

AWS ML Services

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Amazon Comprehend [↗](#)

- NLP and text analytics
- Extract key phrases, entities, **sentiment**, **language**, syntax, topics, and document classifications
- PII Identification (security)

Amazon Translate [↗](#)

- Uses deep learning for translation
- Supports custom terminology in CSV or TMX format
- Appropriate for proper names, brand names, etc.

Amazon Transcribe [↗](#)

- Speech to text
- Speaker identification
- Channel identification : each caller could be transcribed separately
- Automatic language identification

Amazon Polly [↗](#)

- Text to Speech

- **Lexicons**
 - Customize pronunciation of specific words & phrases
 - Example: "World Wide Web Consortium" instead of "W3C"
- **SSML**
 - Alternative to plain text
 - Speech Synthesis Markup Language
 - Gives control over emphasis, pronunciation, breathing, whispering, speech rate, pitch, pauses.
- **Speech Marks**
 - used to mark the beginning and end of words and phrases, for example when lip-synching animation.

Amazon Rekognition [↗](#)

- Object and scene detection
- Image Analysis : can use with Lambda to trigger image analysis upon upload
- Text in image
- Video analysis : video must come from kinesis Video Streams
- Can be customised : train with a small set of labeled images

Amazon Forecast [↗](#)

- Time series analysis
- "**AutoML**" chooses best model for you :
 - **DeepAR**,
 - **ETS**
 - stands for Exponential Smoothing
 - Used for simple datasets (<100 time series)
 - **CNN-QR** :
 - CNN - Quantile Regression
 - Accepts related **historical** time series data + metadata
 - **DeepAR+** :
 - RNN
 - Accepts related **forward-looking** time series data (Can incorporate **future data** that provide additional predictive power (e.g., special events, promotions).+ metadata
 - **Prophet by Facebook**:
 - Additive model with non-linear trends and seasonality
 - **NPTS**
 - Non-Parametric Time Series
 - Good for sparse data (too missing data)
 - Has variants for seasonal/climatological forecasts
 - **Arima**
 - Autoregressive Integrated Moving Average
 - Used for simple datasets (<100 time series)

Amazon Lex [↗](#)

- Chatbot engine

- A bit is built around intents
- An **utterance** would be a phrase uttered by the user, such as "I want to buy a pizza."
- Lambda functions are invoked to fulfill the intent
- **Slots** specify extra information needed by the intent :Pizza size, toppings, crust type, when to deliver, etc.

Amazon Personalize [↗](#)

- Recommendation Engine
- API access
- A full retrain (passing trainingMode=full) is recommended at least once a week to make recommendations more relevant
- Updates every 2 hours by default

Amazon Textract [↗](#)

- OCR with forms, fields, tables support

AWS DeepRacer [↗](#)

- Reinforcement learning powered 1/18-scale race car

DeepLens [↗](#)

- Deep learning-enabled video camera
- Integrated with Rekognition, SageMaker, Polly, Tensorflow, MXNet, Caffe

Amazon Lookout [↗](#)

- Monitors metrics from S3, RDS, Redshift
- Detects abnormalities from sensor data automatically to detect equipment issues

Amazon Monitron [↗](#)

- End to end system for monitoring industrial equipment & predictive maintenance

TorchServe [↗](#)

Model serving framework for PyTorch

AWS Neuron [↗](#)

SDK for ML inference specifically on AWS Inferentia chips

AWS Panorama [↗](#)

Brings computer vision to your existing IP cameras like face detection

AWS DeepComposer [↗](#)

Composes a melody into an entire song

Amazon Fraud Detector [↗](#)

Amazon CodeGuru [↗](#)

Automated code reviews!

Contact Lens for Amazon Connect [↗](#)

Ingests audio data from recorded calls :

- Theme detection: discovers emerging issues
- Measure talk speed and interruptions
- sentiment Analysis

Amazon kendra (Alexa's sister) [↗](#)

Combines data from file systems, SharePoint, intranet, sharing services (JDBC, S3) into one searchable repository

Amazon Augmented AI (A2I) [↗](#)

Human review of ML predictions

Builds workflows for reviewing low-confidence predictions

Integrated into Amazon Textract and Rekognition

Applications [↗](#)

- Build your own Alexa!
Transcribe -> Lex -> Polly
- Make a universal translator!
Transcribe -> Translate -> Polly
- Build a Jeff Bezos detector!
DeepLens -> Rekognition
- Are people on the phone happy?
transcribe -> Comprehend