ELECTRICAL & COMPUTER ENGINEERING
TEXAS A&M UNIVERSITY

Departmental Seminar

SPEAKER SERIES

Pattern Recognition for Restricted and Nonstationary Data

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A standard assumption in statistics is that the data are independent and identically distributed. In other words, the data are assumed to be an unrestricted and stationary random sample from the mixture of populations. However, in many situations of practical interest this assumption is violated; e.g. in observational case-control studies in biomedicine and in the design of materials science experiments. In this talk, we will show that the mistaken application of standard pattern recognition and machine learning techniques to such data leads to error estimation bias and poor classification performance. We will discuss the principled application of classification and error estimation to data that is restricted by separate sampling, as well as nonstationary data from drifting populations. We will also briefly describe our collaborations in genomics, metagenomics, and materials science that are related to this work.

Friday, February 10, 2017

11:30 AM - 12:30 PM

WEB 236C

Pizza for all attendees!

Dr. Braga-Neto received the baccalaureate degree (1992) in from Universidade Federal de Pernambuco, and the Master's degree (1994) from the Universidade Estadual de Campinas, both in Electrical Engineering. He received an M.Sc. degree (1998) in Mathematical Sciences and M.Sc. (1998) and Ph.D. (2002) degrees in Electrical and Computer Engineering from The Johns Hopkins University. He worked as a post-doctoral researcher at the University of Texas MD Anderson Cancer Center and later at the Recife regional center of the Fundação Oswaldo Cruz from 2004-2007. He joined Texas A&M University 2007, where he is now an Associate Professor in ECE.

Braga-Neto introduced, along with Edward R. Dougherty the notion of Bolstered Error Estimation. He also invented the Boolean Kalman Filter algorithm for partially-observed Boolean dynamical systems (POBDS). He has also made contributions to the field of Mathematical Morphology in signal and image processing. He received an NSF CAREER Award in 2009 for his research on Error Estimation for Pattern Recognition.