DOCTORAL PROGRAM
DISCRETE MATHEMATICS
TU & KFU GRAZ · MU LEOBEN
AUSTRIA

Graz University of Technology

Institut für Optimierung und Diskrete Mathematik

Vortrag im Seminar Diskrete Mathematik und Optimierung

Dienstag 14.01.2014, 14:15

Seminarraum C208, Steyrergasse 30, 2. Stock

Threshold phenomena in k-dominant skylines of random samples

Hsien-Kuei Hwang

(Academia Sinica, Taipei)

Skylines emerged as a useful notion in database queries for selecting representative groups in multivariate data samples for further decision making, multi-objective optimization or data processing, and the k-dominant skylines were naturally introduced to resolve the abundance of skylines when the dimensionality grows or when the coordinates are negatively correlated. In this talk we show that the expected number of k-dominant skylines is asymptotically zero for large samples when $0 < k < d$ under two reasonable (continuous) probability assumptions of the input points, d being the (finite) dimensionality, in contrast to the asymptotic unboundedness when k=d. In addition to such an asymptotic zero-infinity property, a sharp threshold phenomenon is also presented for the expected (d-1)-dominant skylines when the dimensionality is allowed to grow with n. (This talk is based on joint work with W.-M. Chen and T.-H. Tsai, which is available at http://dx.doi.org/10.1137/110856952.)

Mihyun Kang