

## **Topology and the Big Data Problem**

Gunnar Carlsson

Stanford University, United States

The problem of extracting knowledge from large data sets is one of the fundamental intellectual problems faced by the mathematical sciences. In particular, it is important to develop an organizing principle which applies to data sets which exhibit significant complexity. One such principle is the notion of the shape of the data, as encoded by a metric which plays the role of a dissimilarity measure. In this talk, we will discuss what the implications of this observation are, by using various methods of topology to extract information from data. Numerous examples will also be discussed.