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Ensemble based on static classifier selection for automated diagnosis of Mild Cognitive Impairment

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Highlights

- *Early diagnosis of Alzheimer's Disease by machine learning.*
- *Classification of AD from pre-processed sets of T1-weighted MRI*
- *Comparison of different techniques for feature selection*
- *Integration of machine learning methods: SVM, GPC, AdaBoost*
- *Static Classifier Selection using the best features.*

Abstract

Background

Alzheimer's disease (AD) is the most common cause of neurodegenerative dementia in the elderly population. Scientific research is very active in the challenge of designing automated approaches to achieve an early and certain diagnosis. Recently an international competition among AD predictors has been organized: "A Machine learning neuroimaging challenge for automated diagnosis of Mild Cognitive Impairment" (MLNeCh). This competition is based on pre-processed sets of T1-weighted Magnetic Resonance Images (MRI) to be classified in four categories: stable AD, individuals with MCI who converted to AD, individuals with MCI who did not convert to AD and healthy controls.

New Method

In this work, we propose a method to perform early diagnosis of AD, which is evaluated on MLNeCh dataset. Since the automatic classification of AD is based on the use of feature vectors of high dimensionality, different techniques of feature selection/reduction are compared in order to avoid the

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