

Rapepun Piriyaikul 2008: Feature Selection and Dimension Reduction for Medical Image Analysis. Doctor of Engineering (Computer Engineering), Major Field: Computer Engineering, Department of Computer Engineering. Thesis Advisor: Associate Professor Punpiti Piamsa-nga, D.Sc. 77 pages.

Feature Selection has a crucial role in Medical Image Analysis due to a great deal of image features, higher derivatives of mathematical computation and more of time complexity in detection process. Therefore, only some features that can convey enough information about the image should be concerned.

We construct three novel features selection techniques using collaboration with statistical methods. The experiments conducted on a data set of 113 ROIs from Database of the Mammographic Image Analysis Society (MIAS) of UK. First, we used factor analysis and logistic regression classifier to reduce features with compatibly equal accuracy. Second, feature selection was performed in graph based analysis using analogy via path analysis and Bayes inference. The experimental result shows that our selected 13 features performed as well as original 50 features. Third, are pruned by ANOVA, its quality is similar to SFS method but computation is less required.

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Thesis Advisor's signature

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