

水库计算

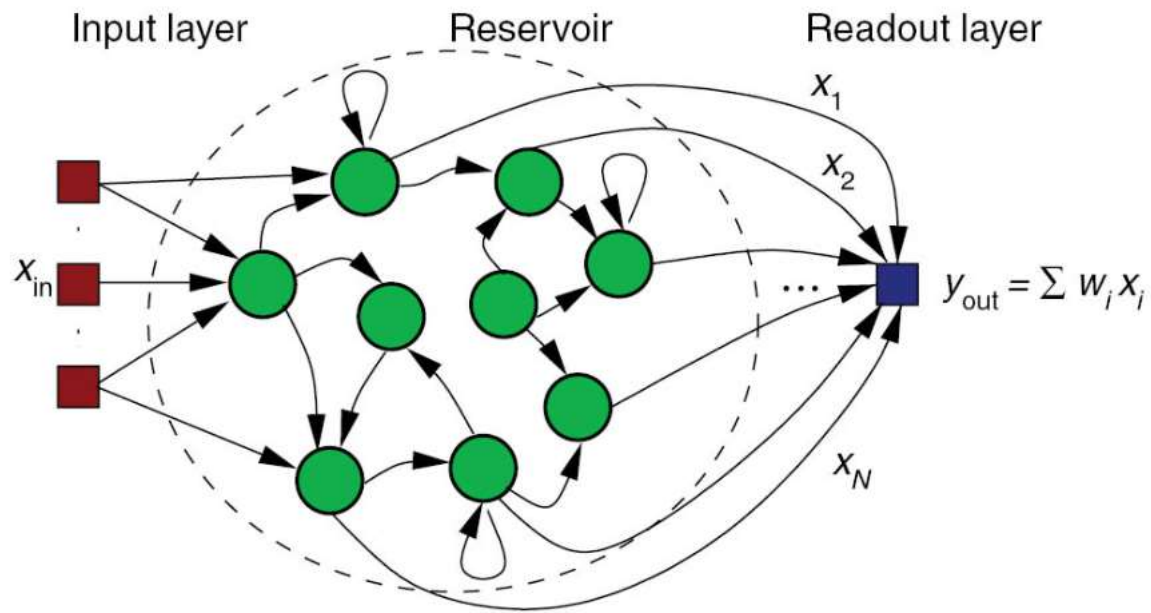
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2019.05.18

- ANN/CNNs: data flows in a single direction
- RNN: internal feedback paths exist, promise in processing time series, more challenging to train (more complex algorithms and convergence stability)
- Schiller and Steil (2005) showed that in traditional training methods for RNNs, where all weights (not only the output weights) are adapted, the dominant changes are in the output weights.

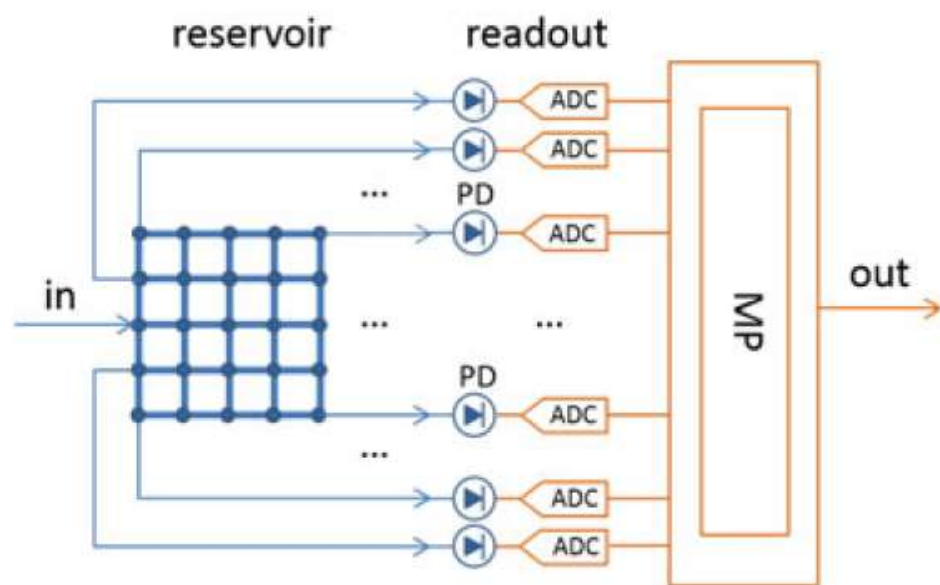
Reservoir Computing

- reservoir computing: (1) Echo state networks; (2) Liquid state networks
- The main idea is (i) to drive a random, large, fixed recurrent neural network with the input signal, thereby inducing in each neuron within this “reservoir” network a nonlinear response signal, and (ii) combine a desired output signal by a trainable linear combination of all of these response signals.

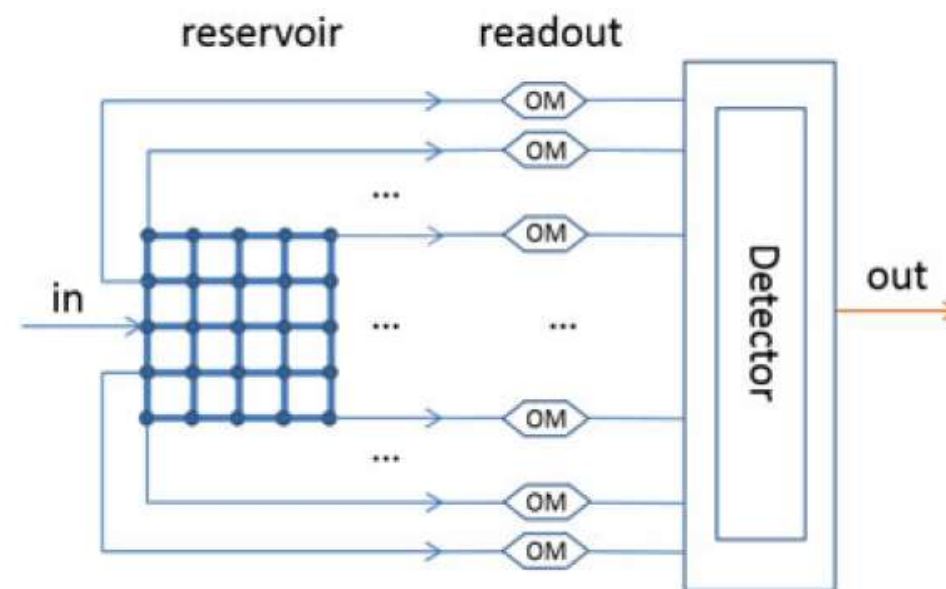


Model

The recurrent part of the network remains hidden and is not trained. This allows much more efficient training to take place at the expense of some computational flexibility.



目前使用的结构



设想的结构