

SESSION 11

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AWS Machine Learning

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AWS Rekognition

- Amazon Rekognition is a machine learning product by AWS that helps in adding image and video analysis to applications.
- It find objects, texts, activities, and scenes in images and videos
- All we have to do is provide the AWS Rekognition API with an image or video, and it will identify
- Labels, content moderation, Text Detection, Face Detection, Face search and verification
- Amazon Rekognition works with two KPI sets – Amazon Rekognition Image and Amazon Rekognition Video. These KPIs help in image and video analysis respectively.
- <https://aws.amazon.com/rekognition/>

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Amazon Transcribe

- Automatically converts speech to text
- Uses a deep learning process called Automatic Speech Recognition(ASR) to convert speech to text quickly
- Automatically removes Personally Identifiable Information(PII) using Redaction
- Supports automatic language Identification for multi-lingual audio
- It analyses the different types of audio provided by the S3 storage. The transcription generated by this system is very accurate, furthermore, it also provides time stamps.
- AWS's Transcribe is number one since its stable release in the market with the highest rating of 7.7 out of 10.
- It is used to convert audio from various sources, and various speakers into text accurately and efficiently.
- Because of the features of Amazon Transcribe, it is easy to generate subtitles and captions based on the speech played.

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Amazon Polly

- Turn text into lifelike speech using deep learning
- Amazon Polly service has Pay-as-you-go model and is priced based on the number of processed characters of text.

Amazon Translate

- Natural and language translation
- It allows you to localize content such as websites and applications for international users, and to easily translate large volume of text efficiently

Amazon Lex and Connect

Amazon Lex(same technology that powers Alexa)

- Automatic speech Recognition(ASR) to convert speech to text
- Natural Language Understanding to recognise the intent of text callers
- Help build chatbots, call center bots

Amazon Connect

- Receive calls, create contact flows, cloud based virtual contact center
- Can integrate with other CRM systems or AWS
- No upfront payment, 80% cheaper than traditional contact center solutions



Amazon Comprehend

- Taking unstructured data and structuring it
- For Natural Language Processing(NLP)
- Fully managed and serverless
- Uses ML to find insights and relationships in text

Language of the text

Extract key phrases, places, people, brands or events

Understands how positive and negative the text is

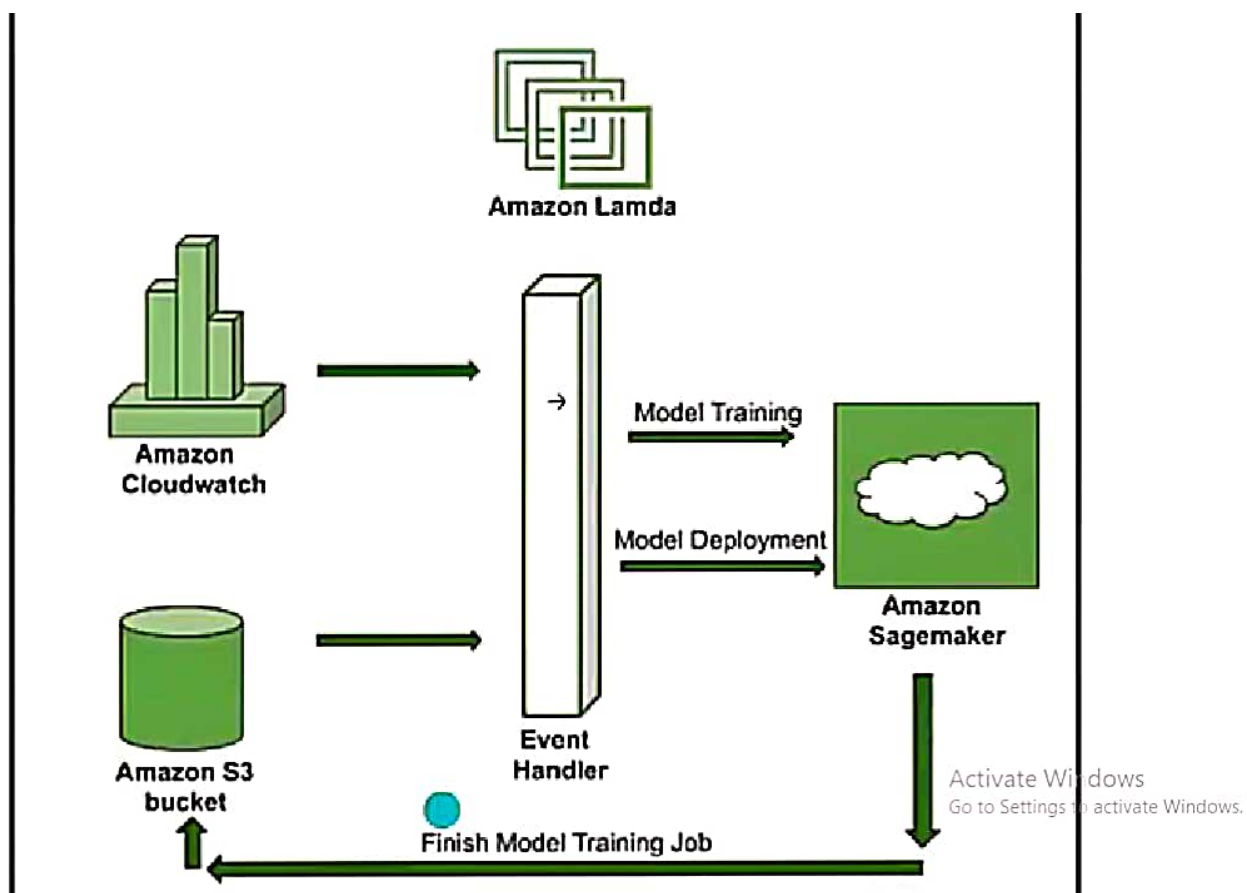
Analyze text using tokenization and parts of speech

