
AWS
re:Invent

MKT209

Accelerate machine learning projects with pretrained models

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Senior Solutions Architect, AWS Marketplace

AWS

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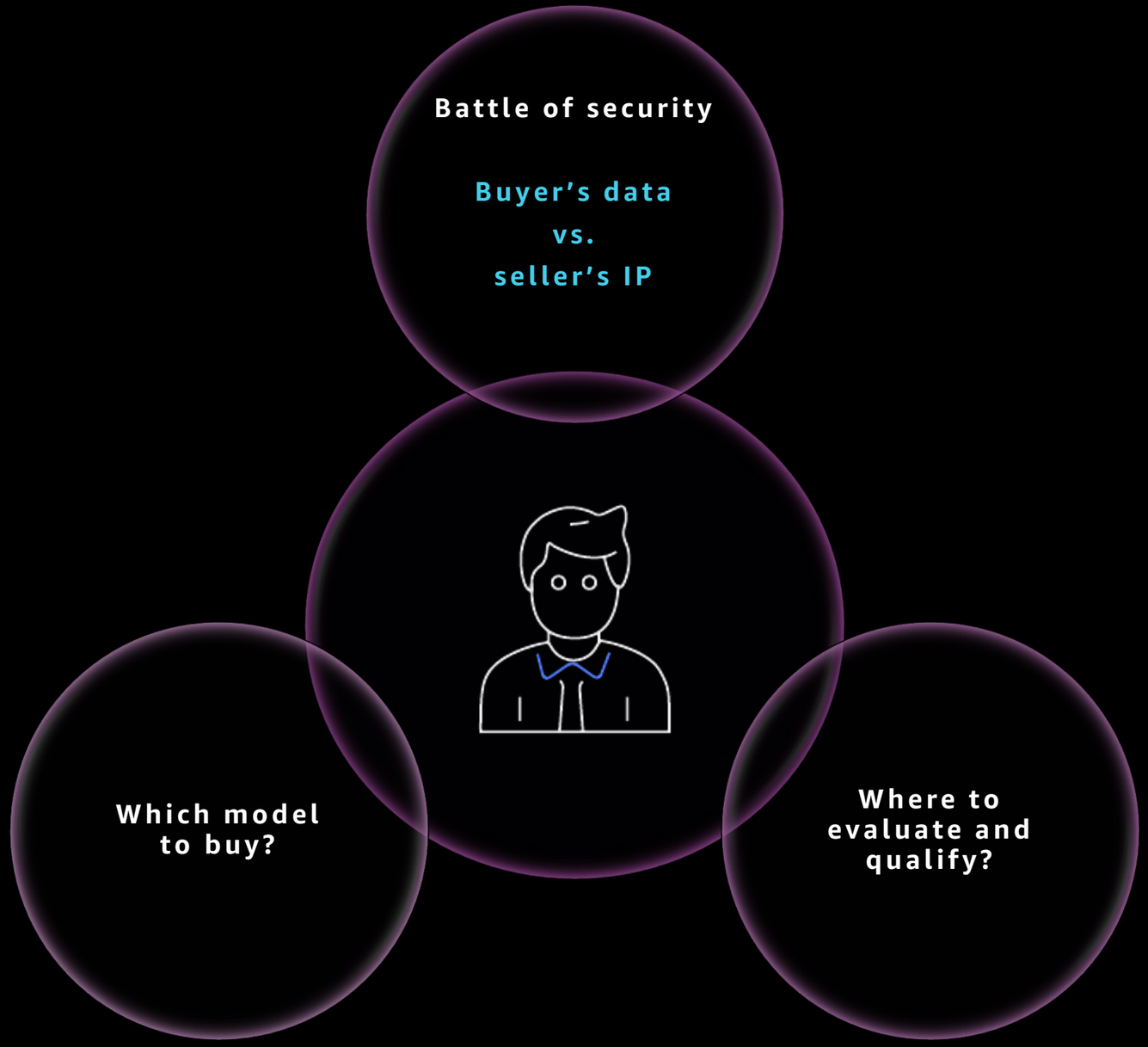
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Agenda

- AWS Marketplace for machine learning overview
- What are ML model packages used for?
- A sample ML model use case
- Demo
- Resources



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Third-party AI solution adoption challenges

