Welcome to the 2020 edition of our Annual Report. Like the years before, last year was just as exciting and productive for our students and faculty, despite the issues caused by the COVID-19 pandemic. I am delighted to share a summary of our key activities and accomplishments during this difficult year.

Our undergraduate program revisions took effect in the Fall. The revisions are comprehensive, touching every major including interdisciplinary ones. New courses in Software Tools in Computing, Data Structures I and Data Structures II have been introduced for immersive student learning. Closely following undergraduate revisions, our Master’s degree programs were revised and approved by the University. Their implementation just got under way this Fall.

The department is growing in student enrollments and we are making significant improvements in Doyle Hall to accommodate collaborative student and faculty work. We look forward to sharing these plans in our next update.

My best wishes to all.

Chandra N Sekharan
Professor and Chair
Dr. Tianyi Li joined the CS Department as an Assistant Professor in the Fall of 2020, with a PhD from Virginia Tech, with research interests in Crowd Computing, Visual Analytics, and Human-AI Interaction, focusing on computer-supported cooperative work, collective intelligence and human-AI teaming. 

Dr. Mohammed Abuhamad joined the CS Department as an Assistant Professor in the Fall of 2020, with a PhD from the University of Central Florida, with research interests in AI/Deep Learning-based Information Security, with a focus on Software and Mobile/IoT Security plus Machine Learning applications and adversarial machine learning.

Dr. Robert Yacobellis was promoted to Senior Lecturer in effective AY 2020–2021. Congratulations to Bob for this well-deserved accomplishment.

Dr. Eric Chan-Tin became the Graduate Program Director (GPD) for Computer Science and Software Engineering in Fall 2020, replacing Dr. Läufer. 

Dr. Peter Dordal became the Graduate Program Director(GPD) for Information Technology in Fall 2020, replacing Dr. Naiman.

Dr. Andrew Harrington transitioned out of his long career at Loyola effective fall 2020. Pictured below is Andrew celebrating at his retirement gathering. We wish Andy well in his future endeavors!

See here for the complete list of full-time faculty: https://www.luc.edu/cs/people/ftfaculty/

See here for the complete list of part-time faculty: https://www.luc.edu/cs/people/ptfaculty/

Computer Science Department Overview

CS Department website: https://luc.edu/cs/

CS Faculty and Staff Directory: https://luc.edu/cs/people/

CS Department academics: https://luc.edu/cs/academics/

CS Department Collection, Loyola eCommons: https://ecommons.luc.edu/cs_facpubs/
Describe how COVID-19 impacted your teaching and research during 2020...

**Robert Yacobellis**

When COVID-19 hit in early 2020 and all classes were forced online, I learned to use Zoom to conduct my COMP 170 and COMP 313/413 sessions remotely.

For classwork, this was relatively straightforward, since I had already prepared slides and Sakai material for both courses; my COMP 170 sections were already supported by Panopto videos for the textbook chapters, and for both courses I also recorded my Zoom sessions and uploaded them to Panopto after my classes.

Although not as personal as face-to-face classes, the Zoom sessions worked well and I was able to welcome students as they joined the sessions and respond to questions they asked in the Zoom Chat or vocally online.

My summer 313/413 session has always been online, so it was no different in 2020. Given my experience in the Spring semester, working with students remotely on Zoom in Fall 2020 was pretty effective and there were no issues.

Since I did not have any research projects in calendar year 2020 there was no impact on research.

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**Eric Chan-Tin**

The switch to Zoom was mostly straightforward and painless. During spring 2020, many students were still engaged remotely. However, in Fall 2020, very few if any students would turn on their webcams. This made it harder to know the students and see how they are doing.

Fewer students also attended online office hours.

Research was slower than usual as student researchers had to juggle many other things.

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**Dmitriy Dligach**

I second what Eric said above. A big teaching issue was that students didn't use their cameras and in general it was very hard to teach interactively.

Student engagement in research was close to non-existent. Very few students were interested in research, but this is likely because they had to take care of much more pressing priorities.
Deep Learning for Clinical Texts

This project develops methods for extracting universal patient representations from unstructured text in electronic health records. These methods leverage huge amounts of clinical data to pre-train neural networks and novel training techniques to incorporate information at multiple time scales. The methods are evaluated using public datasets to promote reproducibility, and applied to clinical research tasks that extend the knowledge of patients with pulmonary hypertension and autism spectrum disorder. This project is funded by NIH and is now in its 3rd year.

