**Cloud Metrics Checker and Optimization Tool**

**The Problem**

Managing resources in the cloud can be a difficult task for businesses. Virtual machines such as EC2 instances, are often run without proper monitoring of its metrics. Some instances may be underused wasting money, while others may be overworked causing performance issues. Without a proper way to check the usage of each Virtual machine, businesses could end up spending more money than necessary or experience system downtime.

**The Scenario**

My Goal is to develop a script which would make cloud infrastructure more efficient by monitoring and optimizing resource usage through AWS CloudWatch. It will look at the metrics like CPU usage and analyze its patterns to give the user recommendations. For example, if a machine is hardly used, the script might suggest terminating the instance. If a machine is overworked, then it might suggest upgrading it to distribute the workload. This script can help businesses save money and keep their systems running smoothly.

**Tools and Libraries**

* **AWS CloudWatch:** To collect resource usage data.
* **IAM:** To give script access to CloudWatch
* **Python Libraries:**
  + **boto3:** To connect to AWS and getting data.
  + **pandas:** To analyzing usage data.
  + **matplotlib:** For creating graphs.

**Challenges and Difficulty Level**

The project presented some difficulty. Tasks like connecting to AWS services and fetching data using boto3 were relatively straightforward, since they rely on standard APIs. However, when it came to analyzing the data and provide accurate recommendations, that was slightly complicated. Also, ensuring the IAM User having the correct permissions and allowing a connection to the CloudWatch was a learning curve.

**Learning Goal and Value**

This project helped me learn how to write a Python script to automate Cloud tasks. It was interesting to see how a script can interact and fetch data from the AWS platform.