AMANDA CHIU

BA Computer Science 2020

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DEVELOPMENT OF NOVEL FORENSIC ANALYTICAL TOOL TO MITIGATE CYBERCRIME

Cybercrime has become a growing threat in our increasingly technological world. To extract sensitive information, some cybercriminals exploit vulnerabilities in computer systems; others, exploit human trust.

Email-based scamming has been around for years and continues to succeed against unsuspecting targets. It may take years of emailing for a scammer to establish an online relationship, before repeatedly "borrowing" money from a love-struck target; it can take a single email posing as an organization's CEO to get an employee to frantically send corporate account information. The ease, speed, and relative anonymity of emails makes it a powerful online tool for scammers. Fortunately, for forensic investigators, these web-based conversations leave a digital trail.

The purpose of this study is to develop an interactive visual analytics tool demonstrating the temporal sequence of scam email threads and their keyword content. In collaboration with a federal agency and forensic investigation team, we obtained thousands of diverse email conversations between scammers and their targets. The analytics tool was designed and developed to assist forensic investigators in identifying behavioral patterns among scammers, in order to devise better countermeasures against their attacks. Further exploration of this data results in actionable outcomes: investigators can gain more insights to identify new categories of email scam types, deconstruct large criminal networks, and stop ongoing fraud attempts.

2018

TWELFTH ANNUAL

SUMMER RESEARCH PROGRAM UNDERGRADUATE ABSTRACTS

NYU TANDON SCHOOL OF ENGINEERING

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2018 SUMMER RESEARCH

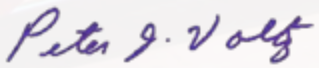
NYU Tandon School of Engineering's Undergraduate Summer Research Program provides a unique opportunity for NYU Tandon, NYU College of Arts and Science, NYU Abu Dhabi, NYU Shanghai, and other select students to engage in research over the course of the summer semester. This program offers students far more than the traditional classroom experience; it allows them to work alongside faculty mentors, as well as PhD and master's students, on cutting-edge research projects. Aside from this, they get to interact with other students of all different levels from various areas and fields of study within NYU and otherwise. Close interaction with faculty and research staff promotes an educational experience that advances Tandon's i^2e model of invention, innovation, and entrepreneurship. Undergraduate students are afforded the opportunity to conduct this research during a 10-week period. The program aims to enhance and broaden students' knowledge base by applying classroom learning to solve practical and contemporary problems, as well as to better prepare them for lifelong learning.

Summer 2018 marked the twelfth year of the Undergraduate Summer Research Program. Since its inception, over 800 students have participated, and a large number of faculty members from a variety of departments have contributed to the program. In addition to the work they do in labs, students attend seminars focused on both academic and career development. They participate in a poster session in collaboration with the NYU CAS Department of Chemistry's MRSEC Program, in which they present their work to other members of the research cohorts, faculty, staff, peers, and other outside attendees.

Tandon's faculty participation in this program is essential, as is the financial support provided by faculty mentors and the Tandon School of Engineering. The gifts from several alumni donors have also propelled the program's success. Dr. Joseph G. Lombardino '58Chem, James J. Oussani, Jr. '77ME, and Dr. Harry C. Wechsler '48CM, for instance, have generously supported this program. Additionally, this year marked the seventh year of the Thompson Bartlett Fellowship. Ten of this summer's female researchers were graciously supported though this fellowship, made possible by Mrs. Dede Bartlett, whose father, Mr. George Juul Thompson, was a graduate of the Electrical Engineering program at the Polytechnic Institute of Brooklyn in 1930. Donors' gifts allow us to engage more student researchers and faculty mentors, and further strengthen this truly unique summer experience. Also this year, for the first time, students were given the opportunities to explore the entrepreneurial world of startups by working in the Tandon Future Labs with partial support of the Institute for Invention, Innovation, and Entrepreneurship (IIIE) at NYU Tandon.

A special thanks also goes to Nicole Johnson, who volunteered her time to mentor the TB Fellows, providing them with additional programming and engagement throughout the summer. She remains in contact with these students over time and often brings them back to engage with younger TB Fellows. I would also like to acknowledge Sara-Lee Ramsawak, who coordinated this year's Undergraduate Summer Research Program and ensured that the program's daily operations ran seamlessly. She coordinates the program and continues to develop and enhance it at every turn.

The abstracts published in this year's volume are representative of the research done over the summer and celebrates the accomplishments of the undergraduate researchers. Congratulations to all of the student researchers who participated in the 2018 Undergraduate Summer Research Program. We all look forward to future summers of more intellectual and scholarly activities.



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Link to full PDF of 2018 Summer Research Program Abstract Booklet
can be found on NYU Tandon's official website here:

https://engineering.nyu.edu/sites/default/files/2018-11/2018_Summer_Research_Abstracts.pdf