Build, Train, and Deploy Machine Learning Models with AWS SageMaker

GETTING STARTED WITH AWS SAGEMAKER

Jorge Vásquez
SOFTWARE ENGINEER

@jorvasquez2301

Overview

Course scenario

AWS SageMaker and the machine learning development process

- Building
- Training
- Deploying

Demo: Setting up AWS SageMaker

Course Scenario

Course Scenario

REST API for doing breast cancer detection from histopathology images

REST API would be integrated later into a full web application that doctors could use for doing diagnostics

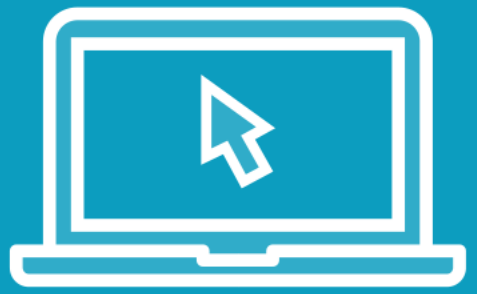
Course Scenario

Globomantics wants to use image classification algorithms that integrate seamlessly with the REST API

Course Scenario

They have heard that AWS SageMaker is a great fit for them, because it allows developers to easily build, train, and deploy machine learning models

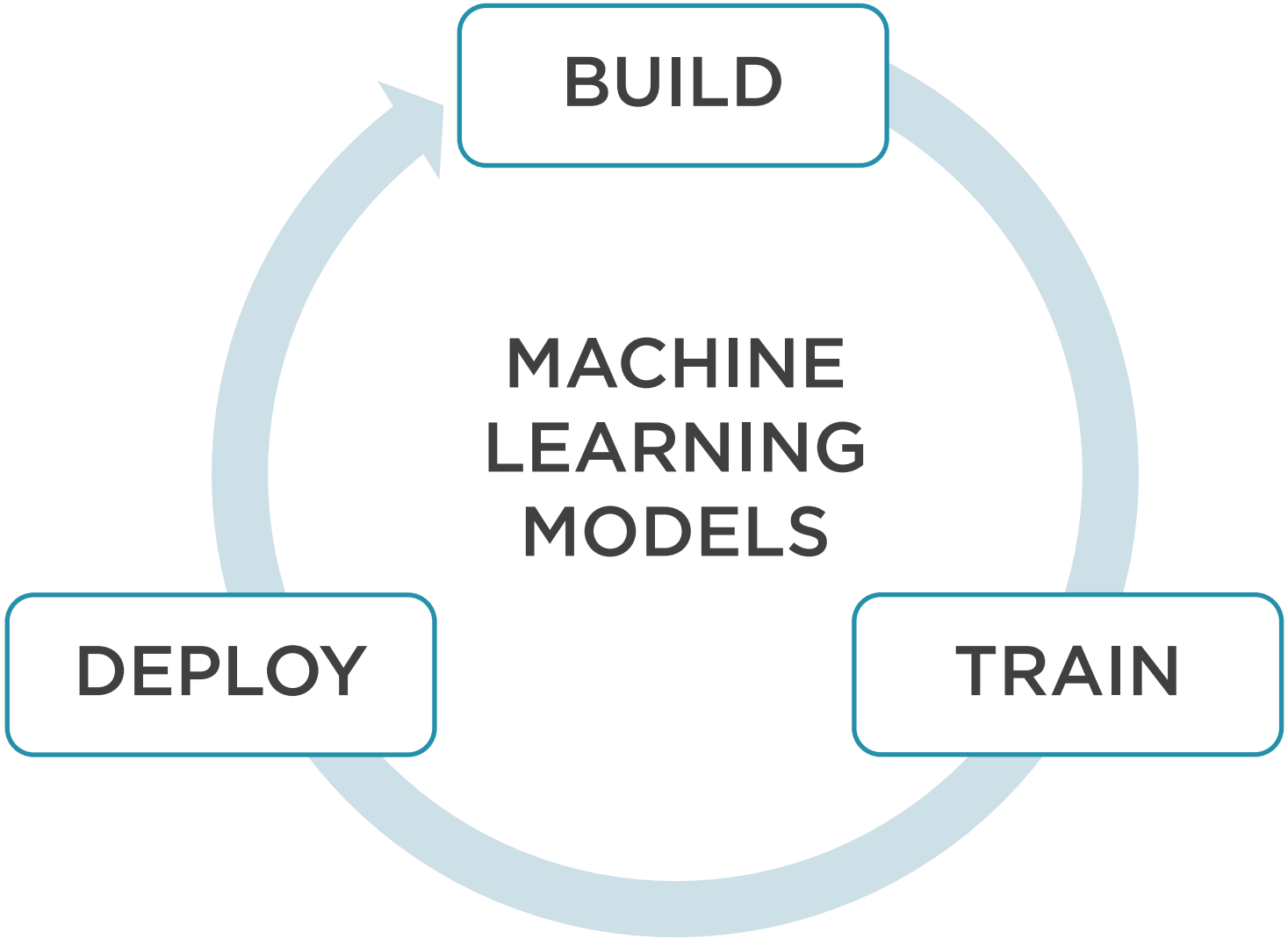
Demo



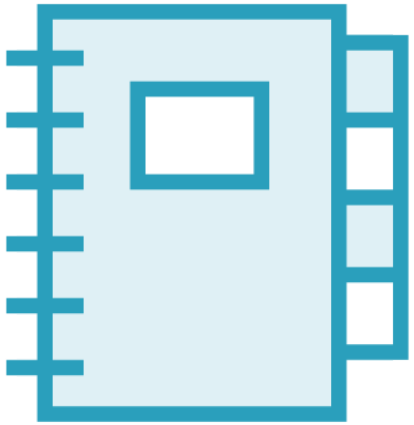
Overview of how the sample REST API for breast cancer detection should work

