

Summer Internship Project Report

Topic

Anomaly Detection AI Service - Annotation

Submitted by

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Chapter 3

Introduction

3.1 Anomaly Detection in Time Series Data

Anomaly detection is the process of identifying the anomalies in a time series dataset. Time series dataset with anomalies leads to inconsistent results during forecasting. We will use the Isolation Forest algorithm to train a time series model. We will also plot a line chart to display the anomalies in our dataset.

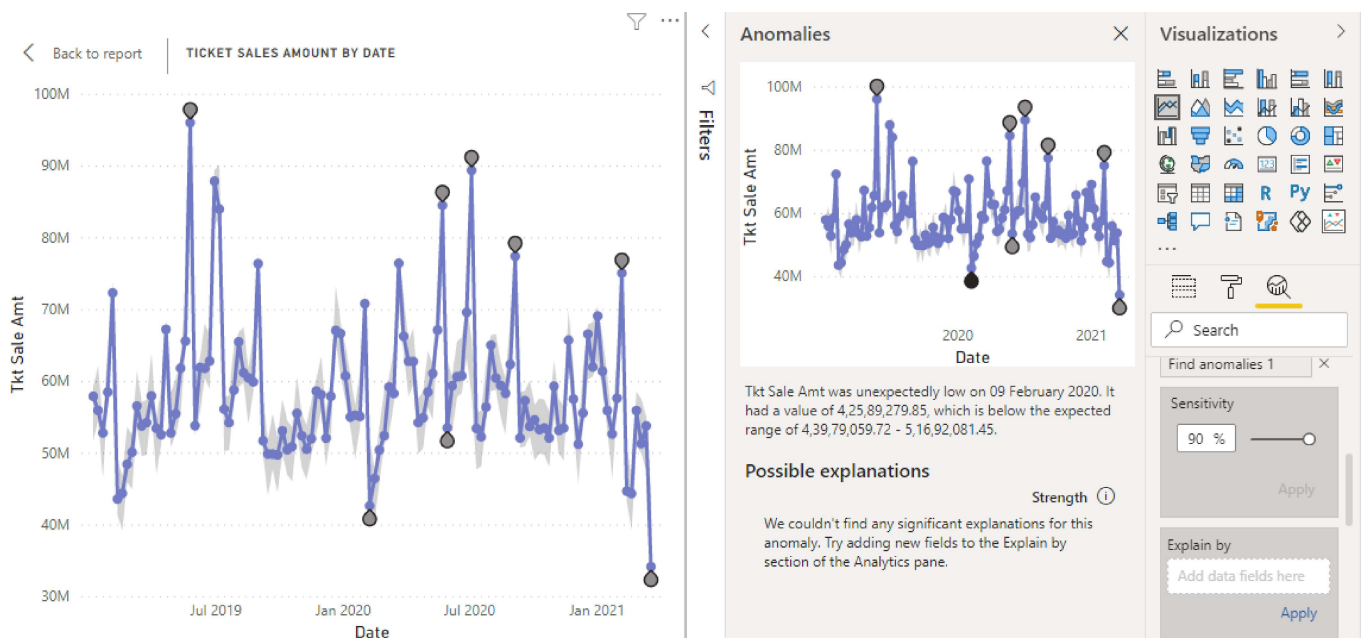


