

# So deep learning, so what?

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## Abstract

Deep learning (DL) is omnipresent among models applying artificial intelligence or machine learning. News coverage and research summaries are full with applications of the DL framework to problems from a wide range of application domains: from complex image recognition tasks to game playing, from deep generative models applied to generating human text to text-to-speech systems, from recognising patterns in everyday activity to building strategies in reinforcement learning setting, and the list is growing. This phenomenon resembles strongly to the explosion and the coming to prominence of the classical multilayer neural networks, dating back to the beginning of the 1980's. The earlier explosion brought a wide range of applications from image recognition to adaptive control and – more importantly – eventually lead to the development of the theory and methods that today are under the umbrella of “modern machine learning”.

In my talk I will present the algorithmic and mathematical foundation of the deep learning methods; the presentation will be strongly dependent on the already developed theory and methodology from machine learning. Whilst presenting it, I will highlight the similarities to some classical machine learning algorithms, I will look at the new challenges and possibilities raised by this new family of algorithms.

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