



## Scalable Gaussian-Process Approximations for Big Data



Gaussian processes (GPs) are popular, flexible, and interpretable probabilistic models for functions in geospatial analysis, computer-model emulation, and machine learning. However, direct application of GPs involves dense covariance matrices and is computationally infeasible for large datasets. We consider a framework for fast GP inference based on the so-called Vecchia approximation, which implies a sparse Cholesky factor of the inverse covariance matrix. The approximation can be written in closed form and computed in parallel, and it includes many popular existing approximations as special cases. We discuss applications of the framework to noisy and non-Gaussian data, to emulation of computer experiments, and to nonparametric regression and variable selection.

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**Date:** Monday, Sept 13, 2021

**Time:** 1:50 – 2:40 p.m. US Central Time

**Zoom Meeting ID:** 998 4499 3279

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**Faculty host:** Yu Ding, TAMIDS

### Biography

Dr. Matthias Katzfuss is an Associate Professor in the Department of Statistics at Texas A&M University. His research interests include spatial and spatio-temporal statistics, Gaussian processes, computational statistics for massive datasets, and data assimilation, with applications to environmental problems and satellite remote-sensing data. His research has been funded by NSF, NASA, NOAA, USDA, and the Jet Propulsion Laboratory. Dr. Katzfuss is the recipient of an NSF Career Award, a Fulbright Scholarship, and an Early Investigator Award by the ASA Section on Statistics and the Environment.

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