Machine Learning Services

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# Amazon Machine Learning (AML)

## Definition

* Fully-managed service that allows users to create machine learning models using historical information to generate predictions.
* It can use the following Machine Learning algorithms:
  + Binary Classification
  + Multiclass Classification
  + Regression

## Benefits

* It is a fully managed service i.e. there is no infrastructure to manage.
* AML can process data from common datastores like S3, Redshift, and RDS (via Data Pipeline).
* AML will train models and allow one to use those trained models using simple API calls.
  + Can be used for both real-time predictions as well as batch predictions

## Limitations

* Only supervised learning i.e. AML requires the data to be labeled.
* Limited exploration and manipulation of data.
* Limited set of tools and algorithms.
* Limit on the size of things like observations, training data, batch inputs, etc.

# Amazon SageMaker

## Definition

* It is a platform used to build, train and deploy machine learning models at scale.
  + Build
    - Provision Jupyter notebooks to easily explore and visualize training data.
    - Connect directly to S3 data or use AWS Glue to move data from Amazon Redshift, DynamoDB, and RDS into S3.
    - Includes most common ML algorithms and frameworks and optimizes them to deliver performance.
  + Train
    - Train models using AWS Hardware.
    - Scale to train models at petabyte scale.
    - Sagemaker automatically tunes one’s models to deliver best accuracy.
  + Deploy
    - Predict results in real-time or with batch results.
    - Can deploy models to auto-scaling infrastructure in many AZs for performance and high availability.
    - One can A/B test their models to see which are more effective and experiment.