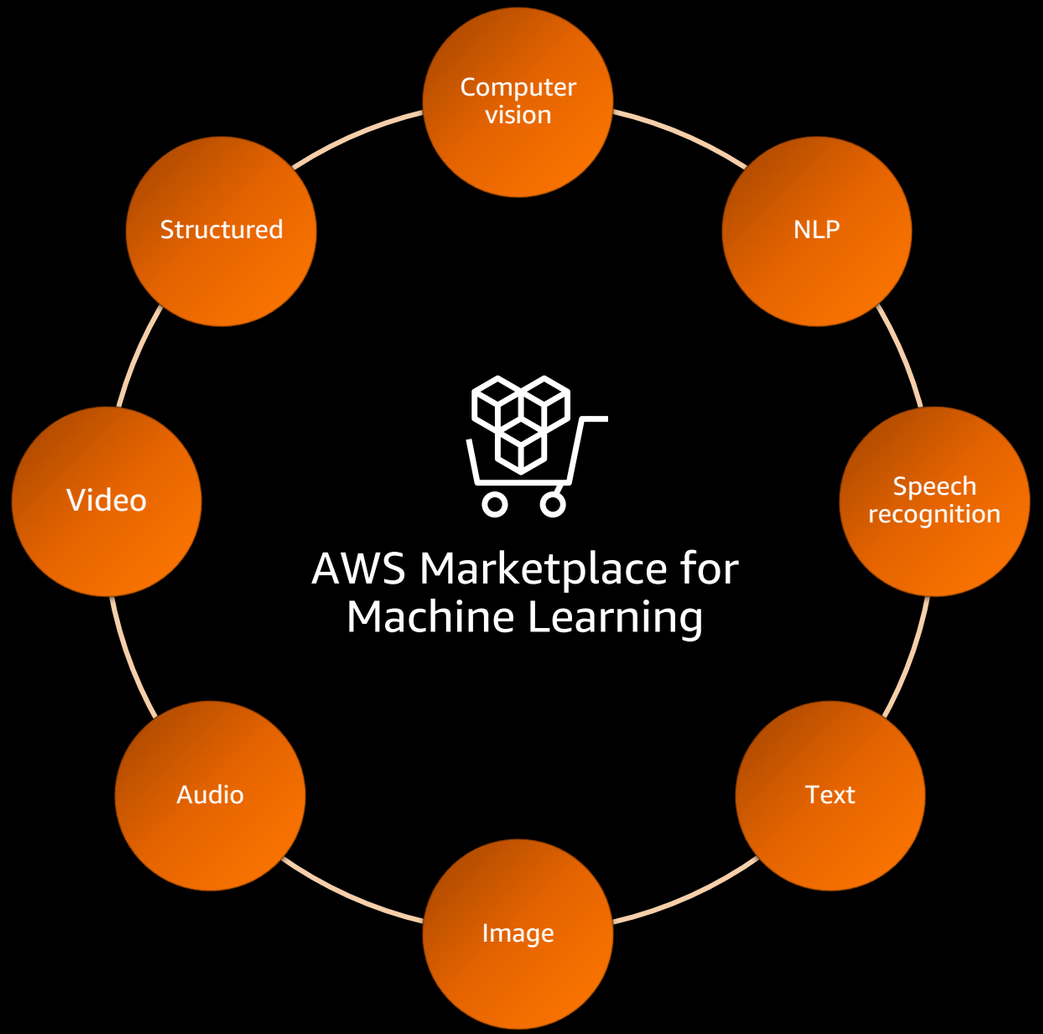
AWS Marketplace for Machine Learning

Amazon SageMaker

Curated and trusted catalog of hundreds of ML model packages and algorithms

Simplified provisioning

- Consolidated into AWS billing
- Free | Free trial | Paid subscriptions



A catalog of products from









































And more...

AWS Marketplace: Models and algorithms



Amazon SageMaker

1 Pre-trained models

- Are ready-to-use

- **Use models for:**
  - Batch **inference**
  - Real-time **inference**
  - Generating **synthetic features**

