Optimization of fMRI analysis of speech areas in pre- and postoperative diagnostics

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Mapping brain activity by means non-invasive method functional magnetic resonance imaging (fMRI) is possible due to changes in hemoglobin forms in blood vessels. This method gives a possibility to characterize relevant functional areas adjacent to the tumor what has important implications for surgical intervention. In this work we focus on optimization of the parameters (Gaussian kernel, significance level and cluster-level extent threshold) used in SPM analysis for the activity of Broca and Wernicke areas responsible for production and understanding the speech which are very important from the point of view patients quality life. Controlling the familywise error rate (FWE) is also discussed for the studied patients.