Temporal Histories of Your Medical Event (THYME) Project

The overarching long-term vision of this research is to create novel technologies for processing clinical free text. Such technologies will enable sophisticated and efficient indexing, retrieval and data mining over the ever increasing amounts of electronic clinical data. A key emphasis of this project is on discovering events and their relations on a timeline. Temporal relations are of prime importance in biomedicine as they are intrinsically linked to diseases, signs and symptoms, and treatments. Understanding the timeline of clinically relevant events is key to the next generation of translational research where the importance of generalizing over large amounts of data holds the promise of deciphering biomedical puzzles. This project is funded by NIH and is now in its 3rd year.

NLP for Detecting Substance Misuse in Electronic Health Records

This project focuses on building tools for the detection of substance misuse from electronic health records (EHRs). Development and validation of a substance misuse classifier would enable a standardized approach to perform screening on all patient encounters on a daily basis in health systems. This project is now funded by NIH and is now in its 1st year.
RESEARCH GRANTS

**GRANTS WITH NEW FUNDING STARTING IN 2020**

Dmitriy Dligach. (Site PI). R01. NIH/NIDA. Data Driven Strategies for Substance Misuse Identification in Hospitalized Patients (R01DA051464). Loyola budget: $491,973 over 5 years.

**ONGOING ACTIVE GRANTS IN 2020**


5. Lucia Dettori (PI), Ronald Greenberg (co-PI), Dale Reed (co-PI), Don Yanek (co-PI), Andrew Rasmussen (co-PI), Alan Mather (former co-PI), Brenda Wilkerson (former co-PI). Track 2 CS10K: Accelerate ECS4ALL. National Science Foundation CNS-1542971. 10/15/15–9/30/20. $999,438.

6. Ronald Greenberg (PI), George K. Thiruvathukal (co-PI). Collaborative Research: Chicago Alliance For Equity in Computer Science CAFECS. National Science Foundation CNS-1738691. 10/15/17 -- 09/30/21. $72,497 Loyola portion of a $2,011,529 collaboration


8. Gregory J. Matthews (PI) and George K. Thiruvathukal (co-PI), Collaborative Research: Statistical Analysis of Partially Observed Shapes in Two Dimensions, National Science Foundation, $75,028

9. Heather Wheeler (PI). NIH R15 HG009569 (05/01/17–04/30/20). Predicting gene regulation across populations to understand mechanisms underlying complex traits. $429,000.
Chandra N Sekharan, Commissioner, Computing Accreditation Commission, July 2020.

Chandra N Sekharan, elected to the grade of IEEE Senior Member, June 2020.

Chandra N Sekharan, Team Chair, ABET, July 2020.

Eric Chan-Tin. “A Guide to Fighting Credit Card Fraud”, May 2020,

https://www.opploans.com/blog/the-guide-to-avoiding-fraudulent-charges/

Eric Chan-Tin was recognized as a Master Researcher in the College of Arts & Sciences in 2020.

Neil Klingensmith, “Outfitting the Frontline,” April 2020,

https://www.luc.edu/features/stories/ppedonations/?fbclid=IwAR01NFrhL_6vgDCeFL-g7hOpjX8LXohKRZ3fynjBZpqQ_k9R5AT1-7HW1ejo

George K Thiruvathukal. “Public webcams are telling us whether people are social distancing”, September 2020,

There were 50 undergraduate internships in 2020. There were 5 graduate internships in 2020. Internships were at companies ranging from startups like Zoro.io to major players like Motorola Solutions, Apple, Kemper, Exelon, and the Federal Reserve Bank of Chicago. Internship activities ranged from website creation and improvements to mobile and full-stack software development and vulnerability testing.

