



Mathematics Colloquium

Representing Data as Measures Using Product Formalisms

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Abstract

The talk will present a multi-scale product formula representation theorem for non-negative measures on spaces with binary tree structures, indicate how positive measures can be visualized by Jordan curves, and describe an applicable multi-scale noise model. Much of the talk will be spent illustrating computation, visualization and analysis of the representations of real world data. The product formula is originally due to Fefferman, Kenig and Pipher (1991). This representation result enables data sets on spaces with an ordered binary tree structure (e.g. time series windows) to be represented as sets of the product coefficient parameters appearing in the the representation theorem then fused and analyzed. Representations for data that have a theoretical and algorithmizable basis alleviate reproducibility of data analyses. The work originally was a collaboration with D. Bassu, P.W. Jones and D. Shallcross. It was originally partially supported by AFOSR Grant Agreement FA9550-10-1-0125. Currently the work is partially supported by the National Science Foundation under grant number CCF-1445755 and by DARPA SocialSim-W911NF-17-C-0098 A paper has been submitted and a draft is published on the math arXiv. <http://arxiv.org/abs/1601.02946>.

Wednesday, 4 April 2018, 4pm

Smith Hall 204

Tea and refreshments will be served at 3:45pm.