AWS FAQ

SageMaker FAQ: https://aws.amazon.com/sagemaker/faqs/

Q: What security measures does Amazon SageMaker have?

Amazon SageMaker ensures that ML model artifacts and other system artifacts are encrypted in transit and at rest. Requests to the SageMaker API and console are made over a secure (SSL) connection. You pass AWS Identity and Access Management roles to SageMaker to provide permissions to access resources on your behalf for training and deployment. You can use encrypted S3 buckets for model artifacts and data, as well as pass a KMS key to SageMaker notebooks, training jobs, and endpoints, to encrypt the attached ML storage volume.

Q: Is R supported with Amazon SageMaker?

Yes, R is supported with Amazon SageMaker. You can use R within SageMaker Notebook instances, which include a pre-installed R kernel and the reticulate library. Reticulate offers an R interface for the Amazon SageMaker Python SDK, enabling machine learning practitioners to build, train, tune, and deploy R models.

Q. What is Amazon SageMaker Studio?

Amazon SageMaker Studio provides a single, web-based visual interface where you can perform all ML development steps. SageMaker Studio gives you complete access, control, and visibility into each step required to build, train, and deploy models. You can quickly upload data, create new notebooks, train and tune models, move back and forth between steps to adjust experiments, compare results, and deploy models to production all in one place, making you much more productive. All ML development activites including notebooks, experiment management, automatic model creation, debugging and profiling, and model drift detection can be performed within the unified SageMaker Studio visual interface.

Q. What is Amazon SageMaker Autopilot?

Amazon SageMaker Autopilot is the industry's first automated machine learning capability that gives you complete control and visibility into your ML models. SageMaker Autopilot automatically inspects raw data, applies feature processors, picks the best set of algorithms, trains and tunes multiple models, tracks their performance, and then ranks the models based on performance, all with just a few clicks. The result is the best performing model that you can deploy at a fraction of the time normally required to train the model. You get full visibility into how the model was created and what's in it and SageMaker Autopilot integrates with Amazon SageMaker Studio. You can explore up to 50 different models generated by SageMaker Autopilot inside SageMaker Studio so its easy to pick the best model for your use case. SageMaker Autopilot can be used by people without machine learning experience to easily produce a model or it can be used by experienced developers to quickly develop a baseline model on which teams can further iterate.

Q: How is Amazon SageMaker Autopilot different from vertical AI services like Amazon Personalize and Amazon Forecast?

While Amazon Personalize and Amazon Forecast specifically target at personalized recommendation and forecasting use cases, Amazon SageMaker Autopilot is a generic automatic machine learning solution for classification and regression problems, such as fraud detection, churn analysis, and targeted marketing. Personalize and Forecast focus on simplifying end to end experience by offering training and model hosting in a bundle. You can train models using Amazon SageMaker Autopilot and get full access to the models as well as the pipelines that generated the models. They can then deploy the models to the hosting environment of their choice, or further iterate to improve model quality.

Q: What built-in algorithms are supported in Amazon SageMaker Autopilot?

Amazon SageMaker Autopilot supports 2 built-in algorithms at launch: XGBoost and Linear Learner.

Q: Do I need to periodically checkpoint with Managed Spot Training?

We recommend periodic checkpoints as a general best practice for long running training jobs. This prevents your Managed Spot Training jobs from restarting if capacity is pre-empted. When you enable checkpoints, Amazon SageMaker resumes your Managed Spot Training jobs from the last checkpoint.

Q: What is the underlying tuning algorithm?

Currently, our algorithm for tuning hyperparameters is a customized implementation of Bayesian Optimization. It aims to optimize a customer specified objective metric throughout the tuning process. Specifically, it checks the object metric of completed training jobs, and leverages the knowledge to infer the hyperparameter combination for the next training job.

Q: Will you recommend specific hyperparameters for tuning?

No. How certain hyperparameters impact the model performance depends on various factors and it is hard to definitively say one hyperparameter is more important than the others and thus needs to be tuned. For built-in algorithms within Amazon SageMaker, we do call out whether or not a hyperparameter is tunable.

AWS Comprehend: https://aws.amazon.com/comprehend/faqs/

Q: What is Amazon Comprehend?

Amazon Comprehend is a natural language processing (NLP) service that uses machine learning to find meaning and insights in text.

