
**PROJECT TOPIC: COMPARING TIME SERIES WITH
MACHINE LEARNING BASED PREDICTION APPROACHES
FOR VIOLATION MANAGEMENT IN CLOUD SLAs.**

Group No. : 6

Project Group Members:

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| 1. Nikhil Bansal (F-24/161500353) | 3. Rishabh Agarwal (F-29/161500446) |
| 2. Nikunj Gupta (F-26/161500361) | 4. Tushar Verma (F-42/161500588) |

Project Supervisor: Mr. Saurabh Singhal, Assistant Professor

Objective: We are going to propose a new framework in order to obtain the best method for predicting the QoS based on the input and output pattern, CPU, and memory. This approach ranks the different prediction approaches according to its predicting accuracy, and this determines the SLA Violations.

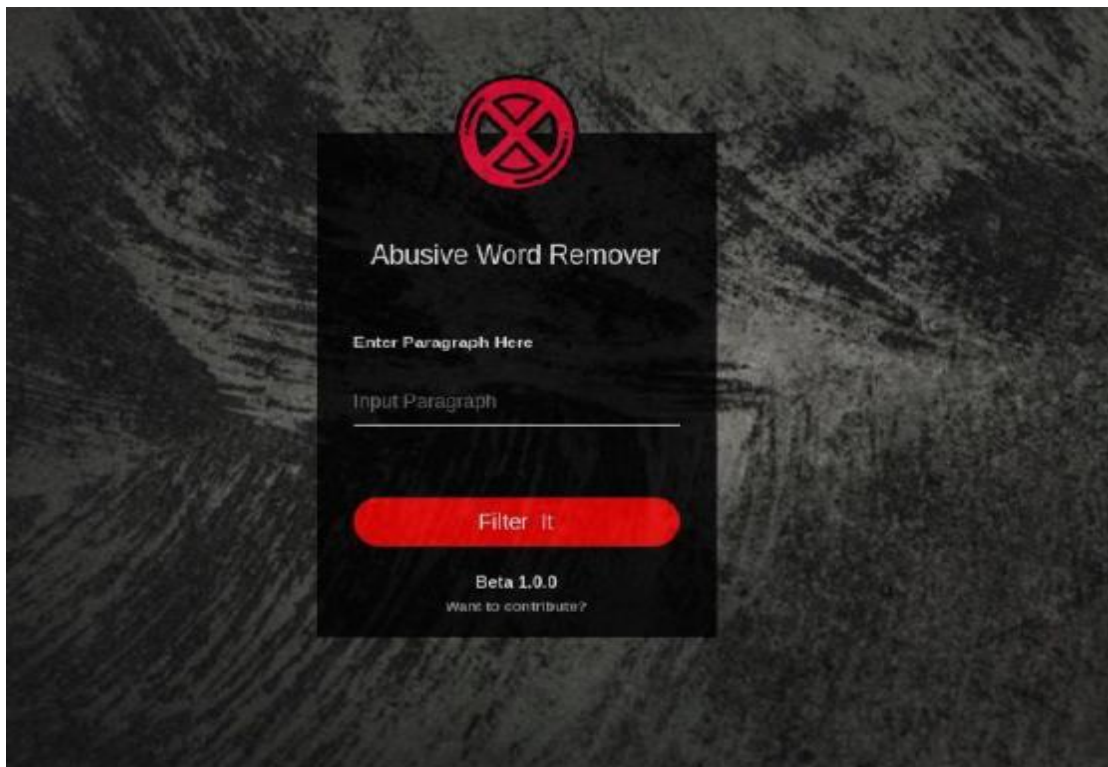
Using this method, the service providers select the method since incorrect adoption causes SLA violation and penalties. We will test and report the accuracy of the time series and machine learning based prediction approaches. Our analysis helps the cloud service provider to choose an appropriate prediction approach and further to utilize the best method depending on input data patterns to obtain an accurate prediction result and better manage their SLAs and to avoid violation penalties.

Tools required:

- ☐ **Hardware Requirements:**
 - Processor (64 bit), Quad-core and above
 - RAM : 4GB
 - No of Cores : 4
 - No. of threads : 8
 - Clock Speed : 2.13GHz
 - Instruction Set : 64 bit
- ☐ **Software Requirements:**
 - Python 3.6
 - Flask
 - Panda Library

Abstract: In cloud computing, service level agreements (SLAs) are legal agreements between a service provider and consumer that contain a list of obligations and commitments which need to be satisfied by both parties during the transaction. From a service provider's perspective, a violation of such a commitment leads to penalties in terms of money and reputation and thus has to be effectively managed. In this, we test and report the accuracy of time series and machine learning-based prediction approaches. Our analysis helps the cloud service provider to choose an appropriate prediction approach and better manage their SLAs to avoid violation penalties.