E.g., **Vehicle Damage Inspection**

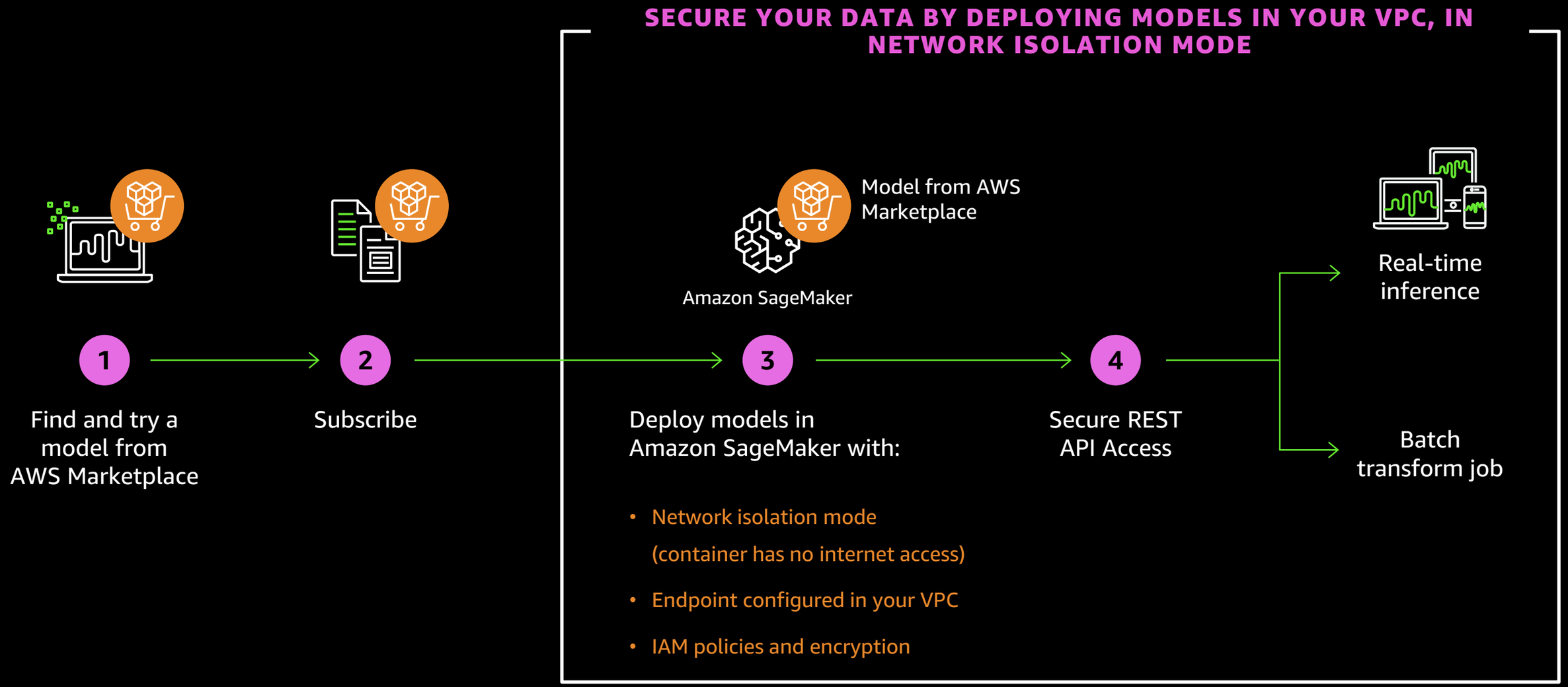
2 Algorithms

- Let you train a custom model

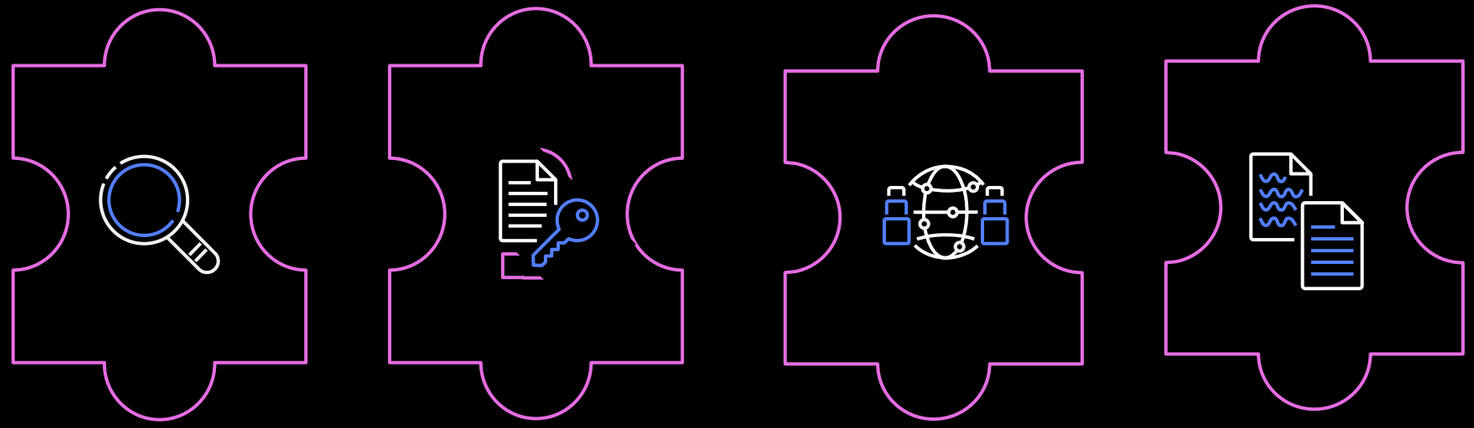
- **Use algorithms for:**
  - Training a model
  - Hyperparameter optimization

E.g., AutoGluon-Tabular, an AutoML algorithm

Deploying ML models from AWS Marketplace



Security



Vulnerability scans

Secure REST API access

Ensures data protection

Private AWS Marketplace

AWS Service Catalog

What are ML model packages used for?

