The Structure of an RNN

Recurrent Neural Network

RNNs are a type of neural network that process sequential data by maintaining an internal state. This internal state allows RNNs to retain and update information from previous inputs, enabling them to make predictions based on the entire sequence.

Internal Feedback Loop

The key component of an RNN is its internal feedback loop. This loop allows the network to pass information from one time step to the next, effectively creating a 'memory' of past inputs that can be used to inform future outputs.

Maintaining Internal State

At each time step, the RNN takes the current input and the previous hidden state as inputs. The network then produces a new hidden state, which is passed back into the network for the next time step. This continuous feedback loop enables the RNN to maintain and update its internal state.

Updating the State

The hidden state of an RNN is continuously updated as new inputs are processed. This allows the network to learn and retain information about the entire sequence, rather than just the current input. This is crucial for tasks like language modeling, where context from previous words is important for predicting the next word.