Title: Applications of Digital Signal Processing in Bioinformatics and Genomics

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Abstract:

Recent advances in high-throughput sequencing technologies have opened a new era of genomics studies, called metagenomics. Recently, metagenomics presented itself as the standard approach for characterizing the compositional and functional capacity of microbial communities by direct study of the genetic contents recovered from environmental samples without prior culturing. Although these advancements enable researchers to sequence bacterial populations at a reasonable budget, analyzing these massive metagenomic datasets present significant challenges. This talk presents novel computational tools, based on digital signal processing and machine learning, to enable the investigation of biological systems. The key problem addressed herein talk concerns the identification of the potential metagenomic biomarkers, which play a critical role in understanding the biological processes and in developing possible therapies.

Short Bio of the Speaker:

Erchin Serpedin received the specialization degree in signal processing and transmission of information from Ecole Superieure D’Electricite (SUPELEC), Paris, France, in 1992, the M.Sc. degree from the Georgia Institute of Technology, Atlanta, in 1992, and the Ph.D. degree in electrical engineering from the University of Virginia, Charlottesville, in 1999. He is currently a professor in the Department of Electrical and Computer Engineering at Texas AM University, College Station. He is the author of 3 research monographs, 1 textbook, 160 journal papers and 260 conference papers. He served as editor-in-chief of EURASIP Journal on Bioinformatics and Systems Biology, an online journal edited by Springer-Nature, and as associate editor for a dozen of journals such as IEEE Transactions on Signal Processing, IEEE Transactions on Communications, IEEE Transactions on Information Theory, IEEE Signal Processing Letters, Signal Processing (Elsevier), EURASIP Journal on Advances in Signal Processing, Physical Communication (Elsevier), and IEEE Communications Letters. His research interests include signal processing, wireless communications, bioinformatics, and machine learning. He is an IEEE Fellow.