國立中山大學應用數學系 學術演講

- 講 者: Dr. Adeline Lo Department of Politics, Princeton University, USA
- 講 題: Variable selection with Partition Retention to predict civil war
- 時 間:2017/01/05(星期四)15:10~16:00
- 地 點:理學院四樓理 SC 4009-1 室
- 茶 會:16:00 於理 SC 4010 室 (系辦公室)

摘要

I propose a new approach to predicting civil war onsets that emphasizes variable selection. A good variable selection approach should be able to search for variables based on a criterion of predictivity, as well as find interactions amongst variables. The first ability is a direct response to the finding that variable selection using causally important and statistically significant variables does not guarantee good prediction. The second ability is especially important given that civil wars are highly complex processes; it is likely that using only information from single variables may result in discarding important information embedded in higher orders interactions (interactions between several variables). I suggest that important higher order interactions in existing political science data can be selected by the Partition Retention (PR) method. I illustrate the approach with simulations and an application to civil wars data, comparing the results with alternative approaches such as random forests, neural networks and lasso. The PR approach performs favorably in nonlinear and interactive simulated data. It identifies variables and variable sets in the applied data, with some variable sets as large as 5 or 6 variables interacting to predict civil war onsets. Using these identified variable sets to predict boosts correct prediction rates on out of sample testing sets from 78.98% to 98.05%. The application demonstrates possible gains in correct prediction rates for civil wars when including a research step for identifying predictive sets of variables.

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