Editorial Boards
(Journals, Magazines, Technical Committees)

Eric Chan-Tin,
EAI Endorsed Transactions on Security and Safety
eudl.eu/journal/esa

Eric Chan-Tin,
Tapia conference
https://tapiaconference.cmd-it.org/

Eric Chan-Tin,
Grace Hopper Celebration
https://ghc.anitab.org/

Eric Chan-Tin,
Women in Cybersecurity (WiCyS)
https://www.wicys.org/

George K. Thiruvathukal
IEEE Computer Advisory Board
https://www.ieee.org/
Industry and Community Related Activities

Dr. Robert Yacobellis is the CS Department’s Industry Liaison, and actively communicates job and internship and other opportunities at least monthly to students and alumni; student jobs information can be found on the luc.edu/cs web page in the Jobs, Jobs, Jobs… area.

Representative companies needing full-time positions in 2020 included iD Tech (STEM student outreach), Apple (tech specialist), American Eagle (web design), Midtronix (web and network development), Northern Trust (cybersecurity), U of C Research (porting Fortran to GPUs), IL US District Courts (help desk), Federal Reserve Bank of Chicago (IT Operations), US State Department (AI & Emerging Technology project work), Kemper (data warehousing), and Motorola Solutions (various).

Other key events for students included hackathons, fellowships, scholarships, and awards, Illinois Charter School teaching opportunities, cybersecurity and other conferences, career webinars, job shadowing and office visit opportunities, and academic professorship openings.

Computer Science Program Advisory Committee

The CS Department has a Computer Science Program Advisory Committee (CS-PAC) consisting of members from industry and jointly hosted by the CS Department in collaboration with Loyola’s School of Continuing and Professional Studies (SCPS), ITS organization, and Quinlan Business School’s IS programs. The CS-PAC’s 8th meeting was held virtually due to COVID-19 on November 12, 2020, and was attended by 17 CS-PAC members and 12 Loyola participants.

Some examples of organizations served in the past year include Living Works, Inspired Youth, Vietnamese Association of IL, YMCA, Asian Human Services, Girl Scouts, and Loyola’s own Girls Who Code chapter servicing students from a variety of Chicago schools. These activities were generally in-person during the beginning of the year, and students have successfully transitioned to carrying out many activities online.

There were also many organizations requesting volunteer help from students and alums, including those in other LUC departments like the School of Law and Department of Military Science. Several K–12 schools and community organizations benefited from contributions of students in the service learning course COMP 390 (Broadening Participation in STEM) taught by Dr. Ronald Greenberg.

Susan Malisch, VP and LUC Chief Information Officer, hosted the meeting.

Chandra Sekharan, CS Department Chair, gave a brief overview of the Department’s progress despite COVID-19 - good enrollment numbers despite higher ed enrollment being down in general, addition of two new faculty members, Dr. Tianyi Li and Dr. Mohammed Abuhamad, and great funding and support from the new Loyola CAS Provost, who has a commitment to Loyola’s becoming an R1 (research-intensive) university. Research has focused on new areas like Internet of Things, Crowd Computing, Security and Privacy, and Machine Learning. One of the CS-PAC members, Paul Edlund from Microsoft, conducted a seminar regarding MS Azure, leading to CS adopting Azure for machine learning. CS also acquired a Lambda GPU server for research in Natural Language Processing (NLP) and Healthcare applications.

In a major accomplishment, Loyola has been designated as a National Center of Academic Excellence in Cyber Defense Education for BS: Cybersecurity (2020-2025).
Computer Science Program Advisory Committee Cont.

» Udayan Das from the School of Continuing and Professional Studies (SCPS) reviewed their technology programs and close relationship with the CS Department. In 2019–2020 new programs were introduced into SCPS: a BA in Web Technologies, and Certificates in Intro to Data Science, Web Design & Development, and User Experience Design. 2020–2021 will see the launch of a Cybersecurity Management Certificate, a Masters in IT Leadership, Strategy, and Governance, and a Mobile Development Certificate, plus Corporate training.

» Susan Malisch indicated that the CS-PAC mentoring program pilot program that matched students with CS-PAC members for mentoring during the 2019–2020 Academic Year had gone very well, despite the early 2020 meetings being somewhat truncated and switching over to virtual meetings due to the pandemic. The November CS-PAC meeting kicked off a second mentoring program for students with Zoom breakout rooms to match up mentors and mentees for monthly meetings throughout the 2020–2021 Academic year.