Q: What can I do with Amazon Comprehend?

You can use Amazon Comprehend to identify the language of the text, extract key phrases, places, people, brands, or events, understand sentiment about products or services, and identify the main topics from a library of documents. The source of this text could be web pages, social media feeds, emails, or articles. You can also feed Amazon Comprehend a set of text documents, and it will identify topics (or group of words) that best represent the information in the collection. The output from Amazon Comprehend can be used to understand customer feedback, provide a better search experience through search filters and uses topics to categorize documents.

Q: What are the most common use cases of Amazon Comprehend?

The most common use cases include:

Voice of customer analytics: You can gauge whether customer sentiment is positive, neutral, negative, or mixed based on the feedback you receive via support calls, emails, social media, and other online channels.

Semantic search: You can use Amazon Comprehend to provide a better search experience by enabling your search engine to index key phrases, entities, and sentiment. This enables you to focus the search on the intent and the context of the articles instead of basic keywords.

Knowledge management and discovery: You can analyze a collection of documents and automatically organize them by topic. You can then use the topics to personalize content for your customers.

Data privacy

Q: Are text inputs processed by Amazon Comprehend stored, and how are they used by AWS?

Amazon Comprehend may store and use text inputs processed by the service solely to provide and maintain the service and to develop and improve the quality of Amazon Comprehend and other Amazon machine-learning/artificial-intelligence technologies. This does not apply to Amazon Comprehend Medical. Use of your content is important for continuous improvement of your Amazon Comprehend customer experience, including the development and training of related technologies. We do not use any personally identifiable information that may be contained in your content to target products, services or marketing to you or your end users. Your trust, privacy, and the security of your content are our highest priority and we implement appropriate and sophisticated technical and physical controls, including encryption at rest and in transit, designed to prevent unauthorized access to, or disclosure of, your content and ensure that our use complies with our commitments to you. Please see https://aws.amazon.com/compliance/data-privacy-faq/ for more information. You may opt out of having your content used to improve and develop the quality of Amazon Comprehend and other Amazon machine-learning/artificial-intelligence technologies by using an AWS Organizations opt-out policy. For information about how to opt out, see Managing AI services opt-out policy

Q: Who has access to my content that is processed and stored by Amazon Comprehend?

Only authorized employees will have access to your content that is processed by Amazon Comprehend. Your trust, privacy, and the security of your content are our highest priority and we implement appropriate and sophisticated technical and physical controls, including encryption at rest and in transit, designed to prevent unauthorized access to, or disclosure of, your content and ensure that our use complies with our commitments to you. Please see the AWS data privacy FAQs for more information.

Q: What is Amazon Comprehend Medical?

Amazon Comprehend Medical is a natural language processing service that makes it easy to use machine learning to extract relevant medical information from unstructured text. Using Amazon Comprehend Medical, you can quickly and accurately gather information, such as medical condition, medication, dosage, strength, and frequency from a variety of sources, like doctors' notes, clinical trial reports, and patient health records.

AWS Lex: https://aws.amazon.com/lex/faqs/

Q: What is Amazon Lex?

Amazon Lex is a service for building conversational interfaces using voice and text. Powered by the same conversational engine as Alexa, Amazon Lex provides high quality speech recognition and language understanding capabilities, enabling addition of sophisticated, natural language 'chatbots' to new and existing applications. Amazon Lex reduces multi-platform development effort, allowing you to easily publish your speech or text chatbots to mobile devices and multiple chat services, like Facebook Messenger, Slack, Kik, or Twilio SMS. Native interoperability with AWS Lambda and Amazon CloudWatch and easy integration with many other services on the AWS platform including Amazon Cognito, and Amazon DynamoDB makes bot development effortless.

Q. What are the most common use cases for Amazon Lex?

The most common use-cases include:

- Self-service voice assistants and chatbots – build a call center bot
- Informational bot – build an automated customer support agent or bot that answers questions
- Application/Transactional bot – build a stand-alone pizza ordering agent or a travel bot
- Enterprise Productivity bot – build custom bots to connect to enterprise data resources
- Device Control bot– use Amazon Lex to issue control commands to connected devices

Q. When do I use Amazon Polly vs. Amazon Lex?

Amazon Polly converts text inputs to speech. Amazon Lex is a service for building conversational interfaces using voice and text.

