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Resampling with Applications to Neurophysiological Time Series

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One of the fundamental tools in the analysis of biosignals including functional magnetic resonance imaging (fMRI) is a time series model and corresponding set of parameters. Such time series are known to exhibit temporal autocorrelation which is one of the fundamental characteristic for such fMRI observations (see e.g. Bullmore et al (2001)). In the presentation, a general survey of resampling methods for time series will be presented and consistency issues will be addressed. The focus of the presentation will be application-oriented toward fMRI signals that exhibit non-gaussian behavior and are non-stationary. The statistical results presented e.g in Leskow et al (2008) will be accompanied by applications to neurophysiological time series.

References

[1] Bullmore E., Long, C., Suckling, J. ,Fadili, J. Calvert, G., Zelaya. F., Carpenter, T.A, Brammer, M. (2001), Colored Noise and Computational Inference in Neurophysiological (fMRI) Time Series Analysis: Resampling Methods in Time and Wavelet Domains. Human Brain Mapping, 12:61-78.

[2] Leskow, J., Lenart, L and Synowiecki, R. (2008), Subsampling in testing autocovariance for periodically correlated time series, Journal of Time Series Analysis, Vol. 29, No.6.