國立成功大學統計學系

專題演講

時　間: 108 年 12 月 26 日 (星期四) 下午 3:30 – 5:00

地　點: 統計學系三樓視聽教室 (62331)

演講者: Hakmook Kang (Assistant Professor)
Department of Biostatistics, Vanderbilt University

題　目: Evidence-based approach on functional magnetic resonance imaging data

茶　會: 下午 3:00 – 3:25 (統計學系二樓教師休息室)

Abstract

The large number of multiple tests in task-induced (or resting-state) functional imaging analysis can result in large Type II Error rates that preclude important findings when stringent Type I Error controls are used. Commonly used multiple comparison corrections include family-wise error rate control (e.g., Random Field Theory and Bonferroni correction) and false discovery rate control, both of which depend on p-values. However, stringent reliance on p-values has been criticized recently in the statistics and neuroscience community. A newly proposed method, the Second-generation p-value (SGPV) based on the likelihood paradigm, overcomes interpretability issues with traditional p-values and has good performance characteristics. SGPVs can be interpreted directly as the proportion of estimates supporting the null hypothesis. Further, by specifying a clinically meaningful region beforehand, the Type I Error rate is naturally controlled and encompasses a proper scientific correction for multiple comparison. Lastly, the pre-specified clinically meaningful region promotes good research practice and prevents the post-hoc interpretation of mediocre results.

For functional imaging analysis, we construct the null interval with the data observed in functionally null region, the cerebrospinal fluid (CSF). In this study, we evaluate the usage of SGPVs in group inference compared to other traditional multiple correction methods.

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