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Large-scale neuroimaging analysis: growth curves for the ageing brain

Friday, 8 April 2016 09:00 (20 minutes)

In this talk I will present new approaches for computer-aided diagnosis of neurodegenerative disease, based on large-scale quantitative modelling of the ageing brain. The main idea is to construct “growth”curves that characterise the distribution of MRI-derived markers in a healthy population as a function of age. These growth curves can then serve as reference charts to which patient data can be compared. I will explain the methodology, show some very recent results, and finally discuss the e-infrastructural needs for this type of research, in which thousands of MRI scans need to be processed.

Speaker’s biography

Dr. Stefan Klein is assistant-professor in the Biomedical Imaging Group Rotterdam, Erasmus MC, the Netherlands, and leading a research line on the development and evaluation of advanced medical image analysis techniques, focussing on a) image registration methodology for fusion of multimodal, longitudinal, and dynamic imaging data and b) quantitative MRI analysis, and c) computer-aided diagnosis. He is one of the two principal developers of the widely-used open source Elastix software for medical image registration (http://elastix.isi.uu.nl). Recently, he has organised a successful “grand challenge”on computer aided diagnosis of dementia based on brain MRI (http://caddementia.grand-challenge.org). In this challenge, 29 methods for computer-aided diagnosis of dementia based on structural MRI were evaluated in an objective, standardised way on a large publicly available dataset.

Presenter: Dr KLEIN, Stefan (Erasmus MC)

Session Classification: Neuroinformatics data exploitation service