

Measurement Science & Systems Engineering Division's

Distinguished Lecture Series

**Thursday, December 16, 10:00 a.m.
Weinberg Auditorium**

Host: RF & Microwave Systems Group

Presents

Joe Mitola, Ph.D



*Institute of Electrical and Electronics
Engineers (IEEE) Fellow*

*Distinguished Professor and
Vice President for the Research
Enterprise, Stevens Institute of
Technology*

The Emergence of Cognitive Systems Technologies

When Dr. Mitola coined the term cognitive radio in 1998, his definition included self-awareness, user-awareness, and environment awareness. In the intervening decade, the radio engineering community has developed radio-awareness of wireless environments into dynamic spectrum access, radio spectrum policy conformance, and integration of heterogeneous wireless networks. In parallel, autonomic networks and self-optimizing networks research has yielded a measure of network self-awareness via smart packets and other cognitive network techniques. The increasing dependence on embedded and networked computational elements has increased the significance of information assurance and cybersecurity in achieving next generation capabilities. In this talk Dr. Mitola will review progress towards cognition and will sketch a future in which the confluence among computational self-awareness, software-engineering, and enterprise level cyber-physical security will fundamentally alter the role of cognition in enabling technologies during the next decade.

BIO: Joseph Mitola III

As Vice President for Stevens Research Enterprise, Professor Mitola develops large scale, cross-disciplinary research initiatives with the Institute's diverse centers, laboratories, and contract research projects. Professor Mitola also advances the research objectives of the Institute by working in close collaboration with the academic deans, department directors, center directors, and principal investigators.

Professor Mitola is recognized internationally for his formulation and groundbreaking research in software-defined radio (SDR) and cognitive radio systems and technologies. In addition to having published the first technical paper on software radio architecture in 1991, Dr. Mitola has published widely and taught courses in software radio in the US, Europe, and Asia. As founding chair of the SDR Forum in 1996, he pioneered global innovation in SDR among industry, government, and academic research organizations. Later, his 1999 Licentiate Thesis in Teleinformatics coined the term cognitive radio for the integration of machine perception of the RF, visual, and speech domains with machine learning into SDR to make dynamic spectrum access technically viable. His doctoral dissertation, Cognitive Radio [KTH, June 2000], created the first architecture for such autonomous radios, formulating the cognition cycle on which the sensing and opportunistic use of radio spectrum whitespace is based. As a distinguished professor, Dr. Mitola's teaching and research interests center on trustworthy cognitive systems.