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Statistical inference for Spatio-Temporal Self-Exciting Point Processes

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Abstract: Self-exciting point processes over space or over networks have been a popular model recently due to its wide applicability to a discrete event data arising from various applications, including social networks, seismic catalog data, crime data, epidemiology, and electronic health records. Self-exciting point process models are particularly useful to capture the triggering effect of the historical events on future events. In this talk, I will present our recent effort in developing statistical inference tools for the self-exciting point process models. I will talk about change-point detection, establishing confidence intervals, deal with textual marks, as well as going beyond simple parametric models to capture spatial-temporal in-separable trigger functions.

Bio: Yao Xie is an Associate Professor and Harold R. and Mary Anne Nash Early Career Professor at Georgia Institute of Technology in the H. Milton Stewart School of Industrial and Systems Engineering, and an Associate Director of the Machine Learning Center. She received her Ph.D. in Electrical Engineering (minor in Mathematics) from Stanford University, M.Sc. in Electrical and Computer Engineering from the University of Florida, and B.Sc. in Electrical Engineering and Computer Science from University of Science and Technology of China (USTC). She was a Research Scientist at Duke University. Her research areas are statistics (in particular sequential analysis and sequential change-point detection), machine learning, and signal processing, in providing the theoretical foundation as well as developing computationally efficient and statistically powerful algorithms. She has worked on such problems in sensor networks, social networks, power systems, crime data analysis, and wireless communications. She received the National Science Foundation (NSF) CAREER Award in 2017. She is currently an Associate Editor for IEEE Transactions on Signal Processing, and Sequential Analysis: Design Methods and Applications.