**Anomaly detection in time series**

Different ways to implement:

* **Z- score method**
* By computing variance of the samples and find the samples which have higher values --> find the anomalies
* We take each point/record and compute the diff between consecutive points, and we will get plot which show the difference and the one with huge diff 🡪 anomaly
* Then we take the mean and standard deviation of the time series and take a cut-off and the point which goes beyond the cut-off is considered as anomaly

Cut-off = mean + std. dev \* threshold

* Seasonal trend decomposition loss
* Apply Z score on the residual component of time series
* Batch detection method – training models by increasing the data
* Fourier transform method – converting time to frequency domain 🡪 do processing over frequency 🡪 convert back to time series

**Use case:**

300 machines 🡪 detect anomalies

We have all the past data; we need to say like there is anomaly in the last hour

Approach to solve this:

* Try to detect short term anomaly so in this way long term anomaly would get detected
* So, detection was made on 1 hour 🡪 let’s take the amplitude and apply z score
* We take representative machine to deploy the models like 🡪 old – stable and unstable

🡪 New – stable and unstable