



# International Journal on Recent Researches In Science, Engineering & Technology

(Division of Civil Engineering)

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Research Paper

Available online at: [www.jrrset.com](http://www.jrrset.com)

Chief Editor : Dr. M.Narayana Rao, Ph.D., Rtd. Professor, NIT, Trichy.

ISSN (Print) : 2347-6729

ISSN (Online) : 2348-3105

Volume 3, Issue 1,  
January 2015.

JIR IF : 2.54

DIIF IF :1.46

SJIF IF: 1.329

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## An Optimum 2D Color Space for Pattern Recognition

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Abstract - This presents an optimum color conversion from the 3D RGB space into a 2D selected space to the purpose of pattern recognition. The method is based on the Karhunen-Loeve transform ( KLT ), also as Principal Component Analysis ( PCA ). The resulted 2D space is defined by the two color components (called C1 and C2 ), corresponding to the two largest Eigen values of the RGB pixel covariance matrix. using the above color projection technique , we propose a color face recognition system based on feature fusion of the C1 and C2 components and a concurrent neural network classifier. The proposed system is experimented for a color face database containing 3520 color images of 151 subjects. We also present a color image segmentation using pixel clustering in the 2D color space by means of a self-organizing neural network. The new 2D color projection model may have wide applications in the areas of color-based pattern recognition .