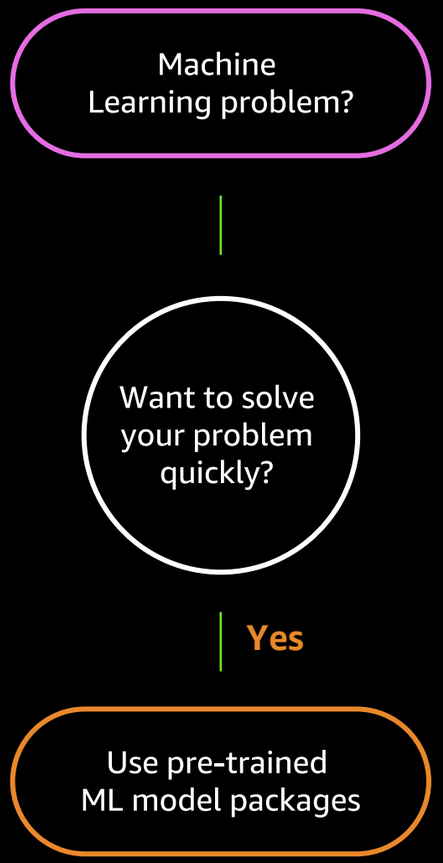


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Model packages: Perform inference

To address business needs



Identify your customer

Identify Passport Detail Page, etc.

Generate better recommendations

Identify brands, understand customer propensity to buy, etc.

Improve workplace safety: Identify compliance

Identify presence of non-workers at worksite, workers are wearing of PPE, masks, etc.

Insurance claim automation

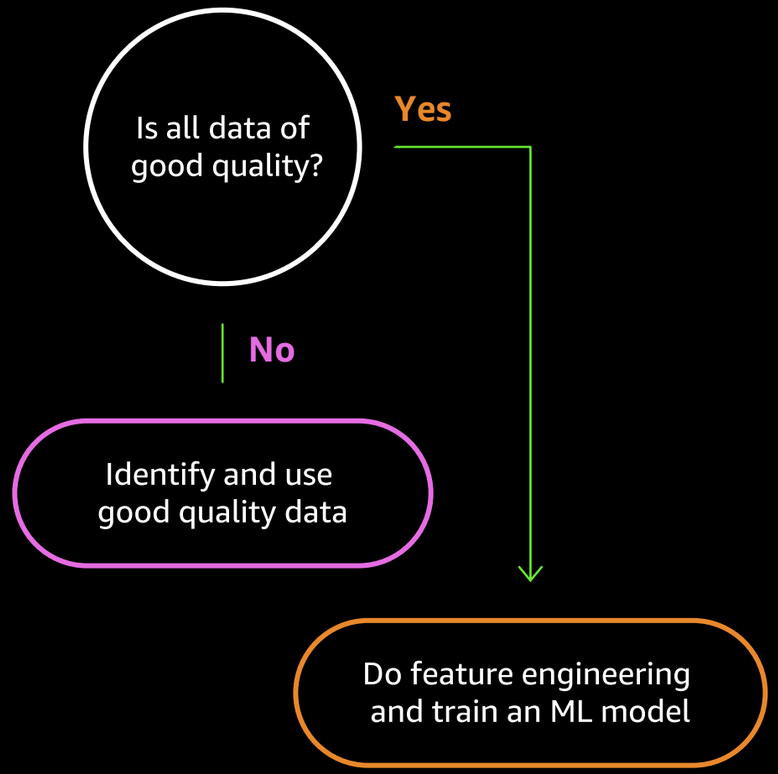
Claim prediction, vehicle’s make/model/year identification, etc.

Process call-center data intelligently

Speech recognition, source separation, etc.

Model packages: Identify high-quality data

Identify and use good quality data



Audio

- Background noise classifier (CPU) — identify audio files with background noise

Image

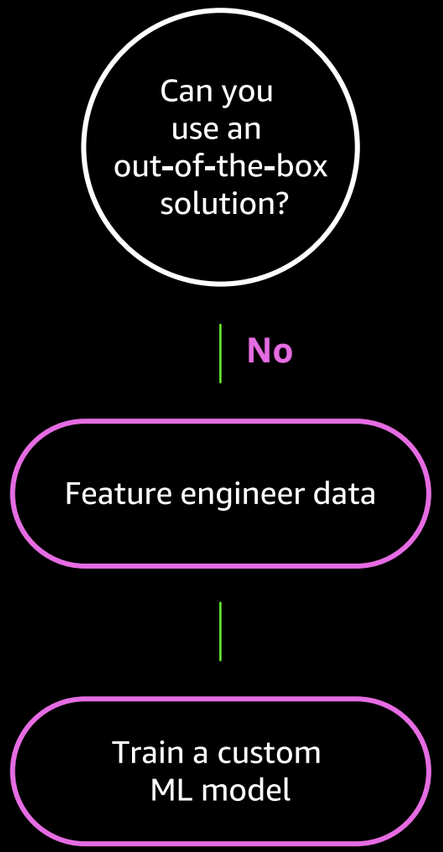
- Image quality score — identify blurry or pixelated images

Text

- Text summarizer — convert wordy documents into short summaries
- Phishing email classifier
- Dynamic AI text similarity model — identify text similarity
- Language scoring inference model — identify difficulty level

