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Hybrid EMPCA-Scott Approach for Estimating Probability Distributions of Mutual Information

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Abstract : Mutual information (MI) is widely used in medical image registration. In the different medical images analysis, it is difficult to choose an optimal bins size number for calculating the probability distributions in MI. As the result, this paper presents a new adaptive bins number selection approach that named a hybrid EMPCA-Scott approach. This work combines an expectation maximization principal component analysis (EMPCA) and the modified Scott's rule. The proposed approach solves the binning problem from the various intensity values in medical images. Experimental results of this work show the lower registration errors compared to other adaptive binning approaches.

Keywords : mutual information, EMPCA, Scott, probability distributions
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