



NESS

New England Statistical Society

NEW ENGLAND STATISTICS SYMPOSIUM SINCE 1987 & NEW ENGLAND STATISTICAL SOCIETY SINCE 2017

LEARNING & EXPLOITING LOW-DIMENSIONAL STRUCTURE IN HIGH-DIMENSIONAL DATA

Dr. David Dunson
Duke University



This talk will focus on the problem of learning low-dimensional geometric structure in high-dimensional data.

We allow the lower-dimensional subspace to be non-linear. There are a variety of algorithms available for “manifold learning” and non-linear dimensionality reduction, mostly relying on locally linear approximations and not providing a likelihood-based approach for inferences. We propose a new class of simple geometric dictionaries for characterizing the subspace, along with a simple optimization algorithm and a model-based approach to inference. We provide strong theory support, in terms of tight bounds on covering numbers, showing advantages of our approach relative to local linear dictionaries. These advantages are shown to carry over to practical performance in a variety of settings. We additionally provide a Bayesian nonparametric methodology for inference, using a new class of kernels.

Thursday, November 14th, 4:00 PM
871 Commonwealth Ave., Boston, MA 02215
Room CGS 129
Refreshments Start at 3:25 PM

Department of
Mathematics & Statistics

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