



TOPIC	Inferring stable gene regulatory networks from steady-state data
ORGANIZERS	Drs. Karimodini and Homaifar; Gorji, and Lacewell (PhD students)
AREA	Data mining, machine learning, and control
SPEAKER	Joy Edward Larvie, MS student, ACIT Center, North Carolina A&T State University
DATE	Wednesday, June 3, 2015
TIME	11:00 AM to 12:00 PM
VENUE	ACIT Center, Room 342, Fort IRC Bldg, North Carolina A&T State University, 1601 East Market Street, Greensboro, NC 27411
FEES	No Charge

SYNOPSIS

Advancements in DNA microarray technology have led to the development of novel learning algorithms for investigating the regulatory roles of genes at the genomic level. From simple clustering to more sophisticated complex hybrid algorithms, system biologists have sought to model gene interactions underlying molecular cell processes from mRNA concentration measurements. These interactions are captured in what researchers refer to as a gene regulatory network (GRN) through a process known as reverse engineering. GRNs have been particularly useful in targeted pathway analysis, disease treatment, medical diagnosis and biomedical research. In this study, a network identification algorithm for recovering sparse, stable and Granger-causal GRNs from steady-state gene expression data is presented. Results indicate that the stability specification not only ensures consistency with the steady-state assumptions, but also significantly improves the identification performance. The proposed technique is based on convex optimization and is applicable to the identification of genome-scale gene regulatory networks.

ABOUT THE SPEAKER



Joy Edward Larvie is an MS student at the North Carolina A&T State University and expected to graduate in June 2015. He received his bachelor's degree in Computer Engineering with honors from the University of Ghana in 2010. His current research interests include machine learning, data mining, signal processing and control.

He has worked as a Teaching Assistant within the Electrical and Computer Engineering Dep't at A&T where he tutored courses in Linear Control Systems and Digital Logic Design. He is currently a Research Assistant at the Autonomous Control and Information Technology Center, studying novel machine learning algorithms and their related applications.