TEXAS A&M Institute of Data Science

Texas A&M Institute of Data Science Seminar Series

Local Gaussian Process Regression for Spatial Data

Gaussian process (GP) regression is a popular tool for analyzing spatial data; however, it does not scale well for large datasets. The computational bottleneck arises from the fact that GP-based inference entails inverting large covariance matrices. One approach to achieve computational efficiency is local GP, where the domain of data is decomposed into smaller subdomains, and as a result, we deal with a collection of smaller covariance matrices. In this talk, we discuss technical challenges in implementing local GP. Specifically, we focus on the selection of subdomains, such that the continuity of the global predictor is easily maintained. We utilize reduced-rank kernel approximation within the local GP framework to further allow for potentially large number of observations in each subdomain. We develop an upper bound for the approximation error and create subdomains such that the upper bound is minimized. Finally, we present guidelines for practitioners so they can utilize this framework to develop efficient and accurate predictive models for spatial data.

Arash Pourhabib, Ph.D.
Data Scientist at Google

Date: Friday, October 09
Time: 1:00 – 2:00 p.m. US Central Time
Zoom Meeting ID: 998 4499 3279
Passcode: 724615
Faculty host: Yu Ding, TAMIDS

Biography

Dr. Arash Pourhabib received his B.S. in Industrial Engineering from Sharif University of Technology in 2008, and his Ph.D. from the Department of Industrial and Systems Engineering at Texas A&M University in 2014. He is currently a Data Scientist at Google. In his role, he focuses on developing quantitative measurements of the quality of Google Maps data. Prior to Google, he was a Data Scientist at Walmart Labs, where he worked on developing algorithms for demand forecasting. Dr. Pourhabib is recently appointed an Associate Editor for the newly created *INFORMS Journal on Data Science*.

You can also click this link to join the seminar https://tamu.zoom.us/j/99844993279?pwd=TkJodWFVRURyMmkwakI4SWZGeVJTQT09

For more information about TAMIDS seminar series, please contact Ms. Jennifer South at jsouth@tamu.edu