors, etc.). Other users will be able to see these lists and reviews and comment on them and rate them. Additionally, users will be able to list and save all movies they have seen, allowing others to see what they have watched and recommend movies to watch in the future. We will also include a message board where users can recommend movies to others and have discussions about cinema in general (movie theories, fun facts, etc.)

Timothy Johnson / Evan Pomponio  
**Fashion Shopping Tool**

We are developing a tool that gathers prices of fashion products from department stores and presents the user with a price analysis on various categories of items. The proposed tool will use a backend web scraper built with Java+ Selenium automation framework for browser scripting. Collected data and analysis will be supplied to a front-end user interface built with React. For increased performance, the web component can be multithreaded to allow concurrent price gathering in multiple categories.

Joseph Kessler / David Leonard  
**3D Shooter Game**

We will design a 3D shooter where the objective is either to get to the end of the level or a survival where you fight off waves of enemies. The game will also include basic animations for when the character runs, walks jumps and crouches.

Joseph Kessler / David Leonard
Emma Boyd (Junior/Computer Science Major) interned remotely in the Information Security Department for Teachers’ Retirement System of New York City. Emma performed the following duties:

- Involved with projects regarding the security and privacy of employees’ devices
- Worked as a team member to complete objectives and goals of the department
- Wrote articles and newsletters and created PowerPoints and Excel sheets to relay information properly.

Emma also interned for the Teachers’ Retirement System during the summer of 2019.

Alexandra Coyle (Senior/Information Technology Major) worked remotely as a STAR intern for SAP America, located in Newtown Square, PA. Her responsibilities included:

- Learning SAP technology (SAC-SAP Analytics Cloud)
- Presented Machine Learning Predictive Analytics Training Video to Team (learned how to code in R and web scrape data)
- Shadowed client meetings and responsible for connecting with all members of the team and other STAR interns.

Alexandra also participated in a one-week hackathon with the interns.

Nadia Cugini (Senior/Computer Science Major) was a Combat System Engineering Intern for Lockheed Martin over the summer. Nadia worked with the C&D Surface Navy Sustainment team, which focuses on the successful Test and Evaluation of Common Source Library (CSL) Programs that are past the maturity point of Engineering Assessment. Within these programs (AMOD and JAMOD), the SNS team will work through PR/TOR evaluation and SWCR/CPCR Verification via Clearquest/STARSYS across all warfare areas and capabilities of C&D. Additionally, SNS supports Model Driven Test (MDT) via Modeling & Simulation, ET&E, TPM, and Regression testing as requested by the programs. As part of her responsibilities, Nadia performed the following:

- Went to the lab and ran tests on various weaponry (found on naval ships)
- Debugged and tested the code
- Pulled in data from tests done at the lab to debug issues found in the code
- Learned how to move data on various servers
- Looked at and debugged c++ weaponry code
- Learned the basics of MatLab
- Helped set up Eclipse on team servers

Nadia has accepted a full-time position at Lockheed Martin upon graduation in May.

“Always remember, your focus determines your reality.”

~ George Lucas
Tiffany Levine (Senior/Computer Science Major) interned as a Systems Safety Engineer over the past two summers under the Naval Surface Warfare Center of Dahlgren, Virginia. During the summer of 2019, she primarily worked on training, understanding the various projects with her teammates, and using Microsoft Word, PowerPoint, and Excel. In summer 2020, she was able to use her experience in databases and SQL to create a database that her team will use, beginning in November/December. She also had different tasks. She completed various training working with teammates to complete time-sensitive assignments and worked primarily with Microsoft, PowerPoint, and Excel.

Although Tiffany cannot speak about the specific projects on which she worked, as they are classified and on a need-to-know basis only, she reported that the experience of working as a government employee was unforgettable. “The biggest highlight from getting this experience is knowing that the work I’ve done is used to protect the safety of warfare fighters and the Navy as a whole.”

Christian Nair (Freshman/Computer Science Major) had an internship at WorkReady through the Archdioceses of Philadelphia. Christian was an AOP Tech Summer Intern. Some of his responsibilities included coming up with ideas on how virtual school could be improved and provide a video explaining how teachers can use different resources of technology to make it easier on their part.

