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Anomaly Detection in the Copula Space

Tuesday, 6 July 2021 15:00 (20 minutes)

A unsupervised learning tool that searches for localized, overdense regions of the copula space of a multi-dimensional feature space is discussed. The algorithm, named RanBox, exists in two versions - one which searches multiple times in random subspaces (typically of 8 to 12 dimensions) of the feature space, and a second one (RanBoxIter) which iteratively adds dimensions to the searched space. Gradient descent is used to localize the multi-dimensional interval which maximizes a suitable test statistic proportional to the significance of the observed data in the box. Applications to UCI datasets from fundamental physics and from fraud detection are discussed.

Affiliation

INFN, Padova

Academic Rank

professor

Primary author: DORIGO, Tommaso (Universita e INFN, Padova (IT))

Presenter: DORIGO, Tommaso (Universita e INFN, Padova (IT))

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