The UMBC Cyber Defense Lab presents

When Sensors Lie:
From Noise to Trustworthy Decisions in Cyber-Physical Systems

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1pm–2pm, Friday, September 25, 2026
Remotely via WebEx: https://umbc.webex.com/meet/sherman

Cyber-physical systems depend on sensor data to control physical processes, but anomalous measurements may arise from benign noise, environmental interference, equipment faults, degradation, or deliberate manipulation. These causes often look alike in data, making simple anomaly detection inadequate for high-consequence applications. This talk presents an uncertainty-aware, physics-informed perspective on sensor trust: combining stochastic modeling, system constraints, multimodal fusion, and machine learning to determine not only whether a measurement is unusual, but what explanations are plausible, how confident the system should be, and whether the discrepancy can lead to a security- or safety-relevant outcome. The discussion will highlight open challenges in attribution, generalizable evaluation, hardware-rooted trust, and decision-making under uncertainty for resilient cyber-physical systems.

Dr. Christiana Chamon Garcia (ccgarcia@vt.edu) received the B.S. degree in electrical engineering from the University of Houston, Houston, TX, USA, in 2017 and the M.S. and Ph.D. degrees in electrical engineering from Texas A&M University, College Station, TX, USA, in 2020 and 2022, respectively. She is currently an assistant professor for the Bradley Department of Electrical and Computer Engineering at Virginia Tech, Blacksburg, VA, USA and director of the *Stochastic Noise and Cyber Innovation Lab (SNACIL)*. In 2016 she was a hardware design intern and in 2017 a product management intern with Hewlett Packard Enterprise. In 2022, she was an applications engineer at Vidatronic Inc, and from 2022 to 2024, she was an instructional assistant professor for the Department of Computer Science and Engineering at Texas A&M. Her research interests include stochastic processes, physical unclonable functions, decentralized networks, cyber-physical systems, security in artificial intelligence, engineering education, human-computer interaction, accessibility in engineering and kinesiology, and exercise science. Dr. Garcia is a 2024 CCI faculty fellow, 2023 Future *Faculty Diversity Program (FFDP)* fellow, 2023 WISCPROF: Future Faculty in Engineering Workshop fellow, 2020-2021 Ebensberger fellow, and a member of ACM, IEEE, and Eta Kappa Nu (HKN).

Host: Dr. Alan T. Sherman, sherman@umbc.edu

Support for this event was provided in part by the NSF under SFS grant DGE-2438185.
The UMBC Cyber Defense Lab meets biweekly Fridays 12-1pm. All meetings are open to the public.

Upcoming CDL meetings:
Oct 9, Clement Fung (UMBC CS)
Oct 23 (1-2pm), Alexander Senichev (UMBC Physics)
Nov 6, Christian Badolato (UMBC CS)
Nov 20, Dong Li (UMBC CS)
Dec 4, Reece Roberston (UMBC Physics)