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COLLOQUIUM ANNOUNCEMENT

Department of Statistics
Virginia Tech

Thursday, September 17, 2009
204 Hutcheson Hall
3:30 p.m.

SPEAKER: Naren Ramakrishnan, Dept. of Computer Science,
Virginia Tech

TITLE: Graphical Models of Evolutionary Constraints in Protein
Families

ABSTRACT:

Evolutionary pressure on proteins to maintain structure and function have constrained their sequences over time and across species. Thus, the sequence record of these proteins contains valuable information about the acceptable (and unacceptable) variations, which can be fruitfully mined. We have designed an approach to model these evolutionary constraints using undirected graphical models (Markov random fields). Our graphical models can classify members of a protein family by functional class, design new proteins that obey the evolutionary constraints, and predict whether or not two proteins from different families will interact. Results on many protein families - PDZ domains, G-protein coupled receptors, and WW domains - show that our models are able to successfully model evolutionary constraints and assist in a wide range of problems in bioinformatics.

This talk will not require any biological background and will emphasize the research issues in statistical modeling and algorithm design.



☺ Refreshments will be available at Top of the Stairs following the seminar. ☺