Figure 3.1: Anomaly Detection

3.3 Working of the Anomaly Detection Tool

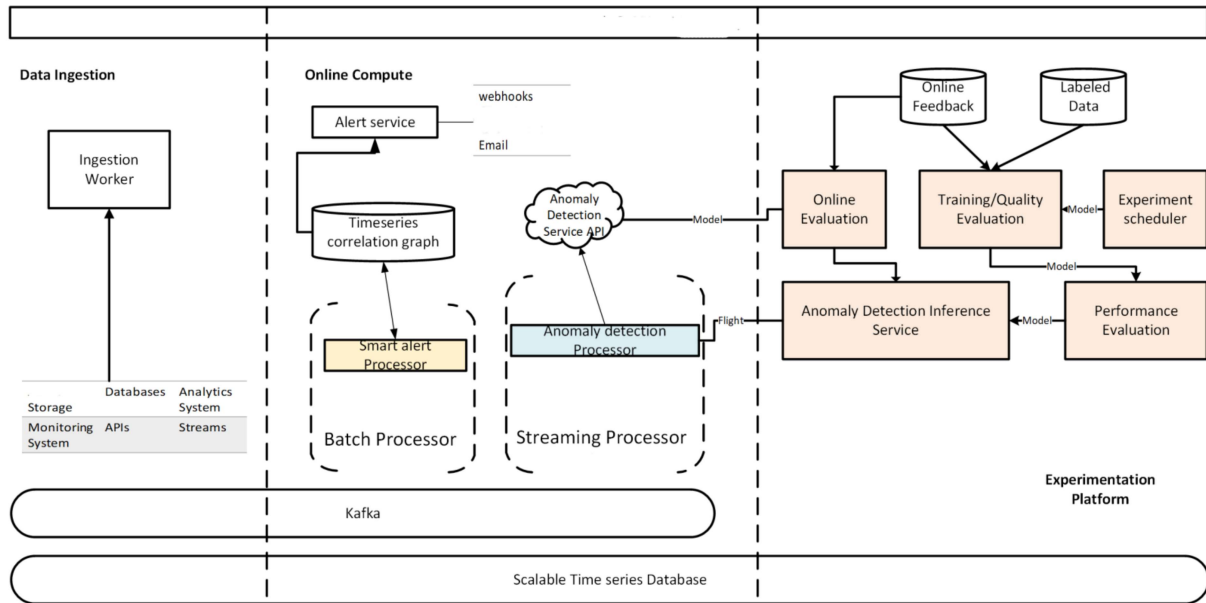


Figure 3.2: Flowchart of the AD Tool

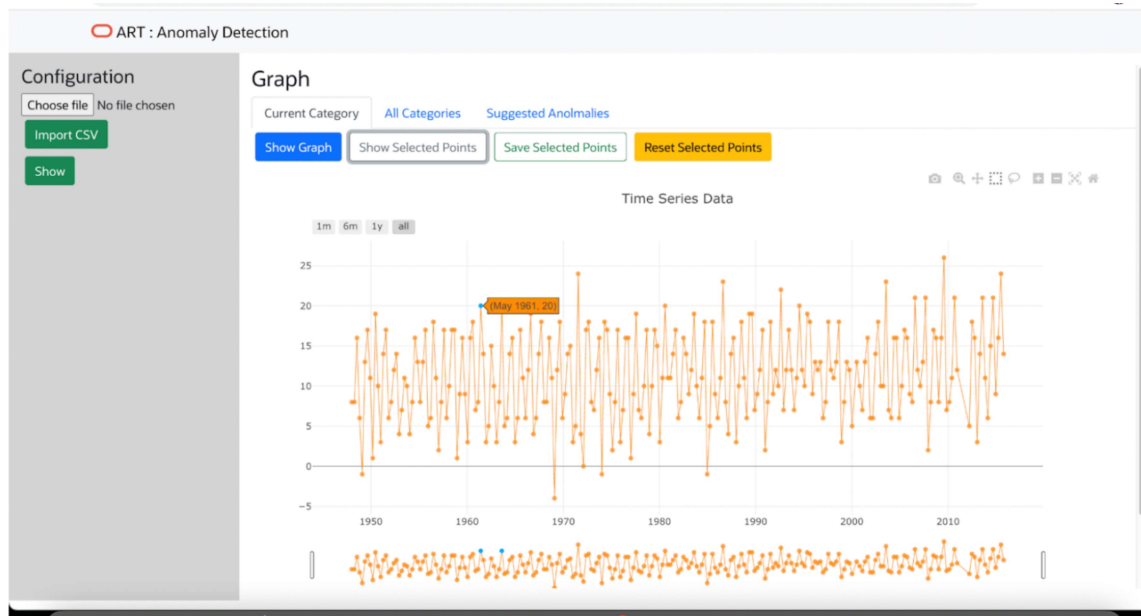


Figure 3.3: User Interface of the Application.

4.2 Algorithm/Procedure/Methodology

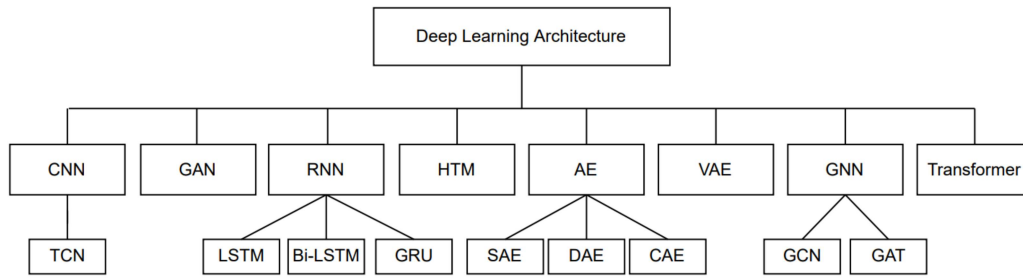
Firstly, Data set should be uploaded on the application and then the plot will be render on the UI using the *plotly.js*.

The Application Interface is build with the *React framework* and the back end with *Spring boot*.