Introduction to AWS SageMaker

What Is AWS SageMaker?



AWS SageMaker for Building



Start creating Jupyter notebooks right away with pre-built notebooks!

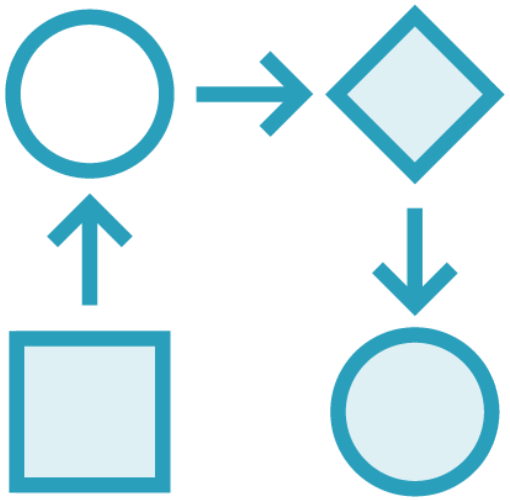
AWS SageMaker for Building

DON'T WASTE YOUR TIME ANYMORE BY INSTALLING TOOLS!

“Time = life. Therefore, waste your time and waste your life, or master your time and master your life.”

Alan Lakein

AWS SageMaker for Building



Use built-in, high performance algorithms!

You can create your own algorithms too!

AWS SageMaker for Building

Using built-in algorithms

Several built-in machine learning algorithms that you can use for a variety of problem types

Ready to be used

Optimized for production

Using your own algorithms

Flexibility to use almost any algorithm code (you provide it as a Docker image)

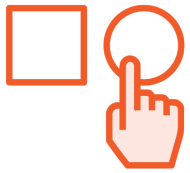
Any implementation language

Any dependent libraries and frameworks

You can use Tensorflow and Apache MXNet containers provided by AWS SageMaker

AWS SageMaker offers several built-in algorithms, the problem you want to solve influences the algorithm you choose

AWS SageMaker Built-in Algorithms



Answers that fit into discrete categories:

Linear Learner and XGBoost

Answers that are quantitative:

Linear Learner and XGBoost

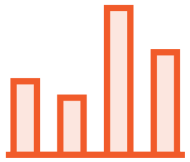
Answers that are discrete recommendations:

Factorization Machines

AWS SageMaker Built-in Algorithms

Identifying groups:

K-Means algorithm



Simplify and better understand attributes of observations:

Principal Component Analysis (PCA)

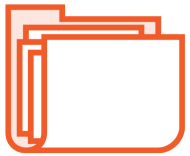
Classify images:

Image Classification Algorithm

AWS SageMaker Built-in Algorithms

Neural machine translation:

Sequence-to-Sequence algorithm

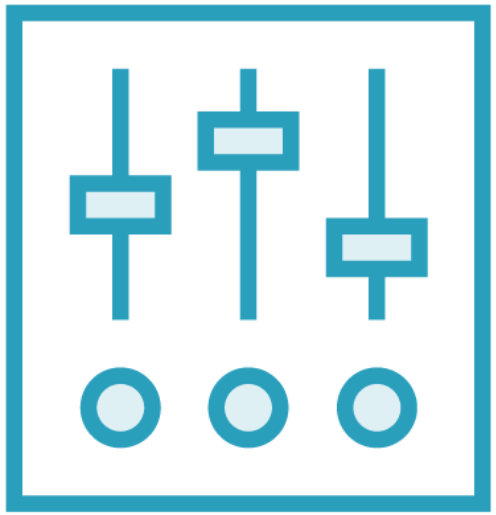


Determining topics in a set of documents:

Latent Dirichlet Allocation (LDA)

Determining topics in a set of documents using Neural Networks:
Neural Topic Model (NTM)

AWS SageMaker for Training



Hyperparameter optimization!

AWS SageMaker for Training

DON'T WASTE YOUR TIME ANYMORE BY DOING RANDOM TRIAL AND ERROR TUNING!

AWS SageMaker for Deploying

Easily create endpoints!

Monitor!

Auto-scale!

Setting up AWS SageMaker

Demo

Creating an IAM Administrator User and Group

Creating an AWS S3 Bucket

Summary

AWS SageMaker helps BOOSTING your whole machine learning development process:

- Building
- Training
- Deploying

Focus on building great machine learning models for solving real world problems!