Information Flow Properties for Security in Cyber-Physical Systems

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Abstract: A Cyber-Physical System (CPS) is an engineered physical system with a significant cyber component and consists of many interacting distributed cyber and physical components. Unintended or misunderstood interactions among the components of a CPS cause unpredictable behavior leading to serious errors. Security and confidentiality problems are particularly vexing. Recent attacks, such as Stuxnet show how Formal security properties can be violated through physical interference with the cyber components. This talk presents an interpretation of formal information flow properties and interference within the context of a cyber-physical system using examples such as pizza delivery at the Pentagon, gas pipeline flow, and green distributed energy systems management (Smart Grid).

Biography: Dr. Bruce McMillin is currently a Professor of Computer Science and a senior research investigator in the Intelligent Systems Center at the Missouri University of Science and Technology. His current work focuses on protection for advanced power grid control. He is leading the distributed grid intelligence project of the Future Renewables Engineering Research Center.