DSS Statistics Seminar

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https://meet.google.com/awp-ggus-dkv

Robust testing in generalized linear models by sign-flipping score contributions

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Generalized linear models are often misspecified due to overdispersion, heteroscedasticity and ignored nuisance variables. Existing quasi-likelihood methods for testing coefficients under misspecified models often do not provide satisfactory type-I error rate control. We present the Orthogonalized Flip Scores test, a novel semi-parametric test based on sign-flipping individual score contributions that is proven to be robust against variance misspecification (e.g. heteroscedasticity and/or overdispersion) – while showing excellent control of the type I error, even for very low sample size. A key point of this method is that – by the sign-flipping strategy – the *p*-value is computed without the need to estimate the Fisher Information Matrix. The method is easily extended to the multivariate framework, hence providing an approach which is robust and asymptotically exact. Furthermore, it allows for a natural extensions to designs with clustered observations (e.g. random effect models). An application to real data will be presented and discussed.

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