Chapter 16
Automation of System Infrastructure Upgrade or Downgrade Using AI

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ABSTRACT

Building recommendation systems and automating their implementation for businesses is the key to a better business environment. It will be helpful to businesses to save on infrastructure costs, get better performance, and upgrade or downgrade systems automatically based on live processing data. The proposed solution is to calculate the upgrade or downgrade of CPU, RAM, disk type, network speed, etc., based on live data of usage automatically. Using cloud platforms or standalone systems and servers, the system infrastructure can be upgraded, downgraded, or customized based on application needs. Using the system alerts, one can get inputs on CPU, RAM, disk usage, network speed, etc. to run automation scripts using AI to achieve the proposed solution. It will be helpful to businesses to save on infrastructure costs, get better.

INTRODUCTION

Artificial intelligence (AI) refers to think and take appropriate action by machines, based on given instructions loaded in machines. Artificial intelligence helps to create new dimensions in data analytics to use the same data for different kind of inventions to be used for improvements, enhancements, etc. There are services like Virtual Machine Scale set up in the cloud platform, Kubernetes clusters, and Docker containers that can be found on standalone servers as well as cloud platforms (both hybrid and pure cloud). It allows machines to mimic the behaviour as per given instructions and make strategic decisions about what action should be taken at every given moment to reach a desired goal. Automation of system infrastructure upgrades and downgrades is workable and the advantages in various situations are considerably larger, use of artificial intelligence on application layer deployment has been limited to the big technology companies that have in-house AI experts and a more powerful computing infrastructure

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than what a small to medium-sized business can afford (Pise, Vadapalli, and Sanders, 2020). Therefore, the ability to deploy artificial intelligence on containerized applications is a tremendous leap forward for small businesses that want to harness the power of big data to gain an edge over their competition.

BACKGROUND

A monitoring system is software that monitor company's system infrastructure. A Monitoring tool, which monitor performance and usage statistics of system hardware parts like central processing unit, read access memory, random access memory, network etc., and alert corresponding teams, in the event of failure or reached given thresholds. A monitoring tool captures detailed information on each piece of hardware in the system, including usage, bandwidth, thresholds, etc., and sends that information to be stored in the database. Our topic's primary focus is on the usage logs of each hardware part of the system. In computer networking, a monitor interface connects to a common communications medium to which several hosts are attached and provides the functions needed to manage the medium, such as testing and election of monitors and providing a set of functions that are common to all attached hosts.

OBJECTIVES AND KEY ISSUES

The use of automation in system infrastructure upgrades or downgrades has ability to result in huge innovations in cost savings on infrastructure, better infrastructure, and a better environment to reduce the risk of system downtime due to extra usage.

The most significant hurdle is calculating the growth or downgrade based on the latest changes to hardware. Example: The latest processor has extra threads to process more data. The hardware change information needs to be updated in the system on time, since we are not sure the system monitoring application loads accurate details to the database (Pise, Vadapalli, and Sanders, 2022). Also, newly added services and the improvement of existing services reflect hardware performance and need to be adjusted in the database configuration. When the first piece of hardware fails, the service level agreement (SLA) is broken, and there will be penalties imposed on the business every year.

System Monitoring Application

A system monitoring application is software that helps to monitor their system infrastructure. A System monitoring application monitor system hardware parts, data traffic, available and running applications, etc., and alert corresponding teams, in the event of failure or reached given thresholds. The monitoring tool captures the detailed information of each piece of hardware in the system (usage, bandwidth, thresholds, etc.) and sends the information to be stored in a database. Our topic has a primary focus on the usage logs of each hardware component of the system (Pise, 2021). All the information gathered by the monitoring system is provided to one or more portals that provide a single interface for end users, such as network administrators and NOC personnel.