

THE DEPARTMENT OF EDUCATIONAL PSYCHOLOGY'S RESEARCH METHODS,
MEASUREMENT, & EVALUATION (RMME) PROGRAMS AND THE DEPARTMENT OF
STATISTICS AT THE UNIVERSITY OF CONNECTICUT PRESENT:

HIDDEN MARKOV MODELS WITH AN UNKNOWN NUMBER OF HIDDEN STATES

DR. XINYUAN SONG, THE CHINESE UNIVERSITY OF HONG KONG

Hidden Markov models (HMMs) are valuable tools for analyzing longitudinal data due to their capability to describe dynamic heterogeneity. Conventional HMMs typically assume that the number of hidden states (i.e., the order of HMMs) is known or predetermined through criterion-based methods. This talk discusses double-penalized procedures for simultaneous order selection and parameter estimation for homogeneous and heterogeneous HMMs. We develop novel computing algorithms to address the challenges of updating the order. Furthermore, we establish the consistency of order and parameter estimators. Simulation studies show that the proposed procedures considerably outperform the commonly used criterion-based methods. An application to the Alzheimer's Disease Neuroimaging Initiative study further confirms the utility of the proposed method.



Dr. Xinyuan Song is a full Professor and Chair in the Department of Statistics at The Chinese University of Hong Kong (CUHK). Her research interests include latent variable models, Bayesian methods, survival analysis, nonparametric and semiparametric methods, and statistical computing. She serves/served as an associate editor for a number of international journals in statistics and psychometrics, including: Biometrics; Electronic Journal of Statistics; Canadian Journal of Statistics; Statistics and Its Interface; Computational Statistics and Data Analysis; Psychometrika; and Structural Equation Modeling: A Multidisciplinary Journal. Dr. Song earned her PhD from CUHK.

Colloquium Access Information:

Friday, 11/03/2023, 10am ET
<https://tinyurl.com/rmme-Song>
Meeting # 2624 049 7169
Password: RMMESTAT

Join by video system: Dial 26240497169@uconn-cmr.webex.com. You can also dial 173.243.2.68 and enter your meeting number.

Join by phone: +1-415-655-0002 US Toll
Access code: 2624 049 7169