On the Distortion of Embedding Perfect Binary Trees into Low-Dimensional Euclidean Spaces

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We study the distortion of an optimal embedding of a perfect binary tree into a Euclidean space with a fixed♀ number of dimensions. The distortion is a characteristic of the embedding, describing to what extend there is a correspondence between the natural metric on the graph and the induced Euclidean metric on its image. The optimal embedding of a graph is the one with the minimal distortion. We obtain an estimation of the lower bound of the distortion by using a volume argument and also present a particular embedding, showing that the value of the lower bound of the distortion is achievable up to a constant, independent of the number of vertices of the perfect binary tree.

Awards Won:

Fourth Award of $500

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