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Professor of Engineering Practice Faculty Candidate

Gary Viviani

Owner and Founder, VivatronX
Bastrop, TX



Monday, February 28, 2022

9:30 A.M. – 10:30 A.M.

BHEE 317

<https://purdue-edu.zoom.us/j/91328751082>

Electronic Synthetic Atom

Lecture Abstract: The ultimate autonomous system is an atom. This presentation describes what can be thought of as an electronic synthetic atom. Such a capability gives rise to applications that approximate the efficiency and effectiveness of naturally occurring systems. These revelations have been confirmed with actual prototype devices. The focus of the presentation will be to explain the theory, in the context of previously known results, and to highlight the new developments. These new developments are key to the ability to fabricate devices with desirable characteristics. Actual device performance, applications, and research directions will also be discussed.

Autonomous Signals and Systems Analysis

(sophomore/junior level subject matter)

Teaching Abstract: This lecture will present standard material associated with signals and systems analysis from the perspective of an approach to synthesis. Synthesis is the basis for analysis. By describing how to design an autonomous approach to signal processing, the critical analysis capabilities are solidified and made apparent. Other related considerations will also be addressed.

Bio: Dr. Viviani is an Associate Professor at Montana Technological University. He specializes in complex autonomous system control and the means for recognizing the associated information related patterns of interest. He has been developing complex autonomous systems for various industries including chemical, power, semiconductor, aerospace and defense. His work in semiconductor ion implantation autonomous control resulted in a system that sustains unmatched performance for producing most of the chips in the world. He has also developed a variety of smart weapons with desirable cognitive abilities. Some of this work included development of advanced drones. He was Vice President and Chief Scientist from 2006-2016 at Insitu, which is now a wholly owned subsidiary of the Boeing Company. At Insitu he was directly involved with the design and implementation of software and hardware systems for autonomous robotic airplanes. Early in his career he earned tenure as the Gulf States Utilities Research Professor at Lamar University. His research was pursued jointly at the university and utility. Much of it involved solving power system control problems, as well as developing some first-generation smart devices. He has various journal level publications. His most recent work is focused on achieving quantum like performance for dynamic information representation. Gary L. Viviani received his BSEE, MSEE and Ph.D. (Electrical and Computer Engineering) degrees from Purdue University in 1977, 1978 and 1980, respectively.