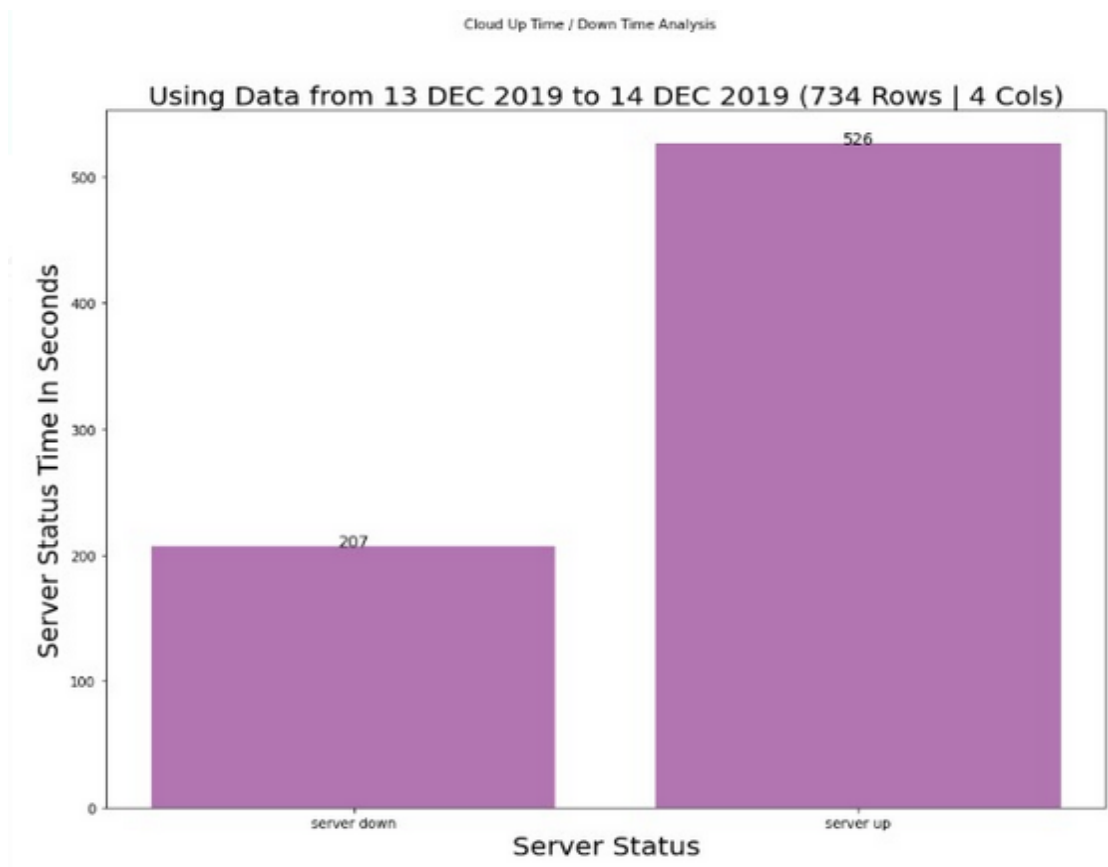
Outcome:



Website Front GUI

2019-12-13	1:10:16	server up	1
2019-12-13	1:10:16	server up	1
2019-12-13	1:10:17	server up	1
2019-12-13	1:10:18	server up	1
2019-12-13	1:10:18	server up	1
2019-12-13	1:10:18	server up	1
2019-12-13	1:10:19	server up	1
2019-12-13	1:10:20	server up	1
2019-12-13	1:10:20	server up	1
2019-12-13	1:10:21	server up	1
2019-12-13	1:10:21	server up	1
2019-12-13	1:10:22	server up	1
2019-12-13	1:10:22	server up	1
2019-12-13	1:10:23	server up	1
2019-12-13	1:10:23	server up	1
2019-12-13	1:10:23	server down	0
2019-12-13	1:10:23	server down	0
2019-12-13	1:10:23	server down	0
2019-12-13	1:10:24	server down	0

Log file



Analysis Graph

Following Data Analysis Graph is depicting the server availability and server unavailability for a given period of time (1 Day i.e. 13 Dec 2019 - 14 Dec 2019) using Pandas Library of Python and on that basis violation, determination of SLA Violation can be made and Cloud Service Provider will have to pay specified penalties to its customer(end user) as per SLA Terms and Conditions.

Final Outcome:

The project determines the SLA Violations between Cloud Service Provider and Cloud Consumer using the Pandas Library and on that basis we have calculated the penalties that cloud service provider will have to pay due to the violation of SLA terms and conditions. The more the server down time will be, the more SLA violations are and thus the Cloud Service Provider has to pay the penalties. For more precise results time series algorithm of Machine Learning can be used to calculate the penalties that service provider will pay for the violation of SLA (Service Level Agreement) terms and conditions.