

Division of Biostatistics, IHE
Medical College of Wisconsin presents



Spatio-Temporal Process Monitoring Using Exponentially Weighted Spatial LASSO

By: Kai Yang, PhD

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Tuesday, September 27th | 3:30PM - 4:30PM

Spatio-temporal process monitoring has received a considerable attention recently due to its broad applications in environment monitoring, disease surveillance, streaming image processing, and more. Because spatio-temporal data often have complicated structure, including latent spatio-temporal data correlation, complex spatio temporal mean structure, and nonparametric data distribution, it is a challenging research problem to monitor spatio-temporal processes effectively. In practice, if a spatio-temporal process has a distributional shift started at a specific time point, then the spatial locations with the shift are usually clustered in small regions. This kind of spatial feature of the shift has not been considered in the existing literature yet. In the talk, I will introduce a new method that takes into account the spatial feature of the shift in its construction. The proposed method combines the ideas of exponentially weighted moving average in the temporal domain for online process monitoring and spatial LASSO in the spatial domain for accommodating the spatial feature of a future shift. It can also accommodate the complicated spatio-temporal data structure well.



Kai Yang, PhD

Dr. Kai Yang joined the Division of Biostatistics in Fall 2021. His major research interests include spatio-temporal data analysis, medical outcome monitoring and quality control. He is particularly interested in developing statistical methodologies and computational tools for nonparametric modeling and sequential monitoring of spatio-temporal data. He is a biostatistician for several research groups at MCW including the Department of Orthopaedic Surgery, Department of Physical Medicine and Rehabilitation and Division of Surgical Oncology.

Location: WebEx | <https://mcw.webex.com/mcw/j.php?MTID=mee5cfa9697226bf66f5f5b5077b2e4ba>



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