Reservoir Computing

Input

The input is the data you have collected that you want to try and predict by feeding it into a reservoir computer. This is often a 1-row collection of numbers

The I/R coupler "couples" the input to the reservoir - allowing the reservoir to make credible predictions based on the input data

Reservoir

The reservoir is a collection of randomly connected nodes. This reservoir stores data across the nodes to be read. This random connection between nodes allows for a better ability to predict dynamic data, since you can form loops of nodes that can remember past states of the reservoir

The R/O coupler connects the reservoir and output, reading the reservoir to make an output of predictions of the same dimensions as the input

Output

The output is the product of the coupling reading the reservoir. The output depends on the current state of the reservoir

I/R

R/O
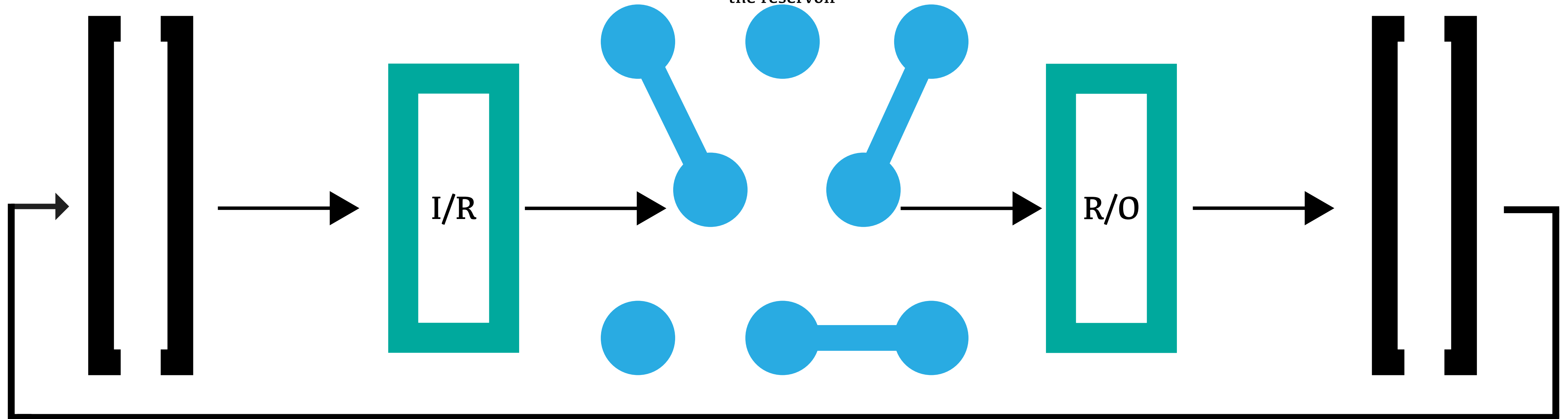
When you have finished training the reservoir on the data you want, you can have it start to predict data. This is done by feeding in the outputs from the reservoir in place of input data that you have already. A reservoir computer is interesting in that it appears to be able to predict highly dynamic systems better than other current methods of machine learning

We want to make these predictions so that we can build predictive models for any seemingly chaotic system