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Title: Universality and feature learning in two-layer neural networks

Universality is the theorist best friend, justifying the study of mathematically tractable models beyond their original and limited scope. In the context of machine learning, recent Gaussian universality results have provided useful insight in the properties of neural networks in the lazy regime, for instance illustrating how overparametrisation is not necessarily at odds with generalisation. However, it is also limiting, as it is known that in this regime overparametrised neural networks can learn as well as a polynomial kernel in the degree of the sample complexity. In this talk, I will discuss the recent progress in universality results and beyond, when feature learning kicks in and neural networks (might) outperform kernels.