

On Herding Dynamical Weights and Fractal Geometry

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Learning the parameters of a Markov Random Field is intractable. To circumvent part of this intractability, I propose to give up on the idea of trying to obtain point estimates. Inspired by the concept of "dynamical synapses", a dynamical system is introduced that generates sequences of pseudo-samples that are guaranteed to satisfy the moment constraints of the associated maximum likelihood problem. This dynamical system is deterministic, yet non-periodic with Lyapunov exponents all equal to one, and its attractor set has fractal properties. I will discuss how to leverage these ideas for classification and estimation and show experimental results for fully observed and restricted Boltzmann machines.