



Joint MUMS Program Transition - SPUQ Workshop
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SPEAKER/ABSTRACT

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“Transformation and Additivity in Gaussian Process”

Abstract:

We discuss the problem of approximating a deterministic function using Gaussian Processes (GP). The role of response transformation in GP modeling is not well understood. We argue that transformations can be used for making the deterministic function approximately additive, which can then be easily estimated using an additive GP. We call such a GP a Transformed Additive Gaussian (TAG) process. To capture possible interactions which are unaccounted for in an additive model, we propose an extension of TAG process called Transformed Approximately Additive Gaussian (TAAG) process. We develop efficient techniques for fitting a TAAG process. In fact, we show that it can be fitted to high-dimensional and big data much more efficiently than the usual GP. Furthermore, we show that the use of TAAG process leads to better estimation, interpretation, visualization, and prediction.

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