Internet Tomograpy

Bin YU, *Statistics Department, University of California at Berkeley, USA*, E-mail: binyu@stat.Berkeley.EDU

Abstract: Internet tomography represents a class of ill-posed linear inverse problems using indirect measurements to infer useful characteristics of computer networks. Origin-destination (OD) traffic estimation based on link counts belongs to this class and is important for routing. In this talk, we will first give a brief overivew of internet tomography and then concentrate on the OD estimation problem. In particular, we will review and compare our OD method (Gaussian model + Iterative Proportional Fitting) with that of the ATT group (gravity model + Mutual information regularization). The comparisons are made through the information theoretic geometry and a real Sprint network data set with validation. Finally we will survey the "second-generation" OD estimation techniques which go beyond the link counts, and present a new partial measurment approach called PamTram which uses minimal direct OD information to significantly reduce the relative error rate and computation.