

2019년 제 4회 통계세미나

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일시 : 2019년 6월 19일 (수) 오후 5시

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Sequential Promotion and Detection of Latent Attribute Change in Cognitive Diagnosis Models

<Abstract>

Cognitive Diagnosis Models(CDMs) primarily aim to identify binary elements of multiple fine-grained attributes at subject-level. When multiple attributes are assessed simultaneously and are expected to change during a span of items, estimation of multiple change points becomes a classical sequential detection problem.

In this research, state-of-the-art statistics that detect latent changes such as CUSUM, Shiryaev and Shiryaev-Roberts are presented to be incorporated in the framework of CDMs. These methods indulge in optimality properties and they can be calibrated to yield a predetermined false detection rate. Bayesian item selection method that stimulates latent change that can be used in conjunction with the detection method is also introduced. Simulation results indicate that both sequential detection methods and the data-driven item selection method outperform the existing methods by reducing the delay in detection.

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