Model packages: Generate synthetic features

A custom ML model needs high-quality features



Audio

- Source separation—separate lyrics from background sound and use lyrics for your transcribe job

Image

- GluonCV YOLOv3 Object Detector, GluonCV MobileNet Classifier – Detect scenes/objects

Text

- Insult detection—emotion analysis model
- Sentence classification—extract additional insights about characteristics associated with the author

A sample ML model use case



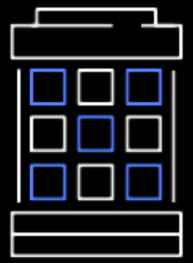
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Predicting customer's affordability

TO INFORM A LENDING DECISION

AnyCompany



A financial organization wants to identify a customer's income and expenditure and their ability to afford credit

- Customer data should not leave the environment
- Model evaluation should happen in organization's environment
- Customer wants to analyze flow logs of the ML model



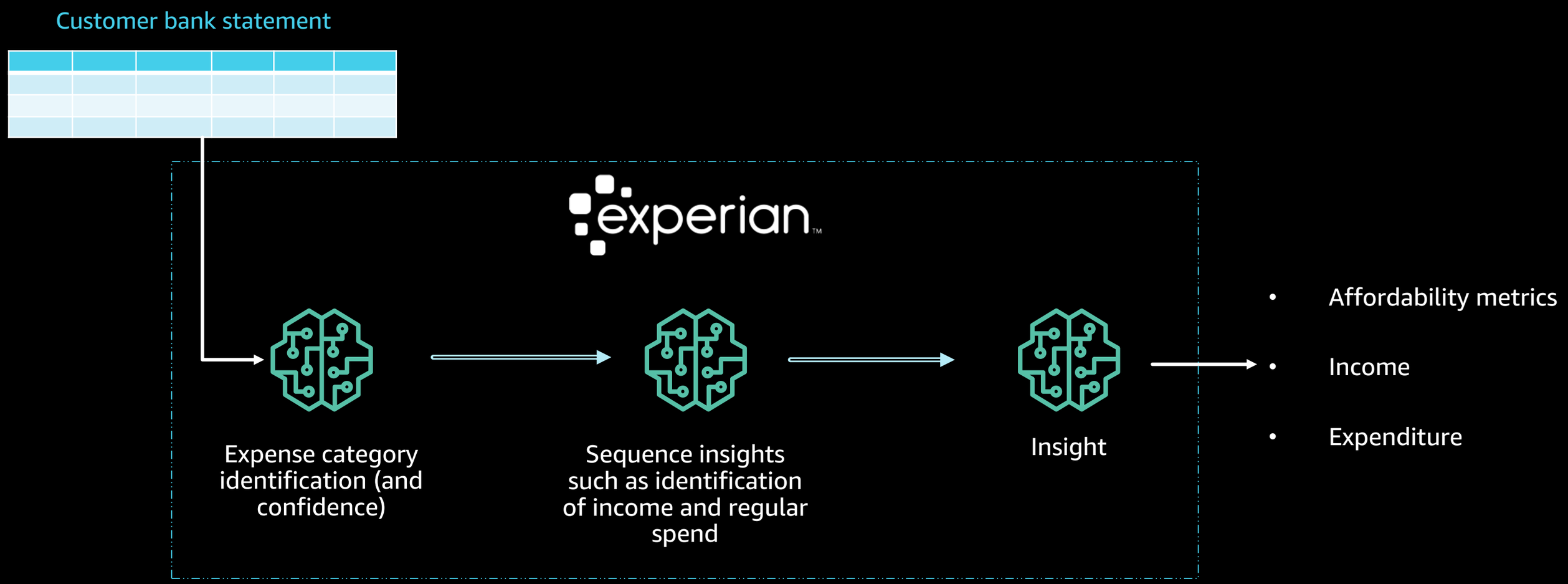
AWS Marketplace for Machine Learning

experian™

Has an ML model pipeline that other identical financial organizations have used in the past

- Seller wants IP protected
- Seller wants to bill customer for usage
- Seller wants to easily release new model versions to maintain accuracy of categorization

ML Engine Pipeline Design deployed from AWS Marketplace

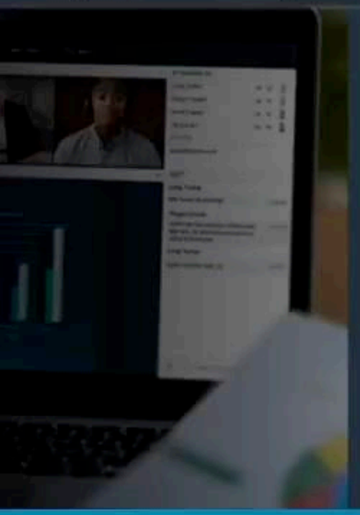


Chrome File Edit View History Bookmarks People Tab Window Help
AWS Marketplace: Homepage | aws-service-catalog-referenc | AWS Marketplace: CaaS | AWS Marketplace: Sequence | AWS Marketplace: CastScore | CloudFormation - Stack | CloudFormation - Stack smver
aws.amazon.com/marketplace

aws marketplace

Hello,

Categories | Delivery Methods | Solutions | Migration Mapping Assistant | Your Saved List | Partners | Sell in AWS Marketplace | Amazon Web Services Home | Help



aws marketplace | Aon

Virtual Event:

