

Question : You have a pet dog whose mood is heavily dependent on the current and past few day's weather. You've collected data for the past 365 days on the weather, which you represent as a sequence as  $x_{<1>}, \dots, x_{<365>}$ . You've also collected data on your dog's mood, which you represent as a sequence as  $y_{<1>}, \dots, y_{<365>}$ . You'd like to build a model to map from  $x \rightarrow y$ . What neural network model you want to use to solve this problem? State reasons of your choosing.

Answer : The neural network model I want to use to solve this problem is LSTM.

The reasons are,

1. Long-Term Dependencies : LSTMs are designed to capture long-term dependencies in sequential data. Since my dog's mood may be influenced by weather conditions from several days ago, LSTM's ability to maintain long-term memory can be beneficial.
2. Flexibility : LSTMs are highly flexible and can be customized to match the complexity of my data.
3. Performance : In practice, LSTMs have been shown to perform well on a wide range of sequential data tasks, including time series prediction, natural language processing, and more.