Localisation and Characterisation of Brain Pathology from Structural MRI Data

Frau Maddalena Strumia
Medical Physics Department, Uniklinik Freiburg

FCD project - "Analysis of Structural MRI Data for the Localisation of Focal Cortical Dysplasia in Epilepsy":

Focal Cortical Dysplasia (FCD) is an anatomic malformation of the cortex that gives rise to epilepsy and can be treated surgically. The precise presurgical localisation of FCD is pivotal for a successful intervention that leads to seizure freedom. Brain MRI is used for imaging and the specificity of its localisation remains a challenging task. In this work multiple features intended to represent intensity, texture and form are extracted from T1-w and FLAIR images and compared to a control database. A final classification step is performed to generate an FCD probability map which highlights FCD lesion(s). The data from 11 most recently visited patients in our clinic and 20 controls have been acquired and examined. In all patient cases the probability map highlights the lesions with high accuracy.

MS project - "Comparative Characterisation of Susceptibility Weighted MRI for Brain White Matter Lesions in MS":

MR Images of the brain in Multiple Sclerosis (MS) show regions of signal abnormalities that can be used for diagnosis and for extracting information about the pathogenesis of the disease. Susceptibility Weighted MRI (SWI) contrast provides additional information in this context. In this study the signal and the contrast of white matter lesions are examined in SW-MRI and compared to the more commonly used T1-w and FLAIR contrasts. It also analyses the lesions in SWI into hypo- and hyper- intense. Additionally, the spatial distribution is estimated for the two lesion types and summarised with their expected distance from the ventricles. The data from 19 MS patients and 23 controls have been acquired and examined. The results show the presence of two lesion classes in SW-MRI for MS patients, while T1-w and FLAIR contrast mechanisms present only a single class each. Hypo-intense SWI lesions appear closer to the ventricles and more correlated to the T1-w signal than the FLAIR signal.

Zeit: Dienstag, 03.07.12, 16 hct
Ort: Geb. 052, SR 02-017

Interessenten sind herzlich eingeladen. Weitere Informationen bei:
V. Popa, Tel: 0761/203-8270 Email: popa@informatik.uni-freiburg.de