Marquette University: Computer science professor awarded $2.6 million NSF grant to train next generation of cybersecurity professionals

Posted on Thursday, Jan 5, 2023

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MILWAUKEE — [Dr. Debbie Perouli](#), assistant professor of computer science in Marquette University's Klingler College of Arts and Sciences, has received a $2.6 million grant from the National Science Foundation to train the next generation of information technology professionals, industry control system security professionals and security managers to meet government cybersecurity needs.

The award will fund a CyberCorps Scholarships For Service program, CyberWIN, through which project investigators will enroll, train and graduate 16 students who will participate in one of the following: an accelerated computer science undergraduate and cybersecurity specialization master's degree program, a graduate program with cybersecurity specialization, or a computer science doctoral program focusing on cybersecurity research.

"This project is intended to meet the growing cybersecurity needs of federal, state, local and tribal governments, both near term with the training of cybersecurity professionals and long term with the improvement of our training program," Perouli said.

Perouli's team will perform a longitudinal study collecting concept map data from CyberWIN scholars and non-scholars at Marquette and other institutions designated as Centers of Academic Excellence in Cyber Defense Education. The team will also

study the evolution of the concept maps for every student across the years of the program and the professional development of specific groups based on criteria such as coursework, internship experiences or demographics. The researchers will also analyze the effectiveness of CyberWIN scholars mentoring high school students in an Upward Bound Math and Science program.

Perouli added, "We will seek to uncover the high-impact practices that increase students' commitment and realize any effect that personal experiences may have on determining them. Our framework can then be adopted by any institution, as it relies on student self-reflections that capture the whole educational experience through rich, multi-dimensional data."

"This grant provides a transformational opportunity for Dr. Perouli and her team to serve the public interest by devising a program that expands the workforce for public cybersecurity positions—an area of critical importance to all of us," said Dr. Heidi Bostic, dean of the Klingler College of Arts and Sciences and the College of Education. "The heart of this project aligns with the mission of Marquette University, as well as the Department of Computer Science, through its commitment to innovation and a human-centered approach to cybersecurity curriculum. Participants will also be drawn from and engage with diverse, underrepresented populations. Marquette is the first university in Wisconsin to garner a grant of this type. The project will catalyze our existing strengths in cybersecurity."

Dr. Keke Chen, Northwestern Mutual Data Science Institute Associate Professor of Computer Science, and Dr. Thomas Kaczmarek, adjunct associate professor of computer science and founder of the Center for Cyber Security Awareness and Cyber Defense at Marquette, are co-investigators on the award. Dr. Lee Za Ong, assistant professor of counselor education and counseling psychology in the College of Education, is also a part of the research team as an external evaluator who will assist in designing assessment instruments, collecting data and analyzing results.

In addition to Chen, both Perouli and Kaczmarek are affiliated faculty with the NMDSI.

The goals of CyberWIN are to recruit scholars with high potential of academic success from diverse backgrounds and produce 16 advanced degree graduates in cybersecurity, including two Ph.D. candidates, over the five years of the project. CyberWIN scholars will mentor high school Milwaukee students of the federal Trio program Upward Bound Math and Science with the goal of broadening participation

in computing and cybersecurity. The high school students will participate in groups during Marquette's annual ACM Wisconsin-Dairyland Programming Competition, where they will present a poster on a cybersecurity topic.

About Marquette University

Marquette University is a Catholic, Jesuit university located near the heart of downtown Milwaukee that offers a comprehensive range of majors in 11 nationally and internationally recognized colleges and schools. Through the formation of hearts and minds, Marquette prepares our 11,100 undergraduate, graduate, doctoral and professional students to lead, excel and serve as agents of positive change. And, we deliver results. Ranked in the top 20% of national universities, Marquette is recognized for its undergraduate teaching, innovation and career preparation as the sixth-best university in the country for job placement. Our focus on student success and immersive, personalized learning experiences encourages students to think critically and engage with the world around them. When students graduate with a Marquette degree, they are truly prepared and called to Be The Difference.