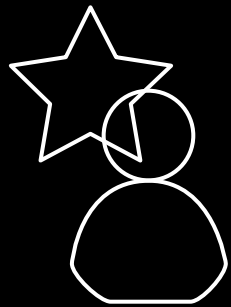


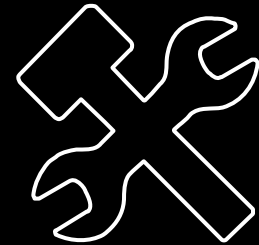
Make your apps smarter with AWS AI services

Julien Simon
Global Evangelist, AI & Machine Learning
[@julsimon](#)

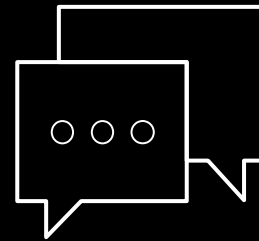
Centerpiece for digital transformation



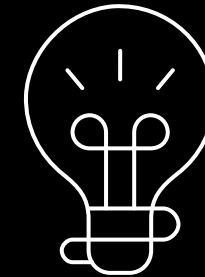
Customer
experience



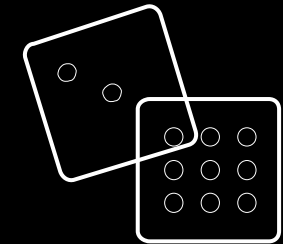
Business
operations



Decision
making



Innovation



Competitive
advantage

40% of digital transformation initiatives
supported by AI in 2019

Our mission at AWS

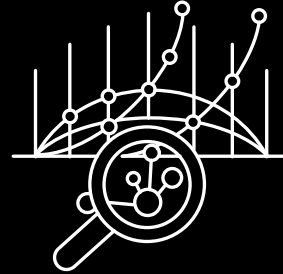
Put machine learning in the hands
of every developer

