

Statistics Former Student Network (SFSN)

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TEXAS A&M UNIVERSITY

Statistics

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GROUP NETWORK HAWKES PROCESS

ABSTRACT:

In this work, we study the event occurrences of individuals interacting in a network. To characterize the dynamic interactions among the individuals, we propose a group network Hawkes process (GNHP) model whose network structure is observed and fixed. In particular, we introduce a latent group structure among individuals to account for the heterogeneous user-specific characteristics. A maximum likelihood approach is proposed to simultaneously cluster individuals in the network and estimate model parameters. A fast EM algorithm is subsequently developed by utilizing the branching representation of the proposed GNHP model. Theoretical properties of the resulting estimators of group memberships and model parameters are investigated under both settings when the number of latent groups G is over-specified or correctly specified. A data-driven criterion that can consistently identify the true G under mild conditions is derived. Extensive simulation studies and an application to a data set collected from Sina Weibo are used to illustrate the effectiveness of the proposed methodology.

BIO: Dr. Yongtao Guan is Professor of Management Science in the Miami Herbert Business School at the University of Miami (UM). Prior to joining UM in 2011, he was Assistant and Associate Professor of Biostatistics at Yale University (2006-2011) and Assistant Professor of Management Science at UM (2003-2006). He was Chair of the Management Science Department (2013-2020) and Director of Deloitte Institute for Research and Practice in Analytics (2018-2021), both at UM, and Professor of Information Systems at the Chinese University of Hong Kong, Shenzhen (2021-2022). He specializes in modeling spatial, temporal, and spatio-temporal data that commonly arise in business, environmental, medical and social media applications. He received his PhD in 2003 under the advisement of James Calvin and Michael Sherman. He was also the recipient of the H.O. Hartley Award in 2015.

Monday, December 5, 2022

1:00 PM - 2:00 PM, CST

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