MACHINE LEARNING
IN
AWS

Machine Learning Cheat Sheet

Amazon has a rather expansive set of services designed for various Artificial Intelligence and Machine Learning tasks. A brief overview of these services is given below:-

Amazon Rekognition

An image recognition tool developed and made readily available by Amazon themselves. Can find objects, people, text, scenes in images and videos using Machine Learning. Use cases: Labelling, Content moderation, text detection, face detection and analysis, face search and verification, celebrity recognition and pathing.

Amazon transcribe

Used to transcibe/turn speech into text using machine learning. Has a feature called redaction which can automatically remove PII (Personally Identifiable Information from the audio recordings).

Amazon Polly

Used to turn text into human-like speech using machine learning, a TTS (Text-To-Speech) service developed and made readily available by Amazon.

Amazon Translate

Used to translate text from one language to another, allows you to localize content - such as websites and applications - for international users, and easily translate large volumes of text efficiently.

Amazon Lex

The same technology that powers Alexa, and is used to create conversational AI chatbots. Uses ASR (Automatic Speech Recognition) to convert speech to text.

Amazon Connect

Used to create virtual call centers, i.e. services that can recieve calls, create contact flows, etc. Can integreate with other CRM Systems or AWS.
Amazon ComprehendA serverless service for Natural Language Processing (NLP) tasks such as sentiment analysis, text classification/grouping, etc.

Amazon Comprehend Medical

Amazon Comprehend Medical detects and returns useful information in unstructured clinical text. Uses NLP to detect Protected Health Information (PHI). From an architecture POV, you could store your medical documents in S3, stream real-time medical data through Kinesis Data Firehose or use Amazon Transcribe to transcibe patient narratives into text and then use Amazon Comprehend Medical for analyzing it.

Amazon SageMaker

Fully managed service for developers/data scienctists to build ML models.

Amazon Forecast

Fully managed service to deliver highly accurate forecasts using time-series forecasting.

Amazon Kendra

Fully managed document search service powered using Machine Learning, can be used to say...Extract answers from within a document (text, pdf, HTML, ppt, etc). It gives users the ability to integrate documents with natural language search capabilities. Additionally, it learns from user interactions/feedbacks to promote preferred results and also has the ability to manually fine-tune search results.

Amazon Personalize

Fully-Managed ML-Service to build apps with real-time personalized reccomendations using the same reccomendation algorithms that is used for the suggestion of products to customers on Amazon.com

Amazon Textract

Automatically extracts text, handwriting and data from any scanned documents using AI and ML.

Macie

Amazon Macie is a security service that uses machine learning and pattern matching to discover, classify, and protect sensitive data stored in AWS. It automatically identifies and alerts you to sensitive data such as personally identifiable information (PII), helping you meet compliance requirements and reduce the risk of data breaches.

Macie continuously monitors your Amazon S3 buckets for anomalies and unauthorized access, providing detailed dashboards and alerts to help you quickly respond to potential security threats. By enhancing visibility into your data security, Macie plays a crucial role in maintaining the privacy and integrity of your sensitive information.

TLDR:

Amazon Macie is used to detect **PII** (Personally identifiable information).

Rekognition

Amazon Rekognition is a powerful and fully managed image and video analysis service provided by AWS. It utilizes deep learning models to analyze and extract meaningful information from images and videos, enabling developers to incorporate visual recognition capabilities into their applications easily.

Key features of Amazon Rekognition include:

1. **Object and Scene Detection**: Automatically identify objects, scenes, and activities within images and videos.

2. **Facial Analysis**: Recognize, analyze, and compare faces for a variety of use cases, including verification and identification.

3. **Facial Recognition**: Create and manage a database of faces to perform real-time face searches against a repository of known faces.

4. **Moderation**: Automatically moderate images and videos by identifying inappropriate content such as violence, adult content, and suggestive imagery.

Basically, Amazon Rekognition is a AWS proprietary service for image recognition purposes.

Textract and Comprehend Medical

Amazon Textract is a machine learning service that automatically extracts text and data from scanned documents. It can analyze a variety of document types, such as forms, invoices, and receipts, extracting key information like text, tables, and form fields. Textract makes it easier to process and analyze large volumes of document data quickly and accurately, enabling businesses to automate document workflows and extract valuable insights.

Amazon Comprehend Medical is a natural language processing service specifically designed for healthcare and life sciences applications. It can extract medical information from unstructured text, such as doctor's notes, clinical trial reports, and patient records.

Basically,

Textract is used to extract text from pdfs and such, while Comprehend Medical is an Amazon service designed especially to understand prescriptions and diagnosis slips. Also, Comprehend Medical can also be used to identify PHI (Protected Health Information).