Least squares vs. Regression or : numerical analysis U statistics

Speaker:

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Abstract:

The aim is to establish a link between the methods used in numerical analysis and those in statistics to solve underdetermined linear systems of equations. These systems appear repeatedly in scientific and technological applications when explaining the behaviour of variables dependent on many factors given few observations. These data sets are increasingly frequent in applications such as bioinformatics, image reconstruction and chemometrics to name just a few.

The systems are often ill-conditioned and must be solved with care. After an overview of important theoretical points, the methods used in statistics, principal component analysis (PCA), and partial least squares (PLS) are described and a bridge to the methods used in numerical analysis is established.