Department of Mathematics, Statistics and Computer Science
St. Francis Xavier University
presents

Behavioural Cybersecurity

by

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Cybersecurity researchers generally agree that our field has made spectacular gains in developing technically secure protocols, but all of careful research in this regard can be overcome by honest users who for some reason choose easy-to-guess passwords such as their significant other or spouse's name --- or on the other hand, hackers who can find such easy-to-guess passwords.

We believe that in order to counter the sloppy behavior of honest users and the clever but malicious behavior of hackers, cybersecurity professionals (and students) must gain some understanding of motivation, personality, behavior and other theories which are studied primarily in Psychology and other behavioral sciences.

Consequently, by building a behavioral component into a cybersecurity program, we feel that the curricular need can be addressed. In addition, noting that while only 20% of Computer Science majors in the US are women, about 80% of Psychology majors are women. It is hoped that this new curriculum, with a behavioral science orientation in the now-popular field of Cybersecurity will induce more women to want to choose this curricular option. The first course in this new curriculum, Behavioral Cybersecurity, was offered in the Spring Semester of 2015 at Howard University.

The topics discussed today will hopefully be of interest to a diverse community including Math, Computer Science and Psychology but also other areas with an interest in Cybersecurity challenges.

Among the topics discussed in the course were: Profiling matrices, hacker case studies, biometrics, human-computer interface (and gender), the Turing test, a proposed Gender Turing test, risk management, "Steg-crypto," personality types, game theory applied to profiling, "The Magical Number Seven", malware classification, password meters, and "Hack Lab" challenges.

Wayne Patterson is Professor of Computer Science in the Department of Systems and Computer Science at Howard University. His doctorate in Mathematics is from the University of Michigan, with Master's degrees in Mathematics from the University of Toronto and in Computer Science from the University of New Brunswick. He has published more than fifty peer-reviewed papers in the area of Cybersecurity over the past thirty years, as well as his 1986 textbook, "Mathematical Cryptology." He is also Principal Investigator for the American Association of Colleges and Universities "Behavioral Cybersecurity" project and Co-Principal Investigator on Howard's College of Engineering GEAR UP project which has supported over 150 undergraduate STEM students in conducting research projects at partner universities in 13 countries.