



Skewness-based projection pursuit: past, present and future

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Skewness-based projection pursuit aims at finding interesting data projections by maximizing their third standardized cumulants. The method relies on tensor eigenvectors, which naturally generalize matrix eigenvectors to multi-way arrays: eigenvectors of symmetric tensors of order k and dimension p are stationary points of polynomials of degree k in p variables on the unit sphere. Dominant eigenvectors of symmetric tensors maximize polynomials in several variables on the unit sphere, while base eigenvectors are roots of polynomials in several variables. Skewness-based projection pursuit finds interesting data projections using the dominant eigenvector of the sample third standardized cumulant to maximize skewness and uses its base eigenvectors to remove skewness, thus facilitating the search for interesting data features other than skewness. The talk outlines the theory and the applications of skewness-based projection pursuit, as well as its limitations.