Q: How do I create a bot in Amazon Lex?

To create a bot, you will first define the actions performed by the bot. These actions are the intents that need to be fulfilled by the bot. For each intent, you will add sample utterances and slots. Utterances are phrases that invoke the intent. Slots are input data required to fulfill the intent. Lastly, you will provide the business logic necessary to execute the action. An Amazon Lex bot can be created both via Console and REST APIs.

Q. What are slots?

To fulfill an intent, the Amazon Lex bot needs information from the user. This information is captured in 'slots'. For example, you would define show name and time as slots for intent to make reservations.

Q. What is an utterance?

An 'utterance' is the spoken or typed phrase to invoke an intent. For example, to invoke the intent to make reservations, you would provide a sample utterance such as, "Can I make a reservation?"

Q. What are prompts?

Amazon Lex elicits the defined 'slots' by using the 'prompts' provided. For example, to elicit value for the slot 'time' you will define a prompt such as "What show time would you like to reserve?". Amazon Lex is capable of eliciting multiple slot values via a multi-turn conversation.

AWS Polly: https://aws.amazon.com/polly/faqs/

General

Q. What is Amazon Polly?

Amazon Polly is a service that turns text into lifelike speech. Amazon Polly enables existing applications to speak as a first class feature and creates the opportunity for entirely new categories of speech-enabled products, from mobile apps and cars, to devices and appliances. Amazon Polly includes dozens of lifelike voices and support for multiple languages, so you can select the ideal voice and distribute your speech-enabled applications in many geographies. Amazon Polly is easy to use – you just send the text you want converted into speech to the Amazon Polly API, and Amazon Polly immediately returns the audio stream to your application so you can play it directly or store it in a standard audio file format, such as MP3. Amazon Polly supports Speech Synthesis Markup Language (SSML) tags like prosody so you can adjust the speech rate, pitch, or volume. Amazon Polly is a secure service that delivers all of these benefits at high scale and at low latency. You can cache and replay Amazon Polly's generated speech at no additional cost. Amazon Polly lets you convert millions of characters per month for free during the first year, upon sign-up. Amazon Polly's pay-as-you-go pricing, low cost per request, and lack of restrictions on storage and reuse of voice output make it a cost-effective way to enable speech synthesis everywhere.

Q. What features are available?

You can control various aspects of speech such as pronunciation, volume, pitch, speech rate, etc. using standardized Speech Synthesis Markup Language (SSML). You can synthesize speech for certain Neural voices using the Newscaster style, to make them sound like a TV or Radio newscaster. You can detect when specific words or sentences in the text are being spoken to the user based on the metadata included in the audio stream. This allows the developer to synchronize graphical highlighting and animations, such as the lip movements of an avatar, with the synthesized speech. You can modify the pronunciation of particular words, such as company names, acronyms, foreign words and neologisms, e.g. "P!nk", "ROTFL", "C'est la vie" (when spoken in a non-French voice) using custom lexicons.

Q. Which audio formats are supported?

With Amazon Polly, you can stream audio to your users in near real time. You can also choose from various sampling rates to optimize bandwidth and audio quality for your application. Amazon Polly supports MP3, Vorbis, and raw PCM audio stream formats.

Q. Which programming languages are supported?

Amazon Polly supports all the programming languages included in the AWS SDK (Java, Node.js, .NET, PHP, Python, Ruby, Go, and C++) and AWS Mobile SDK (iOS/Android). Amazon Polly also supports an HTTP API so you can implement your own access layer.

AWS Rekognition: https://aws.amazon.com/rekognition/faqs/

General

Q: What is Amazon Rekognition?

Amazon Rekognition is a service that makes it easy to add powerful visual analysis to your applications. Rekognition Image lets you easily build powerful applications to search, verify, and organize millions of images. Rekognition Video lets you extract motion-based context from stored or live stream videos and helps you analyze them.

Rekognition Image is an image recognition service that detects objects, scenes, and faces; extracts text; recognizes celebrities; and identifies inappropriate content in images. It also allows you to search and compare faces. Rekognition Image is based on the same proven, highly scalable, deep learning technology developed by Amazon's computer vision scientists to analyze billions of images daily for Prime Photos.

Rekognition Image uses deep neural network models to detect and label thousands of objects and scenes in your images, and we are continually adding new labels and facial recognition features to the service. With Rekognition Image, you only pay for the images you analyze and the face metadata you store.