Executive Fireside Chat Series: Transformation, Modernization, and Governance

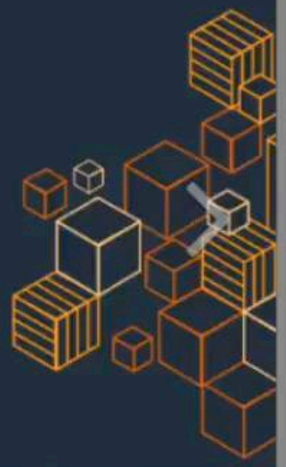
WEDNESDAY, OCTOBER 28 @ 11 AM PT | 2 PM EST

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Speakers:

David McCann
VP of Migration, Marketplace, and Control Services, Amazon Web Services

Rajeev Khanna
Chief Technology Officer, Aon plc



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AWS Marketplace is a digital catalog with thousands of software listings from independent software vendors that make it easy to **find, test, buy, and deploy software** that runs on AWS.

View all products

Find AWS Marketplace products that meet your needs.

Categories	Vendors	Pricing Plans	Delivery Methods
All categories	All vendors	All pricing plans	All delivery methods

Total results: 9556

Clear selection | View results

Popular Categories

Configuration | aws-service-catalog-referen | Configuration | AWS Marketplace: Sequence | AWS Marketplace: CastScore | CloudFormation - Stack caase | Amazon SageMaker

console.aws.amazon.com/cloudformation/home?region=us-east-1#/stacks/stackinfo?filteringText=&filteringStatus=active&viewNested=true&hideStacks=true&stackId=arn%3Aaws%3Acloudformation%3Aus-east-1%3A609791560...

aws Services ▾ N. Virginia ▾ Support ▾

CloudFormation > Stacks > caasendpoint

Stacks

caasendpoint

Delete | Update | Stack actions ▾ | Create stack ▾

Stack info | Events | Resources | Outputs | Parameters | Template | Change sets

Overview

Stack ID
arn:aws:cloudformation:us-east-1:XXXXX:stack/caasendpoint/34ad2570-188d-11eb-bcc4-12d101416601

Description
This sample cloudformation template to creates an endpoint for an ML model from AWS Marketplace(fdp-aws-marketplace-ml-model)

Status
CREATE_COMPLETE

Status reason
-

Root stack
-

Parent stack
-

Created time
2020-10-27 14:47:11 UTC-0500

Deleted time
-

Updated time
-

Drift status
NOT_CHECKED

Last drift check time
-

Termination protection
Disabled

IAM role
-

Tags (0)

Stack-level tags will apply to all supported resources in your stack. You can add up to 200 unique tags for each stack.

Search tags

Key	Value

No tags

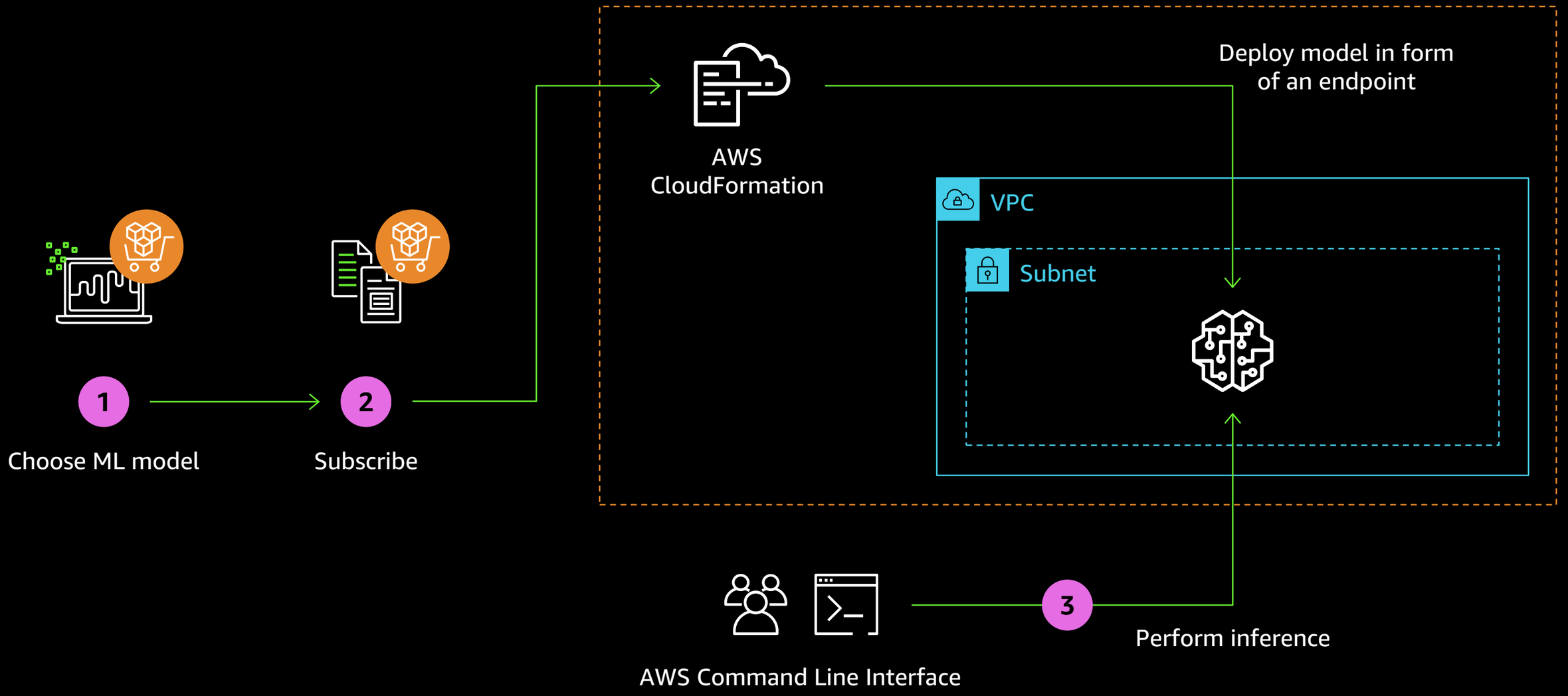
There are no tags defined for this stack

