DSS Statistics Seminar
May 6, 2022, 17:00
https://uniroma1.zoom.us/j/86881977368?pwd=SWRFcVFjMDZTa0lXZk05TE1zNm5adz09
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Bayesian Inference In High-dimensional Spatial Statistics: Conquering New Challenges

Geographic Information Systems (GIS) and related technologies such as remote sensors, satellite imaging and portable devices that are capable of collecting precise positioning information, even on portable hand-held devices, have spawned massive amounts of spatial-temporal databases. Spatial "data science" broadly refers to the use of technology, statistical methods, computational algorithms to extract knowledge and insights from spatially referenced data. Applications of spatial-temporal data science are pervasive in the natural and environmental sciences; economics; climate science; ecology; forestry; and public health. With the abundance of spatial BIG DATA problems in the sciences and engineering, GIS and spatial data science will likely occupy a central place in the data revolution engulfing us. This talk will discuss construction and implementation of scalable Gaussian processes and the importance of conjugate Bayesian models in carrying out Bayesian inference for spatially and temporally oriented massive data sets exhibiting complex dependencies in diverse applications. We will elucidate recent developments in Bayesian statistical science such as geosketching and predictive stacking that can harness high performance scientific computing methods for spatial-temporal BIG DATA analysis and emphasize how such methods can be implemented on modest computing architectures. The talk will include specific examples of Bayesian hierarchical modeling in Light Detection and Ranging (LiDAR) systems and other remote-sensed technologies; environmental sciences; and public health.

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