The meeting closed with a tribute to John Frendreis for his long-standing and impactful work to move Loyola forward into being a stronger Technology organization with links into the Chicago tech community - John is retiring, and will be sorely missed.

Faculty Outreach and Consulting

Leo Irakliotis is serving on the board of Arkiv, a minority-owned, cryptocurrency-based, auction and trading platform. He also continues his service on the advisory board for Open Source Integrators, advocating for transparency and trust in technology deployments for government and civic use.

George K. Thiruvathukal is serving on the board of Access Contemporary Music. ACM is an organization who’s mission is To integrate musical creativity into everyday life through performances of the music of diverse living composers, collaborative events designed to reach new audiences, innovative commissioning projects that foster the creation of new music and through storefront music schools that teach creativity.
Congratulations to Spencer Johnston ‘21 and Jackson West ‘21 for winning the Loyola Outstanding Undergraduate Research Award. Jackson is now a graduate student at Loyola.

Daisy Reyes’22 and Anna Bakas ‘22 were awarded the LUROP Mulcahy scholarship and Provost Fellowship respectively to start research in cybersecurity.

Student Clubs and Activities

Loyola University Chicago participated in the National Cyber League for the Spring 2020 season. The university ranked 20th nationally. The Ramblers team “Z and the Big Boys” scored 2,440 points out of 3,000 and ranked 34 out of 931 teams. Other Loyola teams were “BIG BANG”, “Script Kiddies”, “FlattenTheCurve2020”, and “Hacking4Hire”.

The list of students participating were Maha Alzanbaqi, Zara Batalvi, Job Coritana, Pablo Czutrin, Kevin Donohue, Meskerem Gebrehiwet, Matthew Hempe, Claudia Holtsclaw, Spencer Johnston, Anthony Kaczkowski, Robert Kania, Saad Khan, Jenet Kolaparan, Joe Mazich, Mustafa Mjawaz, Alec Park, Dipen Patel, Irfan Poljak, Haris Qazi, Mike Robinson, Abdul Salam, Logan Walsh, Michael White.

Loyola University Chicago sent 3 teams to compete in the MetaCTF CyberGames 2020. Out of 646 active teams, SeaShanty2 ranked 159, LUC ranked 257, and The Fighting Mongooses ranked 357. Participating students were Justin Kim, Gabe Huerta, Eno Dynowski, Shao Yong, Haris Qazi, Elijah Wooten, Anran Wang, Laura Adams, Tim Abbenhaus, and Duncan Rout.

Loyola University Chicago participated in the AWS Security JAM x WiCyS challenge and ranked 4th!

Loyola hosted its own internal cybersecurity competition on October 14, along with Argonne National Lab. The Cyber Fire Puzzles had 49 participants and 10 teams. Trickbots came out first! Ranking pictured below:

https://www.luc.edu/media/lucedu/computerscience/media/cybersecuritycenter/Screen%20Shot%202020-

Loyola competed in the HTB Uni CTF 2020 competition. Students participating were Haris Qazi (team captain), Jalan Cruz, Justin Kim, Anran Wang, Jack West, Mike Robinson, Claudia Holtsclaw, Eno Dynowski, Gabe Huerta, and Titus Filimon.

The Saturday Java Club was created in Spring 2020, as an alternative social/technical community for students who lost access to Doyle's labs as a result of the pandemic measures. The Club meets every Saturday and explores ideas, techniques, and stories about programming. Attendance varies from a few students to about 15. The club was launched by Leo Irakliotis who co-hosts it along with Robert Yacobellis and William Honig.
MAY, 2020

Undergraduate Departmental Awards, 2019–2020

Michael White (Cybersecurity)
Dijkstra Award for Outstanding Academic Achievement

