

Statistics of Shape on Manifolds: Methods and Comparison Methods

Stephen M. Pizer, Kenan Professor of Computer Science, Univ. of North Carolina, USA

The geometry of an object modulo translation and possibly rotation is best understood as a point on an abstract manifold with significant curvature. Even zero-order geometry, i.e., a list of positions, has this property. Higher order geometry involving local properties such as directions or curvatures or non-local properties such as cross-object relations adds curving dimensions to the abstract manifold. The presentation will survey object geometry models (OM) to support shape statistics, as well as techniques for doing shape statistics on curved manifolds (ST). Because different ST,OM pairs (STOMPs) have been proposed, methods to compare STOMPs are needed. These STOMP comparison methods will also be discussed.