Intro to Cloud Computing + ML Quiz

December 10, 2020

1 Intro to Cloud Computing + ML Quiz

Note: Please do not use resources on the Internet while taking this quiz so you can better assess your knowledge and understanding of this topic. Each question is worth 2 points, for a total of 21 problems and 42 points. Please complete each part after going through the relevant section on the slideshow. Good luck!

2 Part One: Background

2.1 Q1.

Which of the following is NOT an advantage that running a machine learning workflow on the cloud offers?

1. Reduced cost of training

2. Increased availability

3. Better compatibility

4. Ease of use

2.2 Q2.

What is the overall goal of cloud computing? (Free Response)

2.3 Q3.

How does cloud service differentiate from traditional hosting? (Select all that apply)

1. Sold on demand (typically by the minute or hour)

2. User can have as much or as little of the service as they want at any given time

3. Service is fully managed by the provider (User only needs a PC and Internet access)

2.4 Q4.

Which of the following is an example of a cloud-related security risk?

1. Losing network connectivity

2. Not having enough software licenses

3. Not knowing what the cloud provider will charge

4. Storing customer data at a provider

2.5   Q5.

Why is the pay-as-you-go pricing structure so common amongst cloud computing providers? (Free Response)

3   Part Two: Amazon Web Services

3.1   Q1.

A Machine Learning team has several large CSV datasets in Amazon S3. Historically, models built with the Amazon SageMaker Linear Learner algorithm have taken hours to train on similar-sized datasets. The team's leaders need to accelerate the training process.

1. Use Amazon SageMaker Pipe mode.

2. Use Amazon Machine Learning to train the models.

3. Use Amazon Kinesis to stream the data to Amazon SageMaker.

4. Use AWS Glue to transform the CSV dataset to the JSON format

3.2   Q2.

Which of the following is NOT a good use case for using Amazon Rekognition?

1. Scene Detection

2. Object Detection

3. Text in image detection

4. Fraud Detection

3.3   Q3.

A company wants to use machine learning to detect the incoming text in images to create a searchable video library. They want to extract metadata from the images and index the metadata that can be searched by users easily with minimum management of the proposed pipeline. What should you as an architect recommend their solution be?

1. Use Amazon Rekognition to detect text in an images and use Amazon Elasticsearch Service to index the files

2. Use Amazon Rekognition to to detect text in an images and use the DetectedText() API to search the index

3. Use Amazon EMR to create a CNN model to detect text in an image and use Amazon DynamoDB to index the files

4. Use Amazon SageMaker to create a CNN model to detect text in an image and use Amazon DynamoDB to index the files

3.4 Q4.

You need to have deep learning expertise to create image metadata and recognize faces using Amazon SageMaker?

1. True

2. False

3.5 Q5.

A credit card company wants to determine the sentiment of customers using the support tickets to classify whether the issue is urgent or not and in the process rate the service agents based on the customer feedback. What AWS service is best suited to create this solution?

1. Amazon Comprehend

2. Amazon Personalize

3. Amazon Textract

4. Amazon Rekognition

3.6 Q6.

A news organization wants to have transcription of their prime time news for video on-demand service. They are looking for a solution that provides transcription of their news in various languages with minimum management. What AWS services can they use to to create this solution?

1. Use Amazon Lex to transcribe and translate the videos

2. Use Amazon Transcribe to transcribe and Amazon Translate to translate the videos

3. Use Amazon Transcribe to transcribe and Amazon Polly translate the videos

4. Use Amazon Translate to transcribe and translate the videos

3.7 Q7.

What is the best way to describe the service Amazon SageMaker?

1. Amazon SageMaker is a framework that helps customers create neural network algorithms and deploy the models

2. Amazon SageMaker is an API blackbox service that helps customers create their machine learning algorithms

3. Amazon SageMaker is a service that creates, test and validates and deploys your models using Pytorch

4. Amazon SageMaker is a fully managed platform service that helps customers through each stage of their machine learning pipeline from creating datasets, training, optimizing and deploying their machine

3.8 Q8.

A manufacturing company trained their CNN models using Amazon SageMaker python SDK. What function should they use to create an automatic hyperparameter tuning job in Amazon SageMaker SDK?

1. `HyperparameterTuningJob()`

2. `HyperparameterTuner()`

3. `CreateHyperParameterTuningJob()`

4. `HyperparameterTuning()`

3.9 Q9.

A Machine Learning Engineer is preparing a data frame for a supervised learning task with the Amazon SageMaker Linear Learner algorithm. The ML Engineer notices the target label classes are highly imbalanced and multiple feature columns contain missing values. The proportion of missing values across the entire data frame is less than 5%.

What should the ML Engineer do to minimize bias due to missing values?

1. Replace each missing value by the mean or median across non-missing values in same row.

2. Delete observations that contain missing values because these represent less than 5% of the data.

3. Replace each missing value by the mean or median across non-missing values in the same column.

4. For each feature, approximate the missing values using supervised learning based on other features.

3.10 Q10.

A company is setting up a system to manage all of the datasets it stores in Amazon S3. The company would like to automate running transformation jobs on the data and maintaining a catalog of the metadata concerning the datasets. The solution should require the least amount of setup and maintenance.

Which solution will allow the company to achieve its goals? 1. Create an Amazon EMR cluster with Apache Hive installed. Then, create a Hive metastore and a script to run transformation jobs on a schedule.

2. Create an AWS Glue crawler to populate the AWS Glue Data Catalog. Then, author an AWS Glue ETL job, and set up a schedule for data transformation jobs.

3. Create an Amazon EMR cluster with Apache Spark installed. Then, create an Apache Hive metastore and a script to run transformation jobs on a schedule.

4. Create an AWS Data Pipeline that transforms the data. Then, create an Apache Hive metastore and a script to run transformation jobs on a schedule.

4 Part Three: Google Cloud Platform

4.1 Q1.

List three key features of Google's Compute Engine service? (Free Response)

4.2 Q2.

You're writing a Python application and want your application to run in a sandboxed managed environment with the ability to scale up in seconds to account for huge spikes in demand.

Which service should you host your application on?

1. Compute Engine
2. App Engine Flexible Environment
3. Kubernetes Engine
4. App Engine Standard Environment

4.3 Q3.

What are some reasons we would use Keras? (Select all that apply)

1. Allows for easy and fast prototyping (through total modularity, minimalism, and extensibility).
2. Supports both convolutional networks and recurrent networks, as well as combinations of the two.
3. Supports arbitrary connectivity schemes (including multi-input and multi-output training).
4. Runs seamlessly on CPU and GPU.

4.4 Q4.

Explain what a Sequential model is? (Free Response)

4.5 Q5.

Write the code you would use to load a dataset using Keras; include any necessary imports. (Free Response)

4.6 Q6.

All Google Cloud Platform resources are associated with a project. (True Or False)