Tensor networks and optimal sampling in physics informed machine learning

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Many parametric PDEs have solutions that possess a high degree of regularity with respect to their parameters. Low-rank tensor formats can leverage this regularity to overcome the curse of dimensionality and achieve optimal convergence rates in a wide range of approximation spaces. A particular advantage of these formats is their highly structured nature, which enables us to control the approximation error and sample complexity bounds. In this presentation, we will explore how to take advantage of these benefits to effectively learn the solutions of parametric PDEs.

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