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Seminar

WILD ADAPTIVE TRIMMING FOR ROBUST ESTIMATION AND CLUSTER ANALYSIS

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WILD ADAPTIVE TRIMMING FOR ROBUST ESTIMATION AND CLUSTER ANALYSIS*

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Trimming principles play an important role in robust statistics. However, their use for clustering typically requires some preliminary information about the contamination rate and the number of groups. We study the properties of robust estimators when trimming level exceeds the usual bound of 50%. We prove that exact affine equivariance is lost on one hand, but on the other hand an arbitrarily high breakdown point can be achieved by "anchoring" the robust estimator. We also show consistency results under particular conditions. Wild trimming is particularly suited for solving problems in robust cluster analysis. We replace the original K-population (robust) estimation problem with K distinct one-population steps, which take advantage of the good breakdown and separation properties of wildly trimmed estimators. We also support the use of adaptive trimming schemes, in order to infer the contamination rate from the data. A further bonus of our methodology is its ability to provide a reliable choice of the usually unknown number of groups.

** Joint work with Andrea Cerioli and Marco Riani*