Inter-subject correlation analysis with fMRI data

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Abstract: A focus of inter-subject correlation (ISC) analysis is to identify brain regions that respond similarly or synchronize to the same stimuli among a group of individuals by quantifying the inter-subject correlations. Functional MRI data are ideal for evaluating inter-subject correlation with continuous stimuli. In this talk, I will introduce a nonparametric test procedure that is valid under individual and temporal heterogeneity. We study the asymptotic distributions of the proposed test statistics for both random and fixed designs. Our empirical studies demonstrate that the proposed test procedure performs better than the commonly used methods in ISC studies, the adjusted Lagrange multiplier test, Pesaran's cross-sectional dependence (CD) test, and the adjusted Pesaran's CD test.