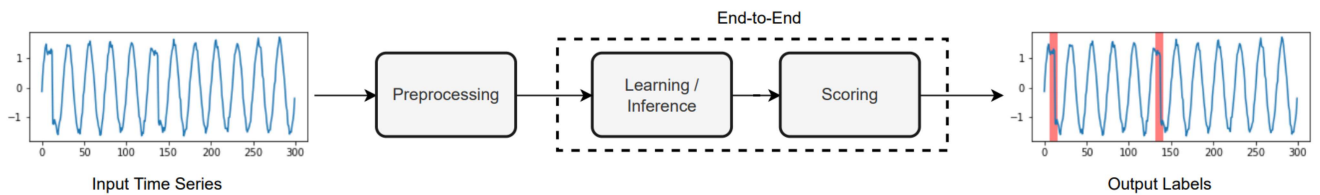
After the rendering of the data annotator can annotate the anomalies manually or using the in-built *Anomaly Detection* feature that was made during the project.

After annotation of the anomaly the points can be saved to the databases (I used *MongoDB* database) and can be reviewed later.

Techniques used for Anomaly Detection in Time Series data.



Deep Learning architecture used in time series anomaly detection



General components of deep anomaly detection models in time series

Figure 4.1: Deep Learning Models for Anomaly Detection on Time series

In RNN(Recurrent Neural Network) used LSTM model for Anomaly Detection

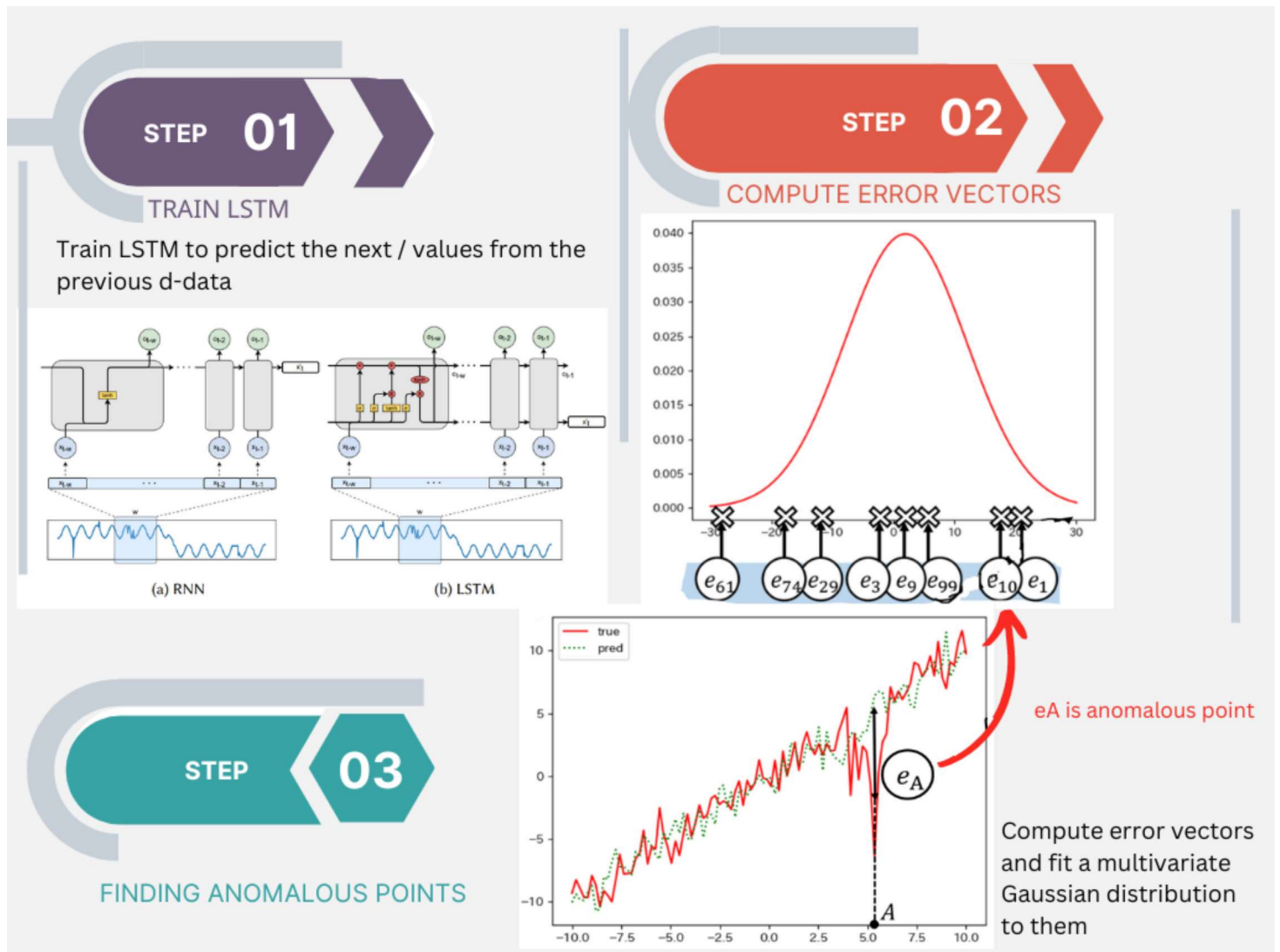


Figure 4.2: Algorithm for Anomaly Detection