

AWS-Certified-Machine-Learning-Specialty復習内容、 AWS-Certified-Machine-Learning-Specialty問題数



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>> AWS-Certified-Machine-Learning-Specialty復習内容 <<

AWS-Certified-Machine-Learning-Specialty問題数 & AWS-Certified-Machine-Learning-Specialty試験対策

多くの人々は高い難度のIT認証試験に合格するのは専門の知識が必要だと思います。それは確かにそうですが、その知識を身につけることは難しくないとといわれています。IT業界ではさらに強くなるために強い専門知識が必要です。Amazon AWS-Certified-Machine-Learning-Specialty認証試験に合格することが簡単ではなくて、Amazon AWS-Certified-Machine-Learning-Specialty証明書は君にとってはIT業界に入る一つの手づるになるかもしれません。

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Amazon MLS-C01: AWS Certified Machine Learning - Specialty試験は、Amazon Web Services (AWS) テクノロジーを使用した機械学習における個人の専門知識をテストするために設計された認定試験です。この試験は、機械学習アルゴリズムとそのAWS環境での応用に強い理解を持つプロフェッショナルを対象としています。

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Amazon AWS Certified Machine Learning - Specialty 認定 AWS-Certified-Machine-Learning-Specialty 試験問題 (Q171-Q176):

質問 # 171

A data science team is planning to build a natural language processing (NLP) application. The application's text preprocessing stage will include part-of-speech tagging and key phrase extraction. The preprocessed text will be input to a custom classification algorithm that the data science team has already written and trained using Apache MXNet.

Which solution can the team build MOST quickly to meet these requirements?

- A. Use Amazon Comprehend for the part-of-speech tagging and key phrase extraction tasks. Use Amazon SageMaker built-in Latent Dirichlet Allocation (LDA) algorithm to build the custom classifier.
- B. Use an NLP library in Amazon SageMaker for the part-of-speech tagging. Use Amazon Comprehend for the key phrase extraction. Use AWS Deep Learning Containers with Amazon SageMaker to build the custom classifier.
- C. Use Amazon Comprehend for the part-of-speech tagging and key phrase extraction tasks. Use AWS Deep Learning Containers with Amazon SageMaker to build the custom classifier.
- D. Use Amazon Comprehend for the part-of-speech tagging, key phrase extraction, and classification tasks.

正解: C

解説:

Amazon Comprehend is a natural language processing (NLP) service that can perform part-of-speech tagging and key phrase extraction tasks. AWS Deep Learning Containers are Docker images that are pre-installed with popular deep learning frameworks such as Apache MXNet. Amazon SageMaker is a fully managed service that can help build, train, and deploy machine learning models. Using Amazon Comprehend for the text preprocessing tasks and AWS Deep Learning Containers with Amazon SageMaker to build the custom classifier is the solution that can be built most quickly to meet the requirements.

References:

Amazon Comprehend
AWS Deep Learning Containers
Amazon SageMaker

質問 # 172

An aircraft engine manufacturing company is measuring 200 performance metrics in a time-series. Engineers want to detect critical manufacturing defects in near-real time during testing. All of the data needs to be stored for offline analysis.

What approach would be the MOST effective to perform near-real time defect detection?

- A. Use AWS IoT Analytics for ingestion, storage, and further analysis. Use Jupyter notebooks from within AWS IoT Analytics to carry out analysis for anomalies.
- B. Use Amazon S3 for ingestion, storage, and further analysis. Use an Amazon EMR cluster to carry out Apache Spark ML k-means clustering to determine anomalies.
- C. Use Amazon S3 for ingestion, storage, and further analysis. Use the Amazon SageMaker Random Cut Forest (RCF) algorithm to determine anomalies.
- D. Use Amazon Kinesis Data Firehose for ingestion and Amazon Kinesis Data Analytics Random Cut Forest (RCF) to perform anomaly detection. Use Kinesis Data Firehose to store data in Amazon S3 for further

正解: B

解説:

analysis.

質問 # 173

An agency collects census information within a country to determine healthcare and social program needs by province and city. The census form collects responses for approximately 500 questions from each citizen. Which combination of algorithms would provide the appropriate insights? (Select TWO)

- A. The Random Cut Forest (RCF) algorithm
- B. The factorization machines (FM) algorithm
- C. The principal component analysis (PCA) algorithm
- D. The Latent Dirichlet Allocation (LDA) algorithm
- E. The k-means algorithm

正解： C、 E

解説：

The agency wants to analyze the census data for population segmentation, which is a type of unsupervised learning problem that aims to group similar data points together based on their attributes. The agency can use a combination of algorithms that can perform dimensionality reduction and clustering on the data to achieve this goal.

Dimensionality reduction is a technique that reduces the number of features or variables in a dataset while preserving the essential information and relationships. Dimensionality reduction can help improve the efficiency and performance of clustering algorithms, as well as facilitate data visualization and interpretation.

