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MR Image texture analysis applied to the diagnosis of Alzheimer's Disease

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10. april 2016

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Abstract

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Kapitel 1

Intro

In this report we will examine MRI data of the hippocampus using image texture analysis and apply machine learning. We have XX normal controls and XX Alzheimer's Disease (AD) patients. They are split into a training set (XX control and XX AD) and a test set (XX control and XX AD).

We'll use 2 different image texture analysis on one the same machine learning and 3 different machine learning on the same image texture to see if there is a difference in either the image texture approach or the machine learning approach. The 3 different machine learning methods are KNN, ANN and Gaussian mixture and 2 different image texture methodes are co occurrence matrix and XX

From here we will compare if there is any gain in using 3D from 2D image texture

We will also try to replicate the analysis from [1] MRfreeborough

1.1 Problem Definition

Is it possible to classify MRI data of the hippocampus into groups of healthy controls vs Alzheimer's patient, using a predefined set of image texture metrices, with an accuracy greater than 80%?

1.2 Alzheimer's Disease

1.3 Image texture analysis methods

1.3.1 co occurrence matrix

1.3.2 another ITA

1.4 Machine learning methods

1.4.1 K-nearest neighbors algorithm

1.4.2 Artificial neural network

1.4.3 Gaussian mixture

Appendices

Log system

Version	Dato	Forfatter(re)	Beskrivelse
1.0	22.01.04	A	created
1.1	23.01.04	B	correction
1.2	03.02.04	A, B	revised after review

Litteratur

MRfreeborough [1] Peter A. Freeborough & Nick C. Fox. Mr image texture analysis to the diagnosis and tracking of alzheimer's disease. *IEEE*, 17(3):5, June 1998.