Automatically organize a collection of text files by topic

- Analyze customer interaction(emails) to find what leads to a positive or negative experience

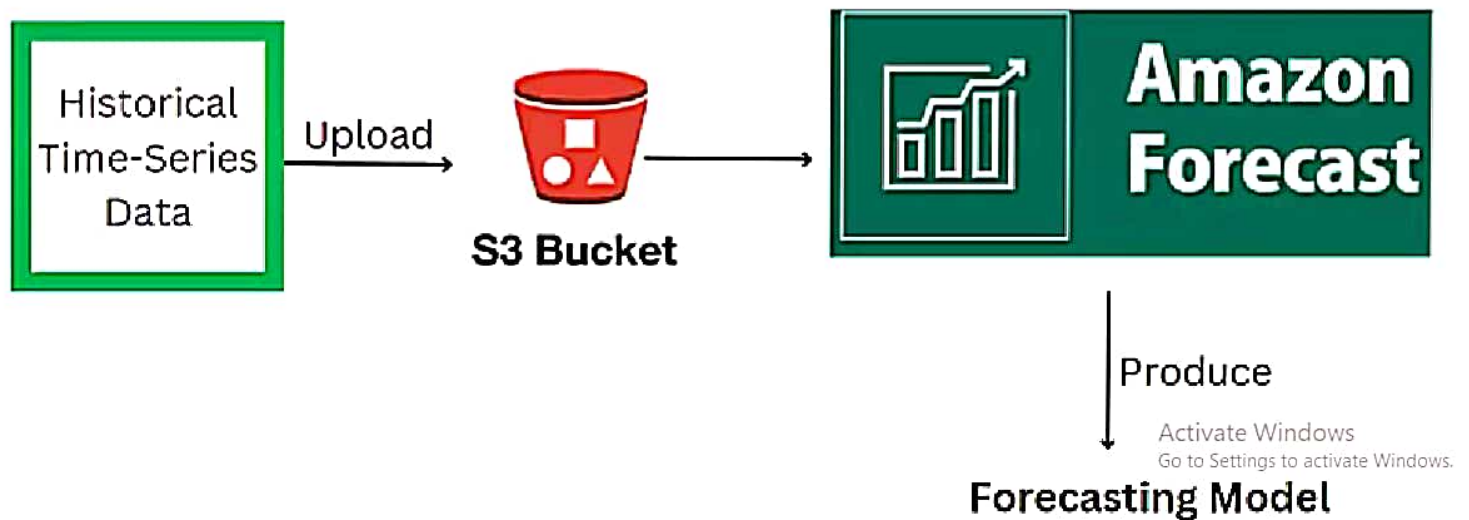
Amazon Sagemaker

- Amazon Sagemaker which helps in creating efficient and more accurate machine learning models the other benefit is that you can use other AWS services in your model such as S3 bucket, amazon Lambda for monitoring the performance of your ML model you can use AWS Cloudwatch which is a monitoring tool.
- Fully managed service for Data Scientists / developers to build, train, and deploy machine learning models at any scale.
- **Build:** Amazon SageMaker includes hosted Jupyter notebooks that make it easy to explore and visualize your training data stored on Amazon S3. You can connect directly to data in S3, or use AWS Glue to move data from Amazon RDS, Amazon DynamoDB, and Amazon Redshift into S3 for analysis in your notebook.
- **Train:** Amazon SageMaker manages all the underlying infrastructure for you and can easily scale to train models at the petabyte scale.
- **Deploy:** Once your model is trained and tuned, Amazon SageMaker makes it easy to deploy in production so you can start running and generating predictions on new data