One of the most common algorithms for dimensionality reduction is principal component analysis (PCA), which transforms the original features into a new set of orthogonal features called principal components that capture the maximum variance in the data. PCA can help reduce the noise and redundancy in the data and reveal the underlying structure and patterns.

Clustering is a technique that partitions the data into groups or clusters based on their similarity or distance.

Clustering can help discover the natural segments or categories in the data and understand their characteristics and differences. One of the most popular algorithms for clustering is k-means, which assigns each data point to one of k clusters based on the nearest mean or centroid. K-means can handle large and high-dimensional datasets and produce compact and spherical clusters.

Therefore, the combination of algorithms that would provide the appropriate insights for population segmentation are PCA and k-means. The agency can use PCA to reduce the dimensionality of the census data from 500 features to a smaller number of principal components that capture most of the variation in the data.

Then, the agency can use k-means to cluster the data based on the principal components and identify the segments of the population that share similar characteristics.

Amazon SageMaker Principal Component Analysis (PCA)

Amazon SageMaker K-Means Algorithm

質問 # 174

A Machine Learning Specialist is developing a custom video recommendation model for an application. The dataset used to train this model is very large with millions of data points and is hosted in an Amazon S3 bucket. The Specialist wants to avoid loading all of this data onto an Amazon SageMaker notebook instance because it would take hours to move and will exceed the attached 5 GB Amazon EBS volume on the notebook instance.

Which approach allows the Specialist to use all the data to train the model?

- A. Use AWS Glue to train a model using a small subset of the data to confirm that the data will be compatible with Amazon SageMaker. Initiate a SageMaker training job using the full dataset from the S3 bucket using Pipe input mode.
- B. Load a smaller subset of the data into the SageMaker notebook and train locally. Confirm that the training code is executing and the model parameters seem reasonable. Launch an Amazon EC2 instance with an AWS Deep Learning AMI and attach the S3 bucket to train the full dataset.
- C. Launch an Amazon EC2 instance with an AWS Deep Learning AMI and attach the S3 bucket to the instance. Train on a small amount of the data to verify the training code and hyperparameters. Go back to Amazon SageMaker and train using the full dataset
- D. Load a smaller subset of the data into the SageMaker notebook and train locally. Confirm that the training code is executing and the model parameters seem reasonable. Initiate a SageMaker training job using the full dataset from the S3 bucket using Pipe input mode.

正解： D

質問 # 175

A credit card company wants to identify fraudulent transactions in real time. A data scientist builds a machine learning model for this purpose. The transactional data is captured and stored in Amazon S3. The historic data is already labeled with two classes: fraud (positive) and fair transactions (negative). The data scientist removes all the missing data and builds a classifier by using the XGBoost algorithm in Amazon SageMaker. The model produces the following results:

- * True positive rate (TPR): 0.700
- * False negative rate (FNR): 0.300
- * True negative rate (TNR): 0.977
- * False positive rate (FPR): 0.023
- * Overall accuracy: 0.949

Which solution should the data scientist use to improve the performance of the model?

- A. Undersample the minority class.
- B. **Apply the Synthetic Minority Oversampling Technique (SMOTE) on the minority class in the training dataset. Retrain the model with the updated training data.**
- C. Oversample the majority class.
- D. Apply the Synthetic Minority Oversampling Technique (SMOTE) on the majority class in the training dataset. Retrain the model with the updated training data.

正解: B

解説:

Explanation

The solution that the data scientist should use to improve the performance of the model is to apply the Synthetic Minority Oversampling Technique (SMOTE) on the minority class in the training dataset, and retrain the model with the updated training data. This solution can address the problem of class imbalance in the dataset, which can affect the model's ability to learn from the rare but important positive class (fraud).

Class imbalance is a common issue in machine learning, especially for classification tasks. It occurs when one class (usually the positive or target class) is significantly underrepresented in the dataset compared to the other class (usually the negative or non-target class). For example, in the credit card fraud detection problem, the positive class (fraud) is much less frequent than the negative class (fair transactions). This can cause the model to be biased towards the majority class, and fail to capture the characteristics and patterns of the minority class. As a result, the model may have a high overall accuracy, but a low recall or true positive rate for the minority class, which means it misses many fraudulent transactions.

SMOTE is a technique that can help mitigate the class imbalance problem by generating synthetic samples for the minority class. SMOTE works by finding the k-nearest neighbors of each minority class instance, and randomly creating new instances along the line segments connecting them. This way, SMOTE can increase the number and diversity of the minority class instances, without duplicating or losing any information. By applying SMOTE on the minority class in the training dataset, the data scientist can balance the classes and improve the model's performance on the positive class1.

The other options are either ineffective or counterproductive. Applying SMOTE on the majority class would not balance the classes, but increase the imbalance and the size of the dataset. Undersampling the minority class would reduce the number of instances available for the model to learn from, and potentially lose some important information. Oversampling the majority class would also increase the imbalance and the size of the dataset, and introduce redundancy and overfitting.

References:

1: SMOTE for Imbalanced Classification with Python - Machine Learning Mastery

質問 # 176

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