EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT
COLLOQUIUM SERIES

Nonparametric Classification Methods for
Cognitive Diagnosis

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September 18, 2018 (Tuesday)
11:00 – 12:30
Room 108, Runme Shaw Building, HKU

Abstract
The focus of cognitive diagnosis (CD) is on evaluating an examinee’s strengths and weaknesses in terms of a set of cognitive skills that need to be learned. Current methods for fitting CD models work well for large-scale assessments, where data for hundreds, if not thousands of examinees are available. However, the development of CD-based assessment tools that can be used in small-scale test settings, say, for monitoring instruction and learning at the classroom level, has not kept up with the rapid pace at which research and development have proceeded for large-scale assessments. This is mainly because the sample sizes in small-scale test settings do not allow for the item parameters, hence, examinees’ proficiency class memberships to be reliably estimated. In this presentation, two nonmodel-based methods, the nonparametric classification and general nonparametric classification methods, are introduced. The two nonparametric methods allow for assigning examinees to the correct proficiency classes with a high rate of accuracy even with relatively small sample sizes. Theoretical justifications and empirical studies will also be presented to support the legitimacy of using the methods. Finally, a data set from a CD assessment, the Fraction in Addition and Subtraction Test, will be used to demonstrate a real-world application of the methods.

About the Speaker
Dr. Chia-Yi Chiu is currently an associate professor from the Educational Measurement and Statistics program in the Department of Educational Psychology at Rutgers University, New Jersey. Dr. Chiu’s research concerns the theoretical foundations of innovative assessment methods for CD. She aims to develop efficient and easy-to-use assessment tools that help improve the quality and effectiveness of instruction. Examples of these tools include the nonparametric classification methods and related applications that are particularly suitable for small education programs. Dr. Chiu’s current projects, funded by a National Science Foundation CAREER grant, involve the development of nonparametric CD-based computerized adaptive testing for use in classrooms.

Everyone is welcome to attend!
If interested, please confirm your attendance by sending an email to kpsantos@hku.hk.