

Predicting Precision Matrices for Color Matching

中本, 尊元

<https://hdl.handle.net/2324/2236046>

出版情報 : Kyushu University, 2018, 博士 (機能数理学) , 課程博士
バージョン :
権利関係 :



氏 名 : 中本 尊元

論 文 名 : Predicting Precision Matrices for Color Matching
(カラーマッチングにおける精度行列の予測)

区 分 : 甲

論 文 内 容 の 要 旨

In this paper, as data, ellipsoids in a color coordinate called CIE-Lab system are given for 19 colors. Each ellipsoid is the region whose all points are visually recognized as the same color at the center in the coordinate system. Our aim here is to predict the shape of an ellipsoid whose center is given by a new color. We proposed two prediction methods of positive definite matrices determining ellipsoids. The first one is a nonparametric method with Gaussian kernel.

The prediction is provided as a weighted sum of positive definite matrices corresponding to 19 ellipsoids in the training data. The second one is to use a matrix-valued regression model to a logarithm of positive definite matrices where explanatory variables are three elements of color centers. The best result was obtained by the nonparametric methods with three bandwidth parameters. The log normal regression shows weaker performance, but the model estimation is easily carried out.