Our Approach for Machine Learning



Customer-focused

90%+ of our ML roadmap is defined by customers



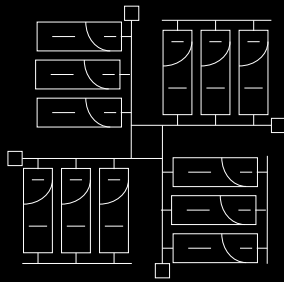
Pace of innovation

200+ new ML launches and major feature updates in the last year



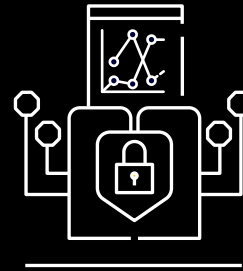
Breadth and depth

A wide range of AI and ML services in-production



Multi-framework

Support for the most popular frameworks



Security and analytics

Deep set of security and encryption features, with robust analytics capabilities



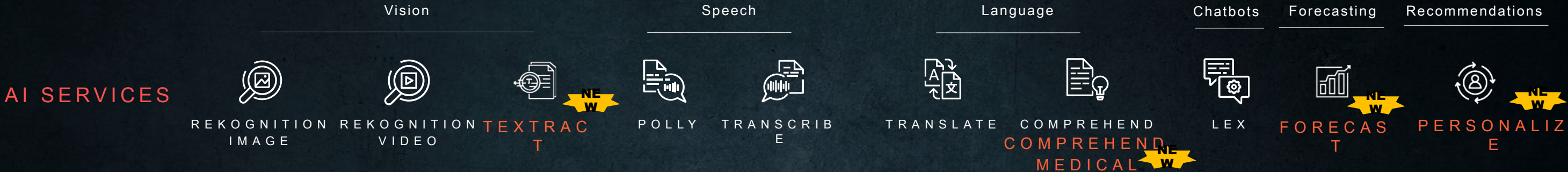
Embedded R&D

Customer-centric approach to advancing the state of the art

More machine learning happens on AWS than anywhere else



The Amazon ML Stack: Broadest & Deepest Set of Capabilities



Put AI to work for your business

AI SERVICES

Vision



REKOGNITION IMAGE REKOGNITION VIDEO TTRACT

Speech



POLLY



TRANSCRIBE



TRANSLATE



COMPREHEND
& COMPREHEND
MEDICAL

Language



LEX

Chatbots



FORECAST



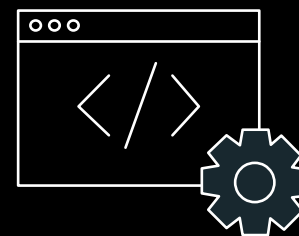
PERSONALIZE

Forecasting

Recommendations



Pre-trained AI services that require
no ML skills or training



Easily add intelligence to your
existing apps and workflows



Quality and accuracy from
continuously-learning APIs

Amazon Rekognition

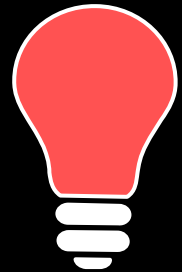
Easily add intelligent image and video analysis to your applications.

Amazon Rekognition: Deep Learning-Based Image and Video Analysis

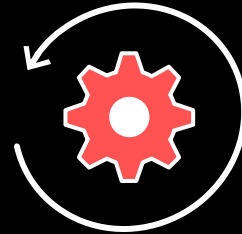


Amazon Rekognition Benefits

State of the
art capabilities



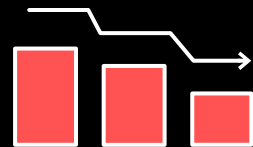
Continuous
improvement



Rapid
integration



Low cost



Serverless



Your data
is your own



Real-time identity verification



Aella Credit uses **Amazon Rekognition** to analyze images to verify an individual's identity in real-time without human intervention, allowing it to provide instant loans to eligible customers through its mobile app.

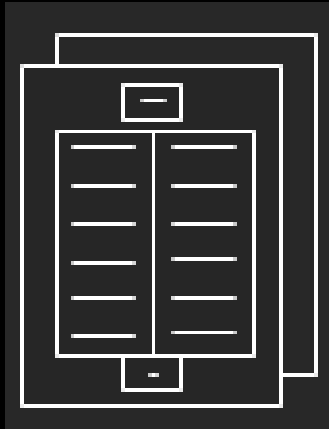
<https://aws.amazon.com/blogs/machine-learning/aella-credit-empowers-underbanked-individuals-by-using-amazon-rekognition-for-identity-verification/>

NE
W

Amazon Textract

OCR++ service to easily extract text and data from virtually any document. No ML experience required.

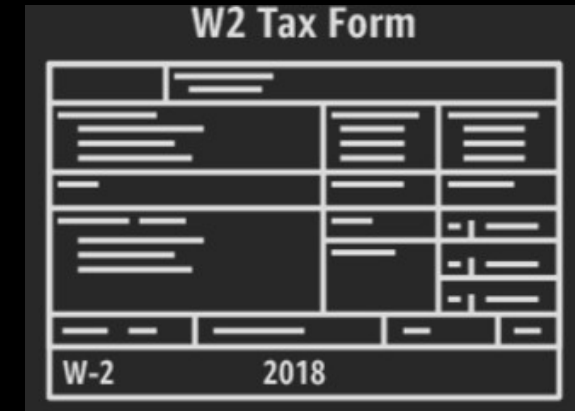
Amazon Textract Features



Text extraction



Table extraction



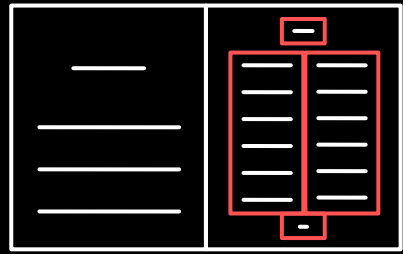
Form extraction

One line of code!