Rekognition Video is a video recognition service that detects activities; understands the movement of people in frame; and recognizes objects, celebrities, and inappropriate content in videos stored in Amazon S3 and live video streams from Acuity. Rekognition Video detects persons and tracks them through the video even when their faces are not visible, or as the whole person might go in and out of the scene. For example, this could be used in an application that sends a real-time notification when someone delivers a package to your door. Rekognition Video allows you also to index metadata like objects, activities, scene, celebrities, and faces that make video search easy.

Q: What are the most common use cases for Amazon Rekognition?

The most common use-cases for Rekognition Image include:

- Searchable Image Library
- Face-Based User Verification
- Sentiment Analysis
- Facial Recognition
- Image Moderation

The most common use-cases for Rekognition Video include:

- Search Index for video archives
- Easy filtering of video for explicit and suggestive content

Q: What image and video formats does Amazon Rekognition support?

Amazon Rekognition Image currently supports the JPEG and PNG image formats. You can submit images either as an S3 object or as a byte array. Amazon Rekognition Video operations can analyze videos stored in Amazon S3 buckets. The video must be encoded using the H.264 codec. The supported file formats are MPEG-4 and MOV. A codec is software or hardware that compresses data for faster delivery and decompresses received data into its original form. The H.264 codec is commonly used for the recording, compression and distribution of video content. A video file format may contain one or more codecs. If your MOV or MPEG-4 format video file does not work with Rekognition Video, check that the codec used to encode the video is H.264.

Q: What file sizes can I use with Amazon Rekognition?

Amazon Rekognition Image supports image file sizes up to 15MB when passed as an S3 object, and up to 5MB when submitted as an image byte array. Amazon Rekognition Video supports up to 10 GB files and up to 6 hour videos when passed through as an S3 file.

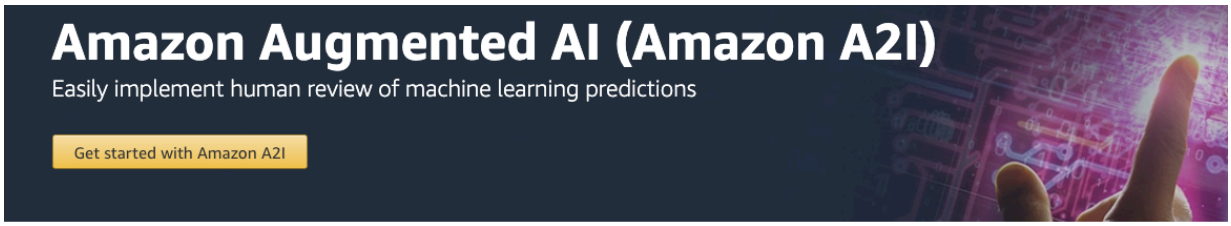
Q: How does image resolution affect the quality of Rekognition Image API results ?

Amazon Rekognition works across a wide range of image resolutions. For best results we recommend using VGA (640x480) resolution or higher. Going below QVGA (320x240) may increase the chances of missing faces, objects, or inappropriate content; although Amazon Rekognition accepts images that are at least 80 pixels in both dimensions.

Q: How can I get Amazon Rekognition predictions reviewed by humans?

Amazon Rekognition is directly integrated with Amazon Augmented AI (Amazon A2I) so you can easily route low confidence predictions from Amazon Rekognition Image to human reviewers. Using the Amazon Rekognition API for content moderation or the Amazon A2I console, you can specify the conditions under which Amazon A2I routes predictions to reviewers, which can be either a confidence threshold or a random sampling percentage. If you specify a

https://aws.amazon.com/augmented-ai/



Amazon Augmented AI (Amazon A2I) makes it easy to build the workflows required for human review of ML predictions. Amazon A2I brings human review to all developers, removing the undifferentiated heavy lifting associated with building human review systems or managing large numbers of human reviewers.

Amazon A2I makes it easy to build and manage human reviews for machine learning applications. Amazon A2I provides built-in human review workflows for common machine learning use cases, such as content moderation and text extraction from documents, which allows predictions from Amazon Rekognition and Amazon Textract to be reviewed easily. You can also create your own workflows for ML models built on Amazon SageMaker or any other tools. Using Amazon A2I, you can allow human reviewers to step in when a model is unable to make a high confidence prediction or to audit its predictions on an on-going basis.

