

2021년 제 2회 통계세미나

고려대학교 통계연구소와 BK21 통계학교육연구팀이 다음과 같이
공동으로 세미나를 개최하오니 많은 참여 바랍니다.

일시 : 2021년 4월 9일 (금) 오전 11시

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Mapping unobserved item-respondent interactions: A latent space item response model with interaction map

<Abstract>

Classic item response models assume that all items with the same difficulty have the same response probability among all respondents with the same ability. These assumptions, however, may very well be violated in practice, and it is not straightforward to assess whether these assumptions are violated, because neither the abilities of respondents nor the difficulties of items are observed. An example is an educational assessment where unobserved heterogeneity is present, arising from unobserved variables such as cultural background and upbringing of students, the quality of mentorship and other forms of emotional and professional support received by students, and other unobserved variables that may affect response probabilities. To address such violations of assumptions, we introduce a novel latent space model which assumes that both items and respondents are embedded in an unobserved metric space, with the probability of a correct response decreasing as a function of the distance between the respondent's and the item's position in the latent space. The resulting latent space approach provides an interaction map that represents interactions of respondents and items, and helps derive insightful diagnostic information on items as well as respondents. In practice, such interaction maps enable teachers to detect students from underrepresented groups who need more support than other students. We provide empirical evidence to demonstrate the usefulness of the proposed latent space approach, along with simulation results. This work was done jointly with Dr. Minjeong Jeon (UCLA), Michael Schweinberger (Rice), and Sam Baugh (UCLA).

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