

## Section 17 Machine Learning Section

### # Amazon Rekognition :-

- ① Find objects, people, text, scenes in images and videos using ML.
- ② Facial analysis & facial search to do user verification, people counting
- ③ Create database of "familiar faces" or compare against celebrities.

### ④ Use Cases :-

- 1] Labeling
- 2] Content Moderation
- 3] Text Detection
- 4] Face Detection & Analysis
- 5] Face search & verification
- 6] Celebrity Recognition
- # Pathing (ex. for sports game analysis)



## Amazon Transcribe

- ① Automatically convert speech to text
- ② Uses a deep learning process called automatic speech recognition (ASR) to convert speech to text quickly & accurately.
- ③ Automatically remove personally identifiable information (PII) using Redaction
- ④ Supports Automatic Language Identification for multi-lingual audio.
- ⑤ Use Cases:
  - 1] Transcribe customer service calls
  - 2] Automate close captioning & subtitle
  - 3] generate metadata for media assets to create a fully searchable archive.



## Amazon Polly

- ① Turn text into lifelike speech using deep learning
- ② Allowing you to create applications that talk

## Amazon Translate

- ① Natural & accurate language detection.
- ② Amazon Translate allows you to localize content - such as websites & applications - for international users, and to easily translate large volumes of text efficiently.



## Amazon Lex & Contact Connect

① Amazon Lex :- (Same technology that powers Alexa)

- Automatic Speech Recognition (ASR) to convert speech to text
- Natural Language Understanding to recognize the intent of text, callers
- Helps build chatbots, call center bots.

② Amazon Connect :

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



## Amazon Comprehend

- ① For Natural Language Processing - NLP
- ② Fully managed & serverless service
- ③ Use ML to find insights & relationships in text
  - 1] Lang. of the text
  - 2] Extracts key phrases, places, people, brands, or events.
  - 3] Understands how +ve or -ve the text is
  - 4] Analyzes text using tokenization & parts of speech.
  - 5] Automatically organizes a collection of text files by topic.
- ④ Sample Use Cases:
  - 1] Analyze customer interactions (emails) to find what leads to a +ve or -ve experience
  - 2] Create and group articles by topics that Comprehend will uncover



## Amazon SageMaker

- ① Fully managed service for developers/data scientists to build ML models
- ② Typically difficult to do all process in on place + provision servers
- ③ Machine learning process (simplified): predicting your exam score

## Amazon Forecast

- ① Fully managed service <sup>that</sup> uses ML to deliver highly accurate forecasts
- ② Example: predict the future sales of a raincoat
- ③ 50% more accurate than looking at the data itself.
- ④ Reduce forecasting time from months to hrs
- ⑤ Use Cases: Product Demand Planning, Financial Planning, Resource Planning



## Amazon kendra

- ① Fully managed document search service powered by ML.
- ② Extract answers from within a document (text, Pdf, HTML, Powerpoint, Ms Word, PPTs..)
- ③ Natural language ~~process~~ search capabilities
- ④ Learn from user interactions/feedback to promote preferred results (Incremental Learning)
- ⑤ Ability to manually fine-tune search results (importance of data, freshness, custom, ....)



## Amazon Personalize

- ① Fully managed ML-service to build apps with real-time personalized recommendations
- ② Example: personalized product recommendations / re-ranking, customized direct marketing.
  - ex: User bought gardening tools, provide recommendations on the next one to buy.
- ③ Same technology used by Amazon.com
- ④ Integrates into existing websites, appl's, SMS, email marketing systems, .....
- ⑤ Implement in days, not months (you don't need to build, train, & deploy ML sol'n)
- ⑥ Use cases: retail stores, media & entertainment



## Amazon Texttract

- ① Automatically extract text, handwriting, & data from any scanned doc using AI & ML.
- ② Extract data from forms & tables
- ③ Read & process any type of document (PDFs, Images....)
- ④ Use Cases:
  - 1] Financial services (e.g. invoices, reports)
  - 2] Healthcare (e.g.: medical record, insurance claims)
  - 3] Public sector (e.g.: tax forms, ID doc, passport)



## AWS Machine Learning - Summary

- ① **Rekognition**:- Face detection, labeling, celebrity detection
- ② **Transcribe**:- audio to text (ex: subtitles)
- ③ **Polly**:- text to audio
- ④ **Translate**:- Translations
- ⑤ **Lex**:- build conversational bots - chatbots
- ⑥ **Connect**:- cloud contact center
- ⑦ **Comprehend**:- natural lang. processing  
(Cust. review categorizes)
- ⑧ **SageMaker**:- ML for every dev. & data scientist
- ⑨ **Forecast**:- Build highly accurate forecasts
- ⑩ **Kendra**:- ML - Powered doc. search engine
- ⑪ **Personalize**: real-time personalized recommendation.



⑩ **Texttract**: detect text & data in doc