“Never let the fear of striking out keep you from playing the game.”
~ Babe Ruth
Cyber-physical systems (CPS) refer to a group of systems that combine the real physical world with cyber components. Traditionally, the applications of CPS in research and the real world mainly include smart power grid, autonomous automobile systems, and robotics systems. In recent years, due to the fast development of pervasive computing, sensor manufacturing, and artificial intelligence technologies, mobile cyber-physical systems that extend the application domains of traditional cyber-physical systems have become increasingly popular. In mobile cyber-physical systems, devices have rich features, such as significant computational resources, multiple communication radios, various sensor modules, and high-level programming languages. These features enable us to build more powerful and convenient applications and systems for mobile users. At the same time, such information can also be leveraged by attackers to design new types of attacks. In this talk, we look at the security and privacy issues in applications of mobile CPS. We focus on four interesting topics: voice liveness detection, face forgery detection, securing PIN-based authentication, and the location privacy in AR applications.
After 30 years at SJU, Dr. Susanna Wei decided to retire at the end of the 2020 spring semester. She appears to be adapting to her retirement life quite nicely! Dr. Wei reports she enjoys having the time to cook, trying new recipes, and tinkering in her garden. She and her husband, Bill, are also focused on exercise and a healthy lifestyle. “Life is good so far. I only feel bad not being able to spend time with my children and grandchildren this summer.”

In the near future, Dr. Wei and her husband plan to move to Atlanta, Georgia, in order to be closer to their children and grandchildren. Due to the COVID shut-downs, the department was unable to give her a proper good-bye. We are all hoping to get together in the near future!

Congratulations, Dr. Wei! You will be missed by faculty, staff, and all of the students whose lives you have touched!

“The best is yet to come!”
~ Carolyn Leigh & Cy Coleman

FALL 2020 EVENTS

Thursday, August 10
New CS Graduate Student Virtual Orientation

Thursday, September 17
Fall Virtual Career Fair

Thursday, October 1
Tech & Data Analytics Meet-up

Wednesday, October 21
Student & Employer Virtual Opportunity Knocks “Grow Your Career”

Thursday, October 22
Internship Presentations

Wednesday, October 28
Reading Day

Monday, November 9
Spring Registration Begins

Tuesday, November 10
Guest Speakers:
Nina Griffonetti ('02) & Patrick Stump ('02)

Friday, November 13
Virtual Women in Tech Experience
Hosted by the Mainline Chamber of Commerce &
The Society of Professional Women

Tuesday, November 17
Guest Speaker: Dr. Jiacheng Shang

Thursday, November 19
CS Club Event: React Workshop

Wednesday, November 25
Thanksgiving Break Begins

Monday, November 30
All Classes Resume Online

Monday, December 7
Final Exams Begin

EYE ON IT > Logitech Anywhere 3 Wireless Mouse

On Monday, 21 September 2020, Logitech launched the MX Anywhere 3 mouse, which is compatible with Windows, Mac, Chrome OS, and Linux. The MX Anywhere is “meant to work across different environments and connect with multiple devices at once”. For further information, click here.
Thamer Almasoud (M.S./2017) is in the process of pursuing a PhD in the field of cybersecurity. Upon graduation, Thamer was a lecturer at a university in Saudi Arabia.

Julia (Fox) Gerlach (B.S./2015) Baby Rose Catherine Gerlach was born April 6, 2020. Rose Catherine is welcomed by Julia, her husband, Joe, and siblings Marie, Joey, Lucy, and Michael. Congratulations to all!

Tim Johnson (B.S./2020) was married in April and moved to Baltimore at the end of May. He is employed as a Software Developer for EPIC Scientific, which does defense contracting. Tim is currently contracted with the Army. He works remotely most of the time, but occasionally is required to go to base for testing purposes. Tim reports he enjoys his work and is learning a lot!

Al Masgai (B.S./2019) is a Software Developer at BrickSimple. His company provided solutions to clients from mobile apps, web development, AI/ML, and AR/VR.

“We years may wrinkle the skin, but to give up enthusiasm wrinkles the soul.”
~ Samuel Ullman

We enjoy hearing from you! Please feel free to share your personal and career news at anytime. Email updates to csci_dl@sju.edu or fill out the online alumni form. We will celebrate your achievements in the Offline Observer.