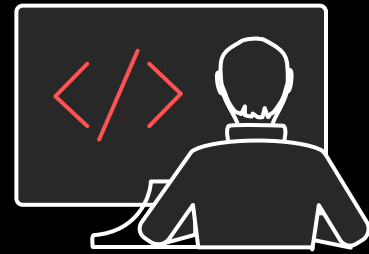
```
response = client.analyze_document(  
    Document={'S3Object': {'Bucket': bucket, 'Name': document}},  
    FeatureTypes=["TABLES", "FORMS"]  
)
```

Amazon Textract

Benefits



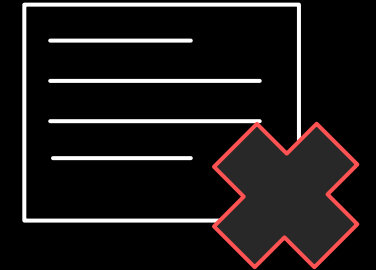
Extract data quickly
and accurately



Eliminate
manual effort



Lower document
processing costs



No ML Experience
Required

Document & form processing

Cox
AUTOMOTIVE™

« With *Amazon Textract*, we can automatically capture and validate data from *documents* and *forms*, such as *loan applications* or *vehicle titles*, so decisions can be made more quickly. This will reduce customer effort and further streamline the process for everyone involved from the manufacturer to the buyer. »

Bryan Landerman, Chief Technology Officer - Cox Automotive

Demo

NE
W

Amazon Forecast

Accurate time-series forecasting service, based on the same technology used at Amazon.com.
No ML experience required.

