CSCI 5410 – Assignment 5

Assignment 5 – Part A

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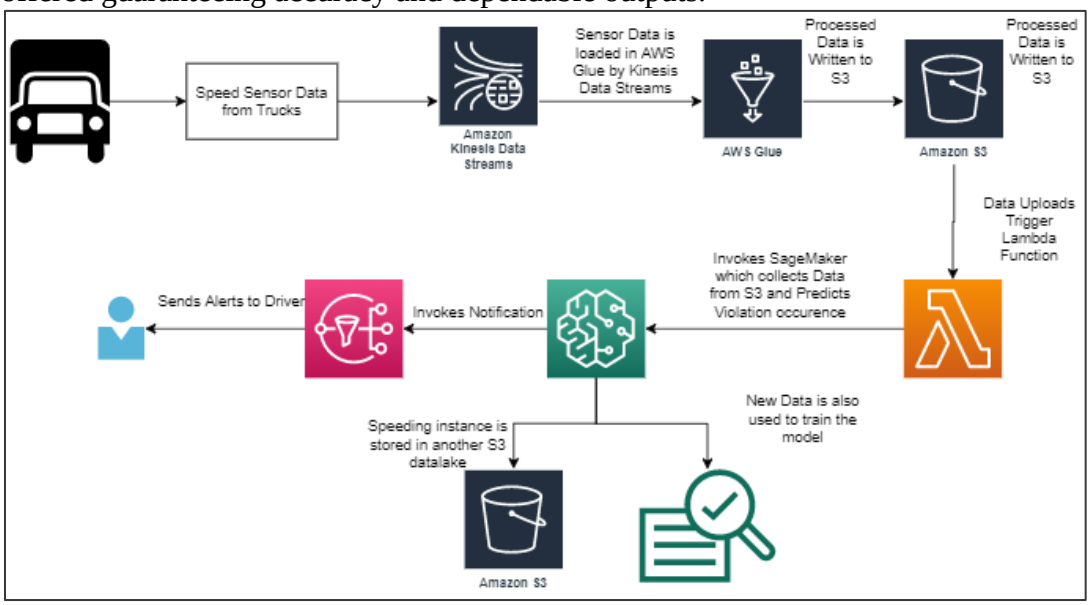
Amazon Web Services (AWS) - Kinesis

Real-time, streaming data can be easily gathered, processed, and analyzed with Amazon Kinesis, allowing organizations to swiftly respond to new information and get reliably accurate insights. With the flexibility to adopt the tools that best match the platform's needs, Amazon Kinesis provides essential features for processing data streams at any magnitude affordably [1]. Organizations can consume real-time data for Artificial Intelligence development, analytics, and other applications with Amazon Kinesis, incorporating multimedia, application logs, website clickstreams, and IoT telemetry data.

Kinesis Data Streams may be used for quick and continuous data ingest and aggregation. Data from social media, market data feeds, IT infrastructure logs, application logs, and online clickstreams are a few examples of different types of data that can be used. The processing is often light-trivial in nature since data ingestion and processing are in real-time processes [2]. Accelerated log and data feed intake and processing, Real-time metrics, reporting, and data analytics are some of the typical use case scenarios for Kinesis Data Streams. Instead of waiting for batches of data to arrive, data-processing applications, for instance, may work on statistics and reports for data and software logs as the data is flowing in. This blends the usefulness of real-time data with the strength of parallel computing.

Amazon Kinesis Use Case

Let us consider the use case where a logistics organization which uses trucks to transport shipments desires to deploy an application on the Cloud and stream sensor data. Clearly, this is an example of streaming data of a huge volume, in real-time. Let us suppose the organization desires to perform analytics on the sensor data to determine speed events and violation prediction, that is using sensor data to predict possible traffic rule violations based upon a vehicle's current speed. The organization will use AWS Kinesis Data Firehose to unceasingly load streaming data into Amazon Web Services (AWS) data lakes. This data will be processed by functions through AWS Glue. Next the data will be placed in S3 buckets which in turn will trigger a Machine Learning model in SageMaker to determine if the current speed of a vehicle will result in a violation. If yes, drivers will be alerted with a warning, with the help of Amazon Simple Notification Service (SNS) to reduce their speed. This inference will be stored in another S3 bucket to further train and improve the accuracy of the model. In addition, Artificial Intelligence developers can conjointly update Machine Learning models in AWS SageMaker as new data becomes offered guaranteeing accuracy and dependable outputs.



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Citations

[1] "Amazon Kinesis," *Amazon Web Services, Inc.*, Feb. 07, 2019. https://aws.amazon.com/kinesis/ (accessed Jul. 20, 2022).

[2] "What Is Amazon Kinesis Data Streams? - Amazon Kinesis Data Streams," *docs.aws.amazon.com*, Sep. 15, 2017. https://docs.aws.amazon.com/streams/latest/dev/introduction.html (accessed Jul. 20, 2022).