

INFERENCE IN TOPOLOGICAL DATA ANALYSIS

Wolfgang Polonik

University of California, Davis, United States

wpolonik@ucdavis.edu

This talk presents some novel contributions to statistical inference in TDA. These are bootstrap based statistical inference methods for (persistent) Betti numbers and Euler characteristic curves along with their theoretical analyses. Beyond the formal presentation of these results, the presentation also aims at conveying the statistical thinking / interpretation that goes along with these developments. Indeed, while topological data analysis (TDA) has seen a huge increase in popularity, the more statistical aspects of TDA unfortunately tend to be less developed. This observation motivates the postulate underlying this presentation that the communication and the interaction between the statistics and the TDA communities deserves to be enhanced. The presented results are based on recent joint work with Benjamin Roycraft and Johannes Krebs.