Abstract

Nowadays, automatic defects detection in MR images is very important in many diagnostic and therapeutic applications. This paper introduces a Novel automatic brain tumor detection method that uses T1, T2_weighted and PD, MR images to determine any abnormality in brain tissues. Here, has been tried to give clear description from brain tissues using Gabor wavelets, energy, entropy, contrast and some other statistic features such as mean, median, variance, correlation, values of maximum and minimum intensity. It is used from a feature selection method to reduce the feature space too. this method uses from neural network to do this classification. The purpose of this project is to classify the brain tissues to normal and abnormal classes automatically, that saves the radiologist time, increases accuracy and yield of diagnosis.

Reference
A Neural Network based Method for Brain Abnormality Detection in MR Images Using Gabor Wavelets

- Marcel Prastawa a, Elizabeth Bullitt c, Sean Ho a, Guido Gerig, “A Brain Tumor Segmentation Framework Based on Outlier Detection” Medical Image Analysis, 1-9, 2004.
- http://documents.wolfram.com
- 1Nathan Moon, 2Elizabeth Bullitt, 4Koen van Leemput, and 1;3Guido Gerig, “Automatic Brain and Tumor Segmentation”, MICCAI2002, LNCS2488(I) pp. 372-379
- Kemal Polat, Salih Gunes, “A New Feature Selection Method on Classification of Medical
- J. A. Freeman and D. M. Skapura, “Neural Networks, Algorithms, Applications and
  NJ: Prentice Hall, 1999
- F. M. Ham and I. Kostanic, “Principle of Neurocomputing for Science and Engineering”
  Classifier”, Proceedings of the 7th European Symposium on Artificial Neural Network,
- Y. S. Hwang and S. Y. Bang, “An Efficient Method to Construct a Radial Basis Function
- C. J. C. Burges, “A tutorial on Support Vector Machines for Pattern Recognition”, Data
- S. Theodoridis and K. Koutroumbas, “Pattern Recognition”, Academic Press, San Diego,
  1999.
  Bhatavdekar, and G. V. Sherbat, “DNA Ploidy and Cell Cycle Distribution of Breast Cancer
  Aspirate Cells Measured by Image Cytometry and Analyzed by Artificial Neural Networks for
  their Prognostic Significance,” IEEE Transaction on Information Technology in Biomedicine.
  Images Using Artificial Neural Networks” Nuclear Science Symposium (1996). Conference
- Alirezaie, J.; Jernagan, M.E.; Nahmias, C.; Neural Network Based Segmentation of
  Magnetic Resonance Images of the Brain” Nuclear Science Symposium and Medical Imaging
- Sammouda, R.; Niki, N.; Nishitani, H. “Neural Networks Based Segmentation of Magnetic
  Resonance Images” Nuclear Science Symposium and Medical Imaging Conference(1994),
- Porter, R.; Huckett, S.; Canagarajah, C.N “Optimal Feature Extraction for the
  Segmentation of Medical Image’s.” Image Processing and Its Applications (1997),

**Index Terms**

**Computer Science**

**Biomedical Applications**
Key words

Feature extraction
Kernel F-score feature

selection
Gabor wavelets

artificial neural network
tumor detection
segmentation
MR images