Vimal Sekhar (Computer Science)
Turing High Achievement Award

Emily Phillips (Computer Science)
Turing High Achievement Award

Victor Lopez
(Information Technology)
Turing High Achievement Award

Adam Delaney
(Software Engineering)
Turing High Achievement Award

Paulina Adamski
Grace Murray Hopper Service and Leadership

Larisa Kreismanis
Grace Murray Hopper Service and Leadership

Linette Maliakal
Grace Murray Hopper Service and Leadership

Jacob Broncato
(Computer Science)
Departmental Honors

Carolina Cervantes (Computer Science)
Departmental Honors

Maria Gocal-Kapps
(Computer Science)
Departmental Honors

Eric Hoffman (Software Engineering)
Departmental Honors

Edward Hubbard (Computer Science)
Departmental Honors

Spencer Johnston
(Information Technology)
Departmental Honors

Anthony LiFonti (Computer Science)
Departmental Honors

Salvatore Macrito
(Information Technology)
Departmental Honors

Linette Maliakal
(Software Engineering)
Departmental Honors

John O’Hare (Software Engineering)
Departmental Honors

Tyler Nguyen (Software Engineering)
Departmental Honors

Alexander Pabin
(Information Technology)
Departmental Honors

Kamale Paridas
(Information Technology)
Departmental Honors

Meagan Stewart (Cybersecurity)
Departmental Honors

Jackson West (Computer Science)
Departmental Honors

Graduate Departmental Awards, 2019–2020

Robert Kania (Computer Science)
Turing Award for Outstanding Academic Achievement

Tyler Arndt
Edsger W. Dijkstra High Achievement Award in Computer Science

Xin Su
Edsger W. Dijkstra High Achievement Award in Computer Science

Aliaksandr Kakhanouski
Margaret H. Hamilton High Achievement Award in Software Engineering

Tomi Shogbamimu
Margaret H. Hamilton High Achievement Award in Software Engineering

Michael Blissett
Herman Hollerith High Achievement Award in Information Technology

Swaeta Sekharan
Herman Hollerith High Achievement Award in Information Technology

Mykola Demianchuk
(Computer Science)
Grace Murray Hopper Service and Leadership Award

Allan Miller
(Computer Science)
Grace Murray Hopper Service and Leadership Award
Loyola Computer Science has an active CS Alumni LinkedIn Group here, co-managed by Dr. Robert Yacobellis

Alfaisal Gassim, MS SE 2019, joined the University of Tabuk full-time in Information Technology in January 2020

Akanksha Negi, MS IT 2019, joined Capital One as a Data Engineer in February, 2020

Peter Nabicht, MS CS 2004, became Head of Strategy at the Securities Technology Analysis Center (STAC) in March, 2020

Zachary Derosier, BS 2020, became a Financial Advisor at Merrill Lynch Wealth Management in May, 2020

Jessica (Brennan) Rubin, MS SE 2017, became Data Engineer II at Nordstrom in June, 2020

Emilio Weba, MS SE 2016, became Senior Full Stack Developer at Capgemini in July, 2020

Saloni Shah, MS CS 2012, was promoted to Senior Software Engineer at Paylocity in August, 2020

Rashan Arshad, BS CS, was promoted to Lead Integration Engineer at GLYNT.AI in September, 2020

Robert David Hernandez, BS SE 2018, was promoted to Software Engineer, Senior Associate, at J.P. Morgan in September, 2020

Vaibhav Thakkar, BS CS 2018, joined Deloitte as a Salesforce Consultant in October, 2020

Jarod Navarro, MS SE 2020, joined CTDI as a Program Analyst in November, 2020
FULL-TIME FACULTY

Mohammed Abuhamad
Eric Chan-Tin
Dmitriy Dligach
Peter Lars Dordal
Stephen Doty

Ronald I. Greenberg
Andrew N. Harrington
Nicholas J. Hayward
William L. Honig
Leo Irakliotis

Neil Klingensmith
Konstantin Läufer
Tianyi Li
Channah Naiman
Catherine Putonti

Chandra N. Sekharan
George K. Thiruvathukal
Heather E. Wheeler
Robert Yacobellis


POSTERS

1. Toward a containerized pipeline for longitudinal analysis of open-source software projects.


INVITED TALKS

1. Eric Chan-Tin gave a talk on “Web Privacy” at the ATHENA Virtual Lecture Day hosted by Women in STEM.

2. Eric Chan-Tin gave the keynote talk at ACM SNTA.


CHAPTERS


For more detailed information about all department publications, please see the Loyola eCommons page: https://ecommons.luc.edu/cs_facpubs/
For more information about the DEPARTMENT OF COMPUTER SCIENCE contact:

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