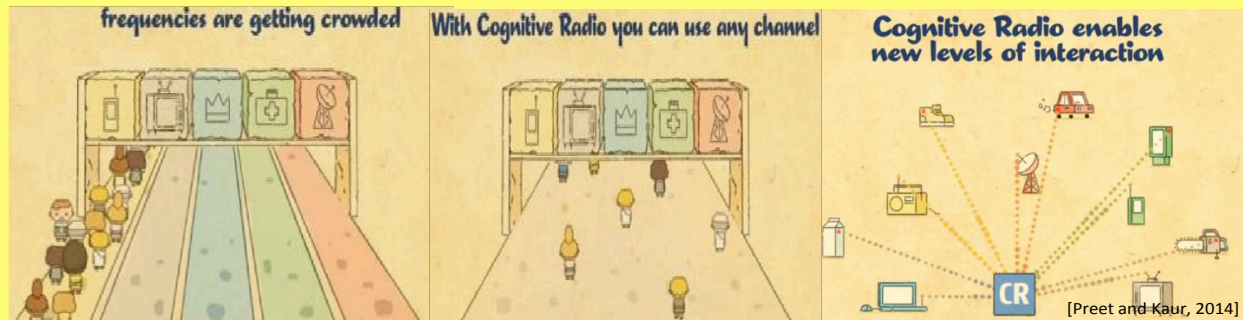


Course Announcement
Fall 2016

ENEE/CMPE 691/CMPE 491 Special Topics
Cognitive Radio Networks



Cognitive radios (CRs) are intelligent radios that can sense, learn, and adapt to the wireless environment in which they operate. CR technologies allow dynamic re-use of precious RF spectrum by monitoring the RF landscape in real time and opportunistically exploiting under-utilized spectral resources (a.k.a. “white space” or “spectrum holes”). Thus, CRs can make the maximum use of the spectral resources in time, space, and frequency domains without causing harmful interference to incumbent transceivers. There have been exciting research and development recently on CR network technologies, with diverse applications to municipal, institutional, military, public safety, and industrial wireless networks.

This Special Topics course aims at providing an up-to-date overview of the CR technologies, with emphasis on the signal processing, machine learning, and optimization techniques enabling the design and operation of CR networks. Important issues in spectrum sensing, dynamic resource allocation, and cross-layer interactions will be delineated. Many of the ideas and signal processing tools discussed will be broadly applicable to other areas as well, including Big Data analytics, wireless sensor networks, and monitoring/optimization of cyber-physical smart systems. Students will seek deeper understanding and new ideas through reading assignments, class presentations and hands-on research projects.

Instructor: Seung-Jun Kim (Assistant Professor, Dept. of CSEE, UMBC)

Prerequisite: Basic linear algebra, calculus, and probability. Proficiency in Matlab® or similar programming languages will be helpful, but not required.

Who should take this course: Anyone in the ENEE/CMPE/CMSC programs, with interest in the application of signal processing, machine learning, and optimization techniques to advanced wireless and smart systems. Students from other disciplines can also sign up upon the instructor’s consent.

For further information, e-mail to sjkim@umbc.edu or visit <http://www.csee.umbc.edu/~sjkim>