國立成功大學統計學系

專題演講

時　間: 108 年 12 月 12 日 (星期四) 下午 2:00 – 3:00

地　點: 統計學系三樓視聽教室 (62331)

演講者: 林立祥 博士候選人

H. Milton Stewart School of Industrial and Systems Engineering, Georgia Institute of Technology

題　目: Transformation and Additivity in Computer Experiments

茶　會: 下午 3:00 – 3:25 (統計學系二樓教師休息室)

Abstract

The Gaussian process (GP) is a popular choice for approximating a deterministic function in computer experiments. However, the role of transformation in GP modeling is not well understood. We proposed using transformation in GP modeling to improve additivity; that is, to find a transformation of the response so that the deterministic function becomes an approximately additive function, which can then be easily estimated using an additive GP. We call such a GP a Transformed Additive Gaussian (TAG) process. To capture possible interactions that are unaccounted for in the additive model, we propose an extension of the TAG process called Transformed Approximately Additive Gaussian (TAAG) process. We develop efficient techniques for fitting a TAAG process. In fact, we show that TAAG can be fitted to high-dimensional data much more efficiently than a standard GP. Additionally, we show that TAG produces better estimation, interpretation, visualization, and prediction. The proposed methods are implemented in the R package TAG.

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