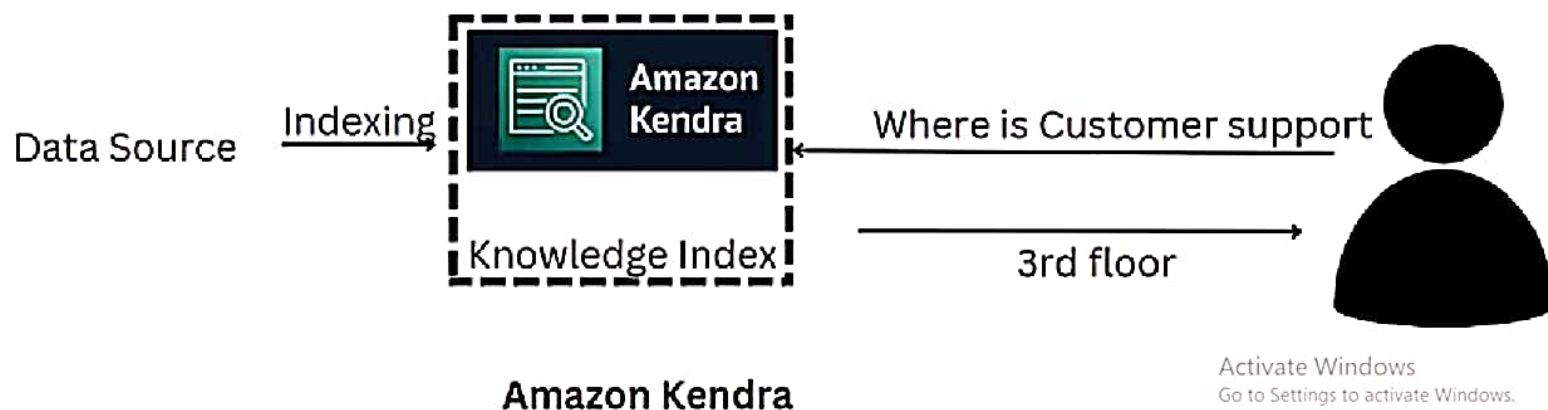
Amazon Forecast

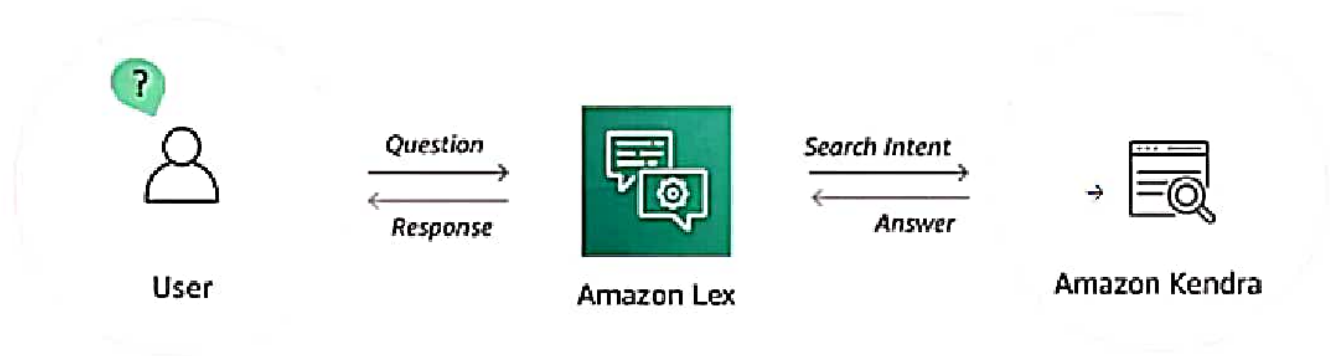
- Fully managed service that uses ML to deliver highly accurate forecast



Amazon Kendra

- Fully managed document search service powered by Machine Learning
- Extract answers from within a document, text, pdf, HTML, PowerPoint, MS Word, FAQs
- Data Sources: Amazon S3, Sharepoint, Google Drive, MS One Drive, Salesforce, Amazon RDS





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Amazon Textract

- Automatically extracts text, handwriting and data from any scanned documents using AI and ML
- Extract data from forms and tables
- Read and process any type of document like, PDFs, images
- Use Cases: Financial Services: invoice reports, Healthcare(medical claims)

- **Rekognition:** face detection, labeling, celebrity recognition
- **Transcribe:** audio to text(subtitles)
- **Polly:** text to audio
- **Translate:** translations
- **Lex:** build conversational bots
- **Connect:** cloud contact center
- **Comprehend:** natural language processing
- **SageMaker:** machine learning for every developer and data scientist
- **Forecast:** build highly accurate forecasts
- **Kendra:** ML powered search engine

Questions

1. You should use Amazon Transcribe to turn text into life like speech using deep learning? True/ False
2. A company would like to implement a chatbot that will convert speech- to- text and recognize customer's intentions. What service should you use?
3. Which fully managed service can deliver high accurate forecast?
4. You would like to find objects, people, text or scene in images and videos. What AWS service would you use?
5. A research team would like to group articles by topics using Natural Language Processing (NLP). Which service would they use?
6. A company would like to convert its document into different languages, with natural and accurate wordings. What should they use?
7. A developer would like to build, train, and deploy a ML model quickly. Which service should they use?

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1. False 2. Lex 3. Forecast 4. Rekognition 5. Comprehend 6. Translate 7. SageMaker