

Matching random features

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Abstract

Abstract: We can do statistical inference on simulation models by adjusting the parameters in the simulation so that the values of randomly chosen functions of the simulation output match the values of those same functions calculated on the data. Results from the "state-space reconstruction" or "geometry from a time series" literature in nonlinear dynamics indicate that just $2d + 1$ such functions will typically suffice to identify a model with a d -dimensional parameter space. Results from the "random features" literature in machine learning suggest that using random functions of the data can be an efficient replacement for using optimal functions. In this talk, I sketch some of the key results, present numerical evidence about the new method's properties, and lay out an agenda for research.

References

- [1] C. Shalizi. A Note on Simulation-Based Inference by Matching Random Features. [ArXiv: 2111.09220](https://arxiv.org/abs/2111.09220), 2021.