On the Expressive Power of Deep Architectures*

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Abstract. Deep architectures are families of functions corresponding to deep circuits. Deep Learning algorithms are based on parametrizing such circuits and tuning their parameters so as to approximately optimize some training objective. Whereas it was thought too difficult to train deep architectures, several successful algorithms have been proposed in recent years. We review some of the theoretical motivations for deep architectures, as well as some of their practical successes, and propose directions of investigations to address some of the remaining challenges.

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