ELECTRICAL & COMPUTER ENGINEERING BIO-SEMINAR Fall 2019

When: **Friday 15:30 – 16:00, November 22, 2019**
Where: **ETB 1035**

Speaker: **Rajan Kapoor**

Ph.D. Student in Prof. Aniruddha Datta's Group
Department of Electrical and Computer Engineering
Texas A&M University

Title: **Using Generative Models with Prior Knowledge for Dissection of Cancer Heterogeneity**

Abstract: We develop a systematic approach for applying pathway knowledge to a multivariate Gaussian mixture model for dissecting a heterogeneous cancer tissue. A major contribution of this work is to examine the efficacy of the EM based approach in estimating the composition of experimental mixture sets from cell-by-cell measurements collected on a dynamic cell imaging platform. Towards this end, we apply the algorithm on hourly data collected for two different mixture compositions of A2058, HCT116 and SW480 cell lines for three scenarios: untreated, Lapatinib-treated and Temsirolimus-treated. Additionally, we show how this methodology can provide a basis for comparing the killing rate of different drugs for a heterogeneous cancer tissue. This obviously has important implications for designing efficient drugs for treating heterogeneous malignant tumors.

Bio: Rajan Kapoor received his Bachelor of Technology in Electrical Engineering from Indian Institute of Technology Patna in 2014. He is currently pursuing his Ph.D. in Electrical Engineering at Texas A&M University. His research interests are applying pattern recognition techniques in bioinformatics including cancer and plant genomics. He is currently a Research Assistant in the Genomic Signal Processing Laboratory under the guidance of Dr. Aniruddha Datta.