

Machine Learning

- Machine Learning
 - Amazon Rekognition
 - Amazon Transcribe
 - Amazon Polly
 - Amazon Translate
 - Amazon Lex & Connect
 - * Amazon Lex: (same technology that powers Alexa)
 - * Amazon Connect
 - Amazon Comprehend
 - Amazon SageMaker
 - Amazon Forecast
 - Amazon Kendra
 - Amazon Personalize
 - Amazon Textract
 - Summary

Amazon Rekognition

- Identifies objects, people, text, and scenes in images and videos using ML
- Facial analysis and facial search for user verification and people counting
- Create a database of familiar faces or compare against celebrities
- Key uses:
 - Labeling
 - Content Moderation
 - Text Detection
 - Face Detection and Analysis (gender, age range, emotions)
 - Face Search and Verification
 - Celebrity Recognition
- More info: Amazon Rekognition

Amazon Transcribe

- Converts speech to text using Automatically speech recognition (ASR)
- Accurate and quick transcription
- Key uses:
 - Transcribing customer service calls
 - Automating closed captioning and subtitling
 - Generating metadata for media assets for searchable archives

Amazon Polly

- Turns text into lifelike speech using deep learning
- Enables creation of talking applications

Amazon Translate

- Provides natural and accurate language translation
- Localizes content for international users
- Efficiently translates large volumes of text

Amazon Lex & Connect

Amazon Lex: (same technology that powers Alexa)

- Uses ASR to convert speech to text
- Natural Language Understanding to recognize text and caller intent
- Helps build chatbots and call center bots

Amazon Connect

- Cloud-based virtual contact center
- Receives calls and creates contact flows
- Integrates with CRM systems or AWS
- No upfront payments, 80% cheaper than traditional contact centers

Amazon Comprehend

- Fully managed and serverless NLP service
- Uses machine learning to find insights and relationships in text
- Key features:
 - Identifies language of the text
 - Extracts key phrases, places, people, brands, or events
 - Determines sentiment of the text
 - Analyzes text using tokenization and parts of speech
 - Organizes text files by topic
- Key uses:
 - Analyzing customer interactions for positive or negative experiences
 - Grouping articles by topics

Amazon SageMaker

- Fully managed service for developers / data scientists to build ML models
- Typically, difficult to do all the processes in one place + provision servers
- Machine learning process (simplified): predicting your exam score

Amazon Forecast

- Fully managed service that uses ML to deliver highly accurate forecasts
- Example: predict the future sales of a raincoat
- 50% more accurate than looking at the data itself
- Reduces forecasting time from months to hours
- Key uses:
 - Product Demand Planning
 - Financial Planning
 - Resource Planning

Amazon Kendra

- Fully managed document search service powered by ML
- Extracts answers from various document types (text, PDF, HTML, PowerPoint, MS Word, FAQs)
- Offers natural language search capabilities
- Learns from user interactions to promote preferred results
- Allows manual fine-tuning of search results

Amazon Personalize

- Fully managed ML service for real-time personalized recommendations
- Key uses:
 - Personalized product recommendations
 - Customized direct marketing
- Integrates into websites, applications, SMS, email marketing systems
- Implemented in days, not months

Amazon Textract

- Automatically extracts text, handwriting, and data from scanned documents using AI and ML
- Reads and processes various document types (PDFs, images)
- Key uses:
 - Financial Services (invoices, financial reports)
 - Healthcare (medical records, insurance claims)
 - Public Sector (tax forms, ID documents, passports)

Summary

- **Rekognition:** Face detection, labeling, celebrity recognition
- **Transcribe:** Audio to text (e.g., subtitles)
- **Polly:** Text to audio
- **Translate:** Language translation
- **Lex:** Build conversational bots (chatbots)
- **Connect:** Cloud contact center

- **Comprehend:** Natural language processing
- **SageMaker:** Machine learning for developers and data scientists
- **Forecast:** Accurate forecasts
- **Kendra:** ML-powered search engine
- **Personalize:** Real-time personalized recommendations
- **Textract:** Detect text and data in documents