Sample use cases



Product demand



Workforce demand

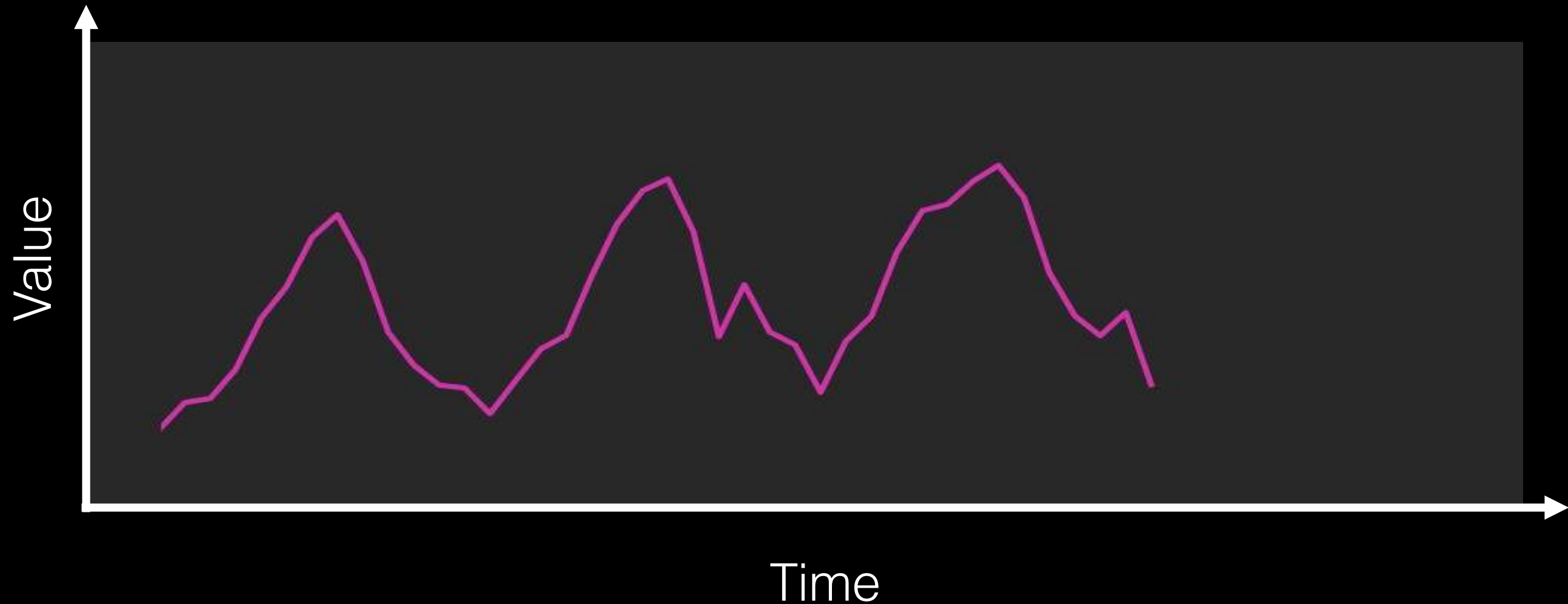


Financial
metrics

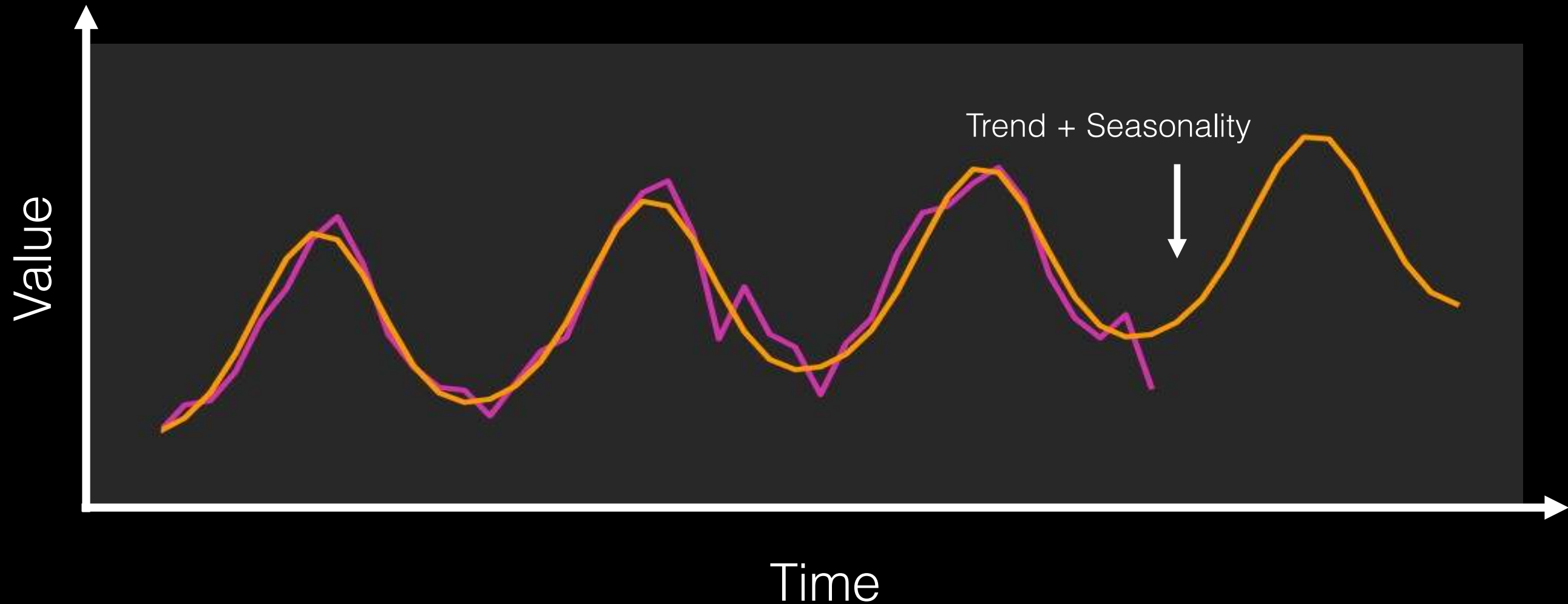


Inventory
planning

