Talk 2: Recurrent Neural Nets and Differentiable Memory Mechanism

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Abstract

This past year, RNNs have seen a lot of attention as powerful models that are able to decode sequences from signals. The key component of such methods are the use of a recurrent neural network architecture that is trained end-to-end to optimize the probability of the output sequence given those signals. In this talk, I'll define the architecture and review some recent successes in my group on machine translation, image understanding, and beyond. On the second part of the talk, I will introduce a new paradigm — differentiable memory — that has enabled learning programs (e.g., planar Traveling Salesman Problem) using training instances via a powerful extension of RNNs with memory. This effectively turns a machine learning model into a "differentiable computer". I will conclude the talk giving a few examples (e.g., AlphaGo) on how these recent Machine Learning advances have been the main catalyst in Artificial Intelligence in the past years.

Short Bio

Oriol is a Research Scientist at Google DeepMind, working on Deep Learning.

Oriol holds a Ph.D. in EECS from University of California, Berkeley, a Master's degree from University of California, San Diego, and a double degree in Mathematics and Telecommunication Engineering from UPC, Barcelona**.**

He is a recipient of the 2011 Microsoft Research PhD Fellowship. He was an early adopter of the new deep learning wave at Berkeley, and in his thesis he focused on non-convex optimization and recurrent neural networks. At Google Brain and Google DeepMind he continues working on his areas of interest, which include artificial intelligence, with particular emphasis on machine learning, language, and vision.