Genomic signal processing (GSP) is the emerging engineering discipline that studies the processing of genomic signals. Owing to the major role played in genomics by transcriptional signaling and the related pathway modeling, it is only natural that the theory of signal processing should be utilized in both structural and functional understanding. The aim of GSP is to integrate the theory and methods of signal processing with the global understanding of functional genomics, with special emphasis on genomic regulation. In this talk, we first provide a very brief introduction to cellular biology and some key issues in bioinformatics. We then focus on a specific problem called motif discovery. Conserved motifs often represent biological significance, providing insight on biological aspects such as gene transcription regulation, biomolecular secondary structure, presence of non-coding RNAs and evolution history. We illustrate how statistical signal processing can be applied to locate conserved motifs in a given set of nucleotide sequences.

Dr. Xiaodong Wang received the Ph.D degree in Electrical Engineering from Princeton University. He is a Professor of Electrical Engineering at Columbia University in New York. Dr. Wang's research interests fall in the general areas of computing, signal processing and communications, and he has published extensively in these areas. Among his publications is a recent book entitled “Wireless Communication Systems: Advanced Techniques for Signal Reception”, published by Prentice Hall in 2003. His current research interests include wireless communications, statistical signal processing, and genomic signal processing.

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Refreshments will be served.
This is part of the ECE colloquium series. Please contact Prof. Yanyong Zhang (vyzhang@winlab.rutgers.edu) for further information.