Chapter 6
Object Detection in Fog Computing Using Machine Learning Algorithms

Peyakunta Bhargavi
Sri Padmavati Mahila Visvavidyalayam, India

Singaraju Jyothi
Sri Padmavati Mahila Visvavidyalayam, India

ABSTRACT

The moment we live in today demands the convergence of the cloud computing, fog computing, machine learning, and IoT to explore new technological solutions. Fog computing is an emerging architecture intended for alleviating the network burdens at the cloud and the core network by moving resource-intensive functionalities such as computation, communication, storage, and analytics closer to the end users. Machine learning is a subfield of computer science and is a type of artificial intelligence (AI) that provides machines with the ability to learn without explicit programming. IoT has the ability to make decisions and take actions autonomously based on algorithmic sensing to acquire sensor data. These embedded capabilities will range across the entire spectrum of algorithmic approaches that is associated with machine learning. Here the authors explore how machine learning methods have been used to deploy the object detection, text detection in an image, and incorporated for better fulfillment of requirements in fog computing.

INTRODUCTION

Fog computing conjointly called fogging could be a distributed computing infrastructure during which some application services are handling at the network edge in a elegant device. Fog computing is a paradigm which monitors the data and helps in detecting an unauthorized access. According to Cisco, the spacious geological involve the Fog computing, and it is well suitable for real time analytics and big data. Fog computing involve an intense geographical allocation of network and provide a trait of site access. With this any unauthorized activity within the cloud network will be detected. To get the advantage of this method a user ought to get registered with the fog. Once the user is prepared to filling up the sign up form he can get the message or email that he's able to take the services from fog computing. A learn by IDC estimates that by 2020, 10 percent of the world's information will be formed by edge devices. This will additional drive the necessity for a lot of economical fog computing solutions that give low latency and holistic intelligence at the same time.

Machine learning could be a branch of artificial intelligence that aims at enabling machines to perform their jobs skillfully by exploitation intelligent software system. Machine Learning is a natural outgrowth of the intersection of Computer Science and Statistics. The statistical learning methods constitute the backbone of intelligent software that is used to develop machine intelligence. Because machine learning algorithms need information to find out, the discipline must have connection with the discipline of database. Similarly, there are familiar terms such as Knowledge Discovery from Data (KDD), data mining, and pattern recognition. Machine learning algorithms are helpful in bridging this gap of understanding. The goal of learning is to construct a model that takes the input and produces the specified result. The models are often thought-about as an approximation of the method we would like machines to mimic. In such a scenario, it's doable that we have a tendency to acquire errors for a few input, however most of the time, the model provides correct answers. Hence, a new calculation of performance (moreover recital of metrics of speed and memory usage) of a machine learning algorithm will be the correctness of result.

FOG COMPUTING

Fog computing is that the thought of a network stuff that stretches from the outer edges of wherever information is made to wherever it'll eventually be hold on, whether or not that is in the cloud or in a customer's data center.

Fog is another layer of a distributed network location and is closely related to cloud computing and also the internet of things (IoT). Public infrastructure as a

16 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/object-detection-in-fog-computing-using-machine-learning-algorithms/236443

Related Content

Fog Computing Architecture, Applications and Security Issues
Rahul Newareand Urmila Shrawankar (2020). *International Journal of Fog Computing (pp. 75-105).*
www.irma-international.org/article/fog-computing-architecture-applications-and-security-issues/245711

Anomaly Detection in Cloud Environments
Angelos K. Marnerides (2015). *Resource Management of Mobile Cloud Computing Networks and Environments (pp. 43-67).*
www.irma-international.org/chapter/anomaly-detection-in-cloud-environments/125960

Evaluating the Performance of Monolithic and Microservices Architectures in an Edge Computing Environment
Nitin Rathoreand Anand Rajavat (2022). *International Journal of Fog Computing (pp. 1-18).*
www.irma-international.org/article/evaluating-the-performance-of-monolithic-and-microservices-architectures-in-an-edge-computing-environment/309139

Novel Taxonomy to Select Fog Products and Challenges Faced in Fog Environments
Akashdeep Bhardwaj (2018). *International Journal of Fog Computing (pp. 35-49).*
www.irma-international.org/article/novel-taxonomy-to-select-fog-products-and-challenges-faced-in-fog-environments/198411

Cloud Computing Technologies
Shweta Kaushikand Charu Gandhi (2021). *Cloud-Based Big Data Analytics in Vehicular Ad-Hoc Networks (pp. 233-253).*
www.irma-international.org/chapter/cloud-computing-technologies/262050