

1106-52-1932 **David Haws*** (dchaws@gmail.com). *Geometric Approach to Learning Bayesian Networks*.

This talk will cover descriptions of probabilistic conditional independence (CI) models and learning Bayesian networks – a type of graphical model – which have applications in natural language processing, biology (epistasis, gene regulatory networks, protein signaling, systems biology), Markov random processes, probabilistic reasoning, artificial intelligence and more. Given observed data, the goal is to find the CI structure which best explains the data. I will overview graphical approaches to the description of CI structures. Then, I will describe a superior algebraic description of CI structures introduced by Studeny et al. which has many elegant properties, suitable for applications of linear programming methods. The remainder of the talk will be devoted to optimization approaches to learning Bayesian networks. (Received September 15, 2014)