**AWS ML - New Services**

* **Monitron**
* **Purpose-** Amazon Monitron is an end-to-end system that detects abnormal behavior in industrial machinery, so you can implement predictive maintenance and reduce unplanned downtime. Amazon Monitron is designed for factory equipment and safe indoor operating environments.
* **Working-** Once the sensor is installed and connected to equipment, Amazon Monitron captures vibration and temperature data from your equipment via wireless sensors, which can be set up in minutes using the Amazon Monitron mobile app with no ML experience or development work required. The Amazon Monitron gateway device securely transfers data to AWS, and the service automatically analyzes your data for abnormal machine conditions using machine learning.
* **Benefit-** You can start monitoring equipment health in minutes through the Amazon Monitron mobile and web apps, and enable predictive maintenance with the same technology used to monitor equipment in Amazon Fulfillment Centers. Any content processed by Amazon Monitron is encrypted and stored at rest in the AWS region where you are using the service.
* **Panorama**
* **Purpose-**

The AWS Panorama Appliance is a hardware device you can install on your network. Connect Panorama to existing cameras within your facility to run multiple computer vision models on concurrent video streams. Once your CV applications are deployed on the device, you can access real-time predictions even in places where network connectivity can be slow or limited such as remote factory locations.

* **Need-** While customers can take advantage of AWS services and use them as building blocks to develop a custom edge computer vision deployment solution, AWS Panorama offers an integrated edge-to-cloud workflow making it easy to build, manage, and deploy computer vision solutions. AWS Panorama removes the heavy lifting from each step of the computer vision process by integrating with familiar AWS services such as AWS SageMaker so you can build and train your CV models easily.
* **Working-** The AWS Panorama Appliance, when connected to a network, can connect to and process video from networked cameras. You can bring your own CV models, such as those built with Amazon SageMaker or use pre-built models from AWS or third-party application providers, and create CV applications by combining the CV models and business logic using the AWS Panorama management console.

You can then deploy these applications to the AWS Panorama Appliance and run simultaneous CV applications per video stream, turning your existing onsite cameras into powerful edge CV devices and generate highly accurate predictions within milliseconds.

* **Benefit-** Panorama applications are there for popular use cases such as object detection, semantic segmentation, and image classification. The AWS Panorama Appliance enables you to run your CV models directly on the device. The application results can be integrated with on-premises line of business applications for automation and can be routed to services such as Amazon Simple Storage Service (S3), Amazon Kinesis Video Streams, or Amazon CloudWatch for deriving actionable insights to drive process improvements.
* **DeepComposer**
* **Purpose-** AWS DeepComposer is the world’s first musical keyboard powered by machine learning to enable developers of all skill levels to learn Generative AI while creating original music outputs.
* **Working-** DeepComposer consists of a USB keyboard that connects to the developer’s computer, and the DeepComposer service, accessed through the AWS Management Console. DeepComposer includes tutorials, sample code, and training data that can be used to start building generative models.

Generative AI allows computers to learn the underlying pattern of a given problem and use this knowledge to generate new content from input (such as image, music, and text).

* **Benefit-** DeepComposer comes with pre-trained genre models to help you get started with Generative AI technologies. You can bring your own music dataset in MIDI format and create your own custom models in SageMaker. You can run your custom models within DeepComposer console where you’ll be able to optimize for hyperparameters and select your dataset.

You can save and export your musical creations in MIDI for additional processing using external tools, or in wav or mp3 format for sharing. You can download your input melody from the music studio in AWS DeepComposer console.

* **HealthLake**
* **Purpose-** Amazon Healthlake is a HIPAA-eligible service enabling healthcare and life sciences companies to securely store and transform their data into a consistent and queryable fashion, and further analyze this data in the cloud, at petabyte scale.
* **Need-** Using the HealthLake APIs, health organizations can easily copy health data, such as imaging medical reports or patient notes, from on-premises systems to a secure data lake in the cloud.
* **Working-** HealthLake uses machine learning (ML) models to automatically understand and extract meaningful medical information from the raw data, such as medications, procedures, and diagnoses. HealthLake organizes and indexes information and stores it in the Fast Healthcare Interoperability Resources (FHIR) industry standard format to provide a complete view of each patient's medical history.

Fast Healthcare Interoperability Resources (FHIR) is a standard for exchanging healthcare information electronically. The standard was created by the Health Level Seven International or HL7 healthcare standards organization.

* **DevOPS Guru**
* **Purpose-** It enables developers and DevOps engineers to automatically identify, diagnose and remediate performance and operation issues that traditionally have been hard to identify and resolve.
* **Need-** The service does not place any expectations on you learn any ML skills or create ML models as this is all taken care of by the service. It is designed to take the burden of setting alarms and thresholds away from operators as well as removing the need to create an excessive number of alarms.
* **Working-** DevOps guru pre-trained background models learn the operational patterns of your application and offer guidance in line with known resource usage patterns.

DevOps guru ingests data from CloudWatch and monitors against the parameters set by the ML models. When a potential issue is detected, DevOps guru gathers log data from CloudTrail from the resources related to the trigger issue and builds an insight containing the possible ways to resolve the issue.

* **Benefit-** The benefit of this approach is that the operator or engineer only has all the information collated into the insight instead of having to investigate multiple alarms and then analyzing the alarm and going to the logs for each associated resource to establish what the problem could be. The insight will already have suggestions on how to resolve the potential problems identified.