AWS translate: https://aws.amazon.com/translate/faqs/

General

Q: What is Amazon Translate?

Amazon Translate is a Neural Machine Translation (MT) service for translating text between supported languages. Powered by deep learning methods, the service provides high quality and affordable machine translation, enabling developers to translate company and user-authored content, or build applications requiring support across multiple languages. The service can be used via an API, enabling either real-time or batch translation of text from the source language to the target language.

Q: What languages are covered?

Amazon Translate supports translation between the following 55 languages and variants: Afrikaans, Albanian, Amharic,

Q: What are the limits on the API?

Amazon Translate real-time service calls are limited to 5,000 bytes per API call. We provide instructions on how to break up large documents into sections and paragraphs so that customers can translate text of any length. See instructions here.

Amazon Translate asynchronous Batch Translation service accepts a batch of up to 5 GB in size per API call with each document not exceeding 20 MB in size, each document containing no more than 1,000,000 characters, and the number of documents in the S3 bucket folder not exceeding 1,000,000 per batch.

AWS transcribe: https://aws.amazon.com/transcribe/faqs/

General

Q: What is Amazon Transcribe?

Amazon Transcribe is an AWS service that makes it easy for customers to convert speech-to-text. Using Automatic Speech Recognition (ASR) technology, customers can choose to use Amazon Transcribe for a variety of business applications, including transcription of voice-based customer service calls, generation of subtitles on audio/video content, and conduct (text based) content analysis on audio/video content.

Q: How does Amazon Transcribe interact with other AWS products?

Amazon Transcribe converts audio input into text, which opens the door for various text analytics applications on voice input. For instance, by using Amazon Comprehend on the converted text data from Amazon Transcribe, customers can perform sentiment analysis or extract entities and key phrases. Similarly, by integrating with Amazon Translate and Amazon Polly, customers can accept voice input in one language, translate it into another and generate voice output, effectively enabling multi-lingual conversations. It is also possible to integrate Amazon Transcribe with Amazon Elasticsearch to index and perform text based search across audio/video library.

Q: My custom vocabulary words are not being recognized! What can I do?

The speech recognition output depends on a number of factors in addition to custom vocabulary entries, so there can be no assurance that if a term is included in the custom vocabulary, it will be correctly recognized.
However, the most frequent reason is that a custom word lacks the correct pronunciation. If you haven't provided a pronunciation for your custom word, please try to create one. If you already have provided one, double-check its correctness, or include other pronunciation variants if necessary. This can be done by creating multiple entries in the custom vocabulary file that differ in the pronunciation field.

Q: There are two ways of giving pronunciations, IPA or SoundsLike fields in the custom vocabulary table. Which one is better?

IPA allows for more precise pronunciations. You should provide IPA pronunciations if you are able to generate IPA (e.g., from a lexicon that has IPA pronunciations or an online converter tool).

Q: How can I provide the pronunciation using SoundsLike field in the custom vocabulary table?

You can break a word or phrase down into smaller pieces and provide a pronunciation for each piece using the standard orthography of the language to mimic the way that the word sounds. For example, in English you can provide pronunciation hints for the phrase *Los-Angeles* like this: *loss-ann-gel-es*. The hint for the word Etienne would look like this: *eh-tee-en*. You separate each part of the hint with a hyphen (-). You can use any of the allowed characters for the input language.

AWS Deeplens: https://aws.amazon.com/deeplens/faqs/

Q: What is AWS DeepLens?

AWS DeepLens is the world's first deep-learning enabled video camera for developers of all skill levels to grow their machine learning skills through hands-on computer vision tutorials, example code, and pre-built models.

Q: How is AWS DeepLens different from other video cameras in the market?

AWS DeepLens is the world's first video camera optimized to run machine learning models and perform inference on the device. It comes with 6 sample projects at launch, that you can deploy to your AWS DeepLens in less than 10 minutes. You can run the sample projects as is, connect them with other AWS services, train a model in Amazon Sagemaker and deploy it to AWS DeepLens, or extend the functionality by triggering a lambda function when an action takes place. You can also apply more advanced analysis on the cloud using Amazon Rekognition. AWS DeepLens provides the building blocks for your machine learning needs.