



## SEMINAR ANNOUNCEMENT

### Distance Geometry in Data Science

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**Biblioteca D.I.I. quota 165**

#### **Abstract**

Many problems in data science are addressed by mapping entities of various kind to vectors in a Euclidean space of some dimension. Most of these methods (e.g. Multidimensional Scaling, Principal Component Analysis, K-means clustering, random projections) are based on the proximity of pairs of vectors. In order for the results of these methods to make sense when mapped back, the proximity of entities in the original problem must be well approximated in the Euclidean space setting. If proximity were known for each pair of original entities, this mapping would be a good example of isometric embedding. Usually, however, this is not the case, as data are partial, wrong and noisy. I shall survey some of the methods above from the point of view of Distance Geometry.

#### **Short bio:**

Leo Liberti obtained his Ph.D. in Global Optimization at Imperial College London, held postdoctoral fellowships at Politecnico di Milano and Ecole Polytechnique in France, where he became professor and vice-president of his department. After two years as a Research Staff Member at IBM Research in New York, he became Research Director at CNRS and part-time professor at Ecole Polytechnique. His main research interests are mathematical programming with applications to industrial problems, optimization algorithms, and distance geometry. He was recently awarded the IFORS Distinguished Lectureship.

***All interested people, particularly PhD students, are invited to attend the seminar***