

Hopfield networks

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A Hopfield network is a form of recurrent artificial neural network popularized by John Hopfield in 1982. Hopfield nets serve as content-addressable memory systems with binary threshold nodes. They are guaranteed to converge to a local minimum, but convergence to a false pattern (wrong local minimum) rather than the stored pattern (expected local minimum) can occur. Hopfield networks also provide a model for understanding human memory.

In this project, we will study [1] which designs simple binary Hopfield networks that have asymptotically vanishing error rates at the best-known information rate.

References

- [1] Ila Fiete, David J. Schwab, Ngoc M. Tran. A binary Hopfield network with $1/\log(n)$ information rate and applications to grid cell decoding.