

Physics & Astrophysics Colloquium

Expectation Thresholds and the Lottery Ticket Hypothesis

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4:00 PM Friday, October 21, 2022, Room 211, Witmer Hall

Abstract:

In 2019, Frankle and Carbin provided an interesting conjecture known as the lottery ticket hypothesis, which supposes that large random neural networks usually contain a ‘lucky’ sub-network that is ‘just as good’ as the larger network. That is, a typical large enough, dense, randomly initialized, feed-forward neural network can be pruned quite a great deal and this much sparser sub-network performs nearly identically to the original dense network after the weights of each are optimized in training. A stronger form of the conjecture due to Ramanujan et al. (that does away with even the necessity of training the sparse sub-network), was proven by Malach, Yehudai, et al. shortly thereafter in 2020, essentially showing that pruning allows for universal approximation in the same fashion as training. Around the same time—and in no relation to the lottery ticket hypothesis—Park and Pham proved the Kahn-Kalai conjecture: a bold claim regarding the point at which a phase transition occurs in a system, rendering some previously unlikely event likely. In this talk, we will discuss a connection between the Kahn-Kalai conjecture and the strong form of the lottery ticket hypothesis.

Refreshments at 3:30 PM in Witmer Hall, Room 215

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