Sparse Factorizations of Real Polynomials & Linear Convolutional Neural Networks

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This talk will explain that Convolutional Neural Networks without activation parametrize semialgebraic sets of real homogeneous polynomials that admit a certain space factorization. We will investigate how the geometry of these semialgebraic sets (e.g., its singularities and relative boundary) changes with the network architecture. Moreover, we will start to explore how these geometric properties affect the optimization of a loss function for given training data.

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