

Non-segmented MR brain images are used for the identification of new biomarkers able to differentiate between patients and healthy controls. Texture analysis enables the quantification of the grey levels and brain patterns on MRI, via voxel inter-relations and spectral properties of the images. Texture analysis is a methodological approach widely used to MR image analysis for identification of tumour and for differentiation between pathological and healthy tissue in different organs. Additionally, texture analysis has established utility when applied to neuropsychiatric disorders including epilepsy, multiple sclerosis and Alzheimer disease. Common texture features are second order statistical features, such as entropy, energy, homogeneity, contrast, correlation and variance that express the heterogeneity of the brain by measuring the inter-relations between voxels.

The extraction of texture feature maps from non-segmented brain images gives insights on the inter-relation of voxels from different modalities i.e., gray-matter volume, white-matter volume and cerebrospinal fluid. To our knowledge, non-segmented images have never been used for the recognition of psychosis, missing the inter-actions between these modalities as an indicator for the diagnosis that led to the identification of new biomarkers. In addition, this study should be considered as a multi-task analysis that additionally to the identification of biomarkers, deep white matter hyperintensities can be captured that are associated with clinical severity and treatment responsiveness. Voxel-based morphometry will be conducted with SPM12 toolbox.