

SUFFICIENT DIMENSION REDUCTION: AN OVERVIEW

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Sufficient dimension reduction was first introduced in the early 90's as a set of tools for regression graphics and diagnostics, but has since then evolved into a rich body of theories and methodologies for handling high-dimensional data, and has found wide applications in such diverse fields as Genomics, Pattern Recognition, and Medicine. My talks will give an overview of the important ideas in this field over the past two decades or so. Specifically, they will cover linear sufficient dimension reduction and inverse-regression based estimators, dimension reduction for structured predictors such as grouped predictors and tensor-valued predictors, asymptotic analysis and order determination, semiparametric estimators and semiparametrically efficient estimators, nonlinear sufficient dimension reduction, and envelop models. These discussions will be supplemented and illustrated by data analysis and applications.