Kullback-Leibler divergence measure for Multivariate Skew-Normal Distributions

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Abstract

The aim of this work is to give the tools to compute the well-known Kullback-Leibler divergence measure for the flexible family of multivariate skew-normal distribution. In particular, we use the J-distance measure to compare the multivariate normal distribution with the skew-multivariate normal distribution, showing that this is equivalent to comparing univariate versions of these distributions. Finally, we applied our results on a seismological catalogue data set related to the 2010 Maule’s earthquake. Specifically, we compare the distributions of the local magnitudes of the regions formed by the aftershocks.

Key words: Skew-normal, cross-entropy, Kullback-Leibler divergence, earthquakes, non-parametric clustering.