

Cloud-Based IoT Analytics and Machine Learning

by Satya K Vivek | April 3, 2023



Among the IT developments that have made it to the forefront in recent times, machine learning and IoT certainly stand out. As with most such technologies, integrating the two can help develop powerful IoT solutions and tackle complex challenges. More specifically speaking, machine learning can be leveraged in cloud based IoT analytics.

3 reasons why cloud-based analytics and machine learning are relevant for IoT solutions.

Here's how machine learning and cloud-based analytics helps develop and implement successful IoT solutions.

Real-time insights

Cloud-based analytics provide IoT solutions with real-time or near real-time insights by processing large volumes of data. These insights drive data -driven decision culture that eventually help driving and optimizing various business transactions and operations. Machine learning has a role to play too – analyzing the trends and patterns leading to identification of anomalies and events.

Predictive analytics

In today's competitive business paradigm, it's all about being proactive and staying ahead of the curve. One of the key applications of machine learning is predictive analytics, i.e., using the gathered data to predict future trends or events.

Automated decision-making

Lastly, machine learning and cloud based IoT analytics make a powerful combination for automated decision-making. This can help streamline and simplify the workflow of the IoT solution for users and hence boosts productivity and efficiency.

Essential cloud-based analytics and machine learning tools to use in IoT solutions.

The wide range of tools for machine learning and cloud-based analytics can honestly be a little overwhelming to choose from. However, here are 3 essential ones that you must implement in your IoT solutions.

Data lakes

The term is self-explanatory, but to put it simply, data lakes are central repositories designed to store both structured and unstructured data at varying scales. Organizations that have implemented data lakes have significantly outperformed by 9% in organic revenue growth in comparison with similar companies.

Streaming analytics

Contrary to the traditional method of processing data in batches, streaming analytics involves the continuous processing and analysis of data records. By implementing streaming analytics, you could prevent fraud, better plan maintenance of your critical assets, and get a comprehensive understanding of your customers.

Machine learning platforms

You would need relevant tools to develop and deploy machine-learning in an IoT solution. Thankfully, there are comprehensive machine learning platforms designed exactly for these purposes. These platforms speed up data processing, automate data workflows, and automate related functions.

Best cloud analytics and machine learning practices for IoT solutions

Here are some of the best practices for the integration of machine learning and cloud analytics in an IoT solution.

Data preprocessing

Process the raw data and prepare it for another processing module or procedure. Though it was important mostly in data mining, data preprocessing has now become crucial in machine learning too.

Model selection

Though you may have several machine learning models available for a training dataset, you can only pick one. Choose the model best suited for the purpose, and make sure it meets the stakeholders' requirements and constraints.



Deployment strategies

Different ML deployment strategies like Big Bang, blue/green, rolling updates, A/B testing, shadow, and canary deployment all have their respective applications. You'd have to choose the right deployment strategy based on your goal and requirements.

Integrating cloud-based analytics is worthwhile.

Integrating cloud based IoT analytics with machine learning might be complicated, but it's most beneficial. An IoT solution powered by cloud analytics and machine learning boasts limitless possibilities and can prove to be a massive success.

