

# ADAPTED PRINCIPAL COMPONENT TRANSFORM (PCT) METHOD FOR RESTORING MEDICAL & INDUSTRIAL IMAGES

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## ABSTRACT

*In this paper, principal component transform (PCT) has been adopted and used as enhancement process to minimize the noise in medical and industrial images. Because images presented in color fashion, each color band has different frequency, therefore convoluted noise was uncorrelated. This noise uncorrelation property between colored image bands has been benefited to cancel as much as possible. In fact, 1<sup>st</sup> principal component, usually, presenting the higher degree of correlated signal, therefore, adopting this component, definitely, presenting almost the net existed informational signal. The PCT procedures performed iteratively, between produced PC's and the rest of the colored bands to filtrate the noise. This method has also been adapted; i.e. adopting image sub-blocks instead of the whole image bands. It was our opinion, proved well, that information existed in image blocks are more correlated than in the image bands. Therefore, chosen PC's from the blocks associated with higher eigen values which means more amount of correlated signals; i.e. better image improvement. Additionally, the transformation performed faster than when applied on the whole image bands.*