Stack policy

Defines the resources that you want to protect from unintentional updates during a stack update.

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Demo: Deploy model and perform inference



Pre-requisites:

1. Sufficient ground truth data [labelled]
2. Label Standardization
3. ML Model needs to deployed
4. Identification of metrics corresponding to problem at hand

Display Ground truth (labelled) data

In [2]:
```
df = pd.read_csv('transactions_sample_v2.csv',
                 parse_dates=['transaction_date'])[['customer_id','transaction_id',
                                                    'transaction_date','type','amount','description','ground_truth_labe
df.sample(10, random_state=34)
```

Out[2]:

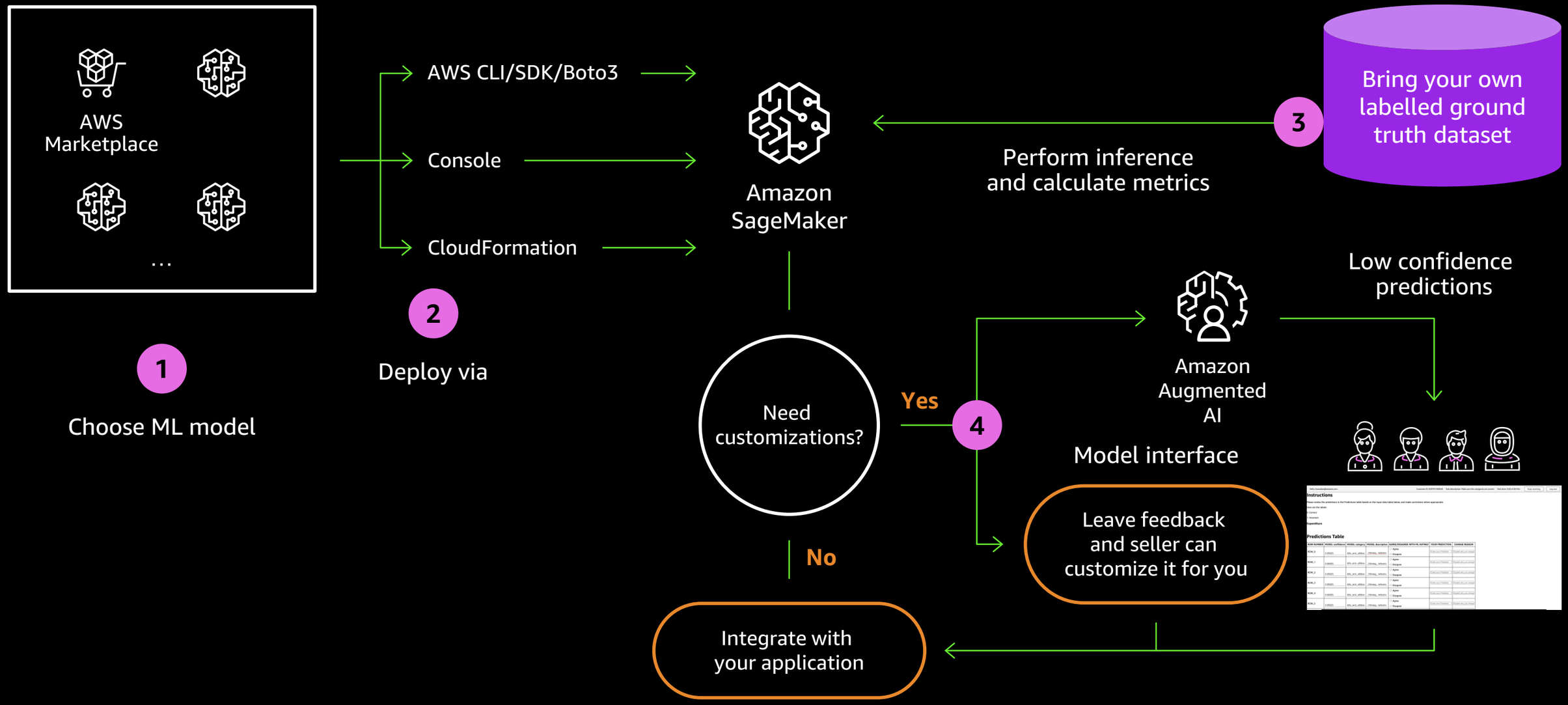
	customer_id	transaction_id	transaction_date	type	amount	description	ground_truth_label
257	123451234	257	2019-05-05 00:00:01+00:00	debit	30.00	bet888.co.uk	gambling_exp/gambling_exp
575	99999	575	2019-02-24 00:00:01+00:00	debit	9.78	tesco pfs cd 9999	transport/fuel
275	123451234	275	2019-05-28 00:00:01+00:00	credit	120.00	billy bob fast transfer	transfer_in/transfer_in
316	99999	316	2018-09-23 00:00:01+00:00	debit	10.01	hoopers convenienc cd 9999	shopping/groceries
5	123451234	5	2018-09-22 00:00:01+00:00	debit	120.00	paypal *janedoe cd 9991	online_shopping/online_spending
684	99999	684	2019-05-04 00:00:01+00:00	debit	7.41	united util water referenc...	bills_and_utilities/water
252	123451234	252	2019-05-04 00:00:01+00:00	debit	60.00	bet888.co.uk	gambling_exp/gambling_exp
694	99999	694	2019-05-10 00:00:01+00:00	debit	13.04	tesco pfs cd 9999	transport/fuel
340	99999	340	2018-10-08 00:00:01+00:00	debit	7.71	united util water referenc...	bills_and_utilities/water
65	123451234	65	2018-10-29 00:00:01+00:00	credit	20.50	john doe transfer	transfer_in/transfer_in

Display predictions

In [4]:
```
caas_outputs = pd.read_csv('prediction_output.csv',
                 parse_dates=['transaction_date'])[['customer_id','transaction_id',
                                                    'transaction_date','type','amount','description','ground_truth_labe
caas_outputs.sample(10, random_state=34)
```

Out[4]:

Demo: Model evaluation and integration



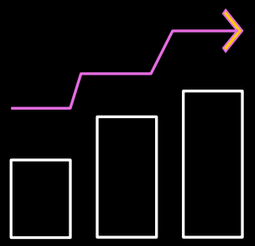
Recap: AWS customers use it to



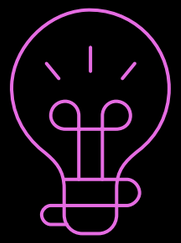
Explore new use cases



Run POCs faster to prove ROI



Reduce time for data prep with feature engineering models



Generate synthetic features

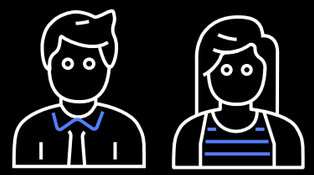


Increase speed to production

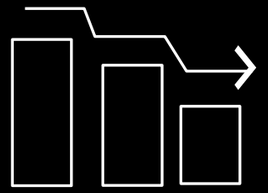
Recap: ISVs and consulting partners use it to



Improve discovery and implementations while protecting IP



Enable secure application integrations



Reduce costs via auto scaling

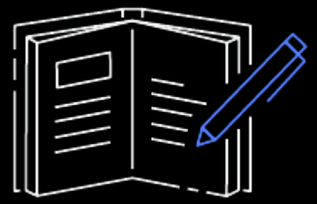


Consulting partners help customers monetize models

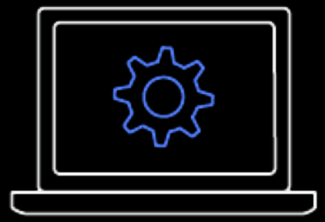
Next steps



- Check out #AWSMarketplaceML Challenge gallery
- Read blogs, watch YouTube videos on the topic



- Try models via Try Product Demo feature
- Run sample notebooks from amazon-sagemaker-examples GitHub repo



- Integrate models in your applications and innovate on behalf of your organization

https://aws.amazon.com/marketplace/solutions/machine-learning/pre-trained-models

Contact: aws-mp-bd-ml@amazon.com

Thank you!

Kanchan Waikar

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