

# Time Series with LSTM in Machine Learning.

## Time Series Forecasting.


Sequence of data points collected at equally spaced time intervals.

Key property:-

Temporal difference  $\rightarrow$  past values influence future values.

## why LSTM for time series?

Because of limitations in RNN or ARIMA model.

  
suffers  
from  
vanishing / exploding  
gradients.

LSTM are designed to overcome this problem of RNN.

$\rightarrow$  LSTM uses gates (input, output, forget) and a cell-state to control the flow of information. allowing model to :

- Remember important long-term patterns
- Forget irrelevant noises
- Update predictions based on new i/p.

## LSTM Architecture.

- 1) i/p gate : decides what info to store
- 2) forget gate : decides what part info to discard
- 3) o/p gate : decides what to o/p at each step
- 4) cell state : A running "memory" across the sequence.

### Workflow :

