

OBJECT ORIENTED DATA ANALYSIS

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Object Oriented Data Analysis is the statistical analysis of populations of complex objects. In the special case of Functional Data Analysis, these data objects are curves, where standard Euclidean approaches, such as principal components analysis, have been very successful. In medical image analysis, the data objects are often shapes, which naturally lie on manifolds. A series of successive improvements in the statistical analysis of shape data objects, developed through deep combination of statistical ideas with differential geometry, together with their practical implications is described. If time permits, an application of topological data analysis to a set of tree structured data objects will also be considered.

Keywords: Manifold Data, Object Oriented Data Analysis, Principal Component Analysis, Shape Statistics