BSc/MSc-project

Title: Quality assurance of lesion and White Matter Hyperintensity assessment in MRI

Description: The project consists of two parts. 1) Assessment of white matter and grey matter in the brain using different imaging software can be influenced by lesions with variable intensities. This is relevant in patients with multiple sclerosis (MS) and small vessel disease (SVD). The student(s) will apply a lesion-filling software tool on the MR images thereby substituting lesions with intensities similar to normal appearing tissue. The student will investigate a number of scans of MS patients and patients with SVD, and assess and quantify how the resulting output differs from the non-lesion filled output and what parameters to use for optimal gain. The aim is to improve accuracy in tissue volume estimates and thereby improve insight into the diseased brain. 2) When several important to frequently monitor variance in their performance both as intra- and interrater variabilities. The aim of this project is to create robust and feasible measures for intra- and interrater variabilities. The student(s) will 1) review the literature for relevant approaches and current recommendations 2) consider automatic and manual methods and 3) design, implement and test a pipeline for intra- and interrater variability which can be applied on a regular basis and detect changes in variabilities.

Required qualifications: Statistics, thorough unix/linux experience, knowledge of MRI, good programming skills in Matlab and other scripting language.

Responsible institution: Danish Research Centre for Magnetic resonance, Hvidovre hospital

Contact information: ninar@drcmr.dk and lundell@drcmr.dk

Allowed no of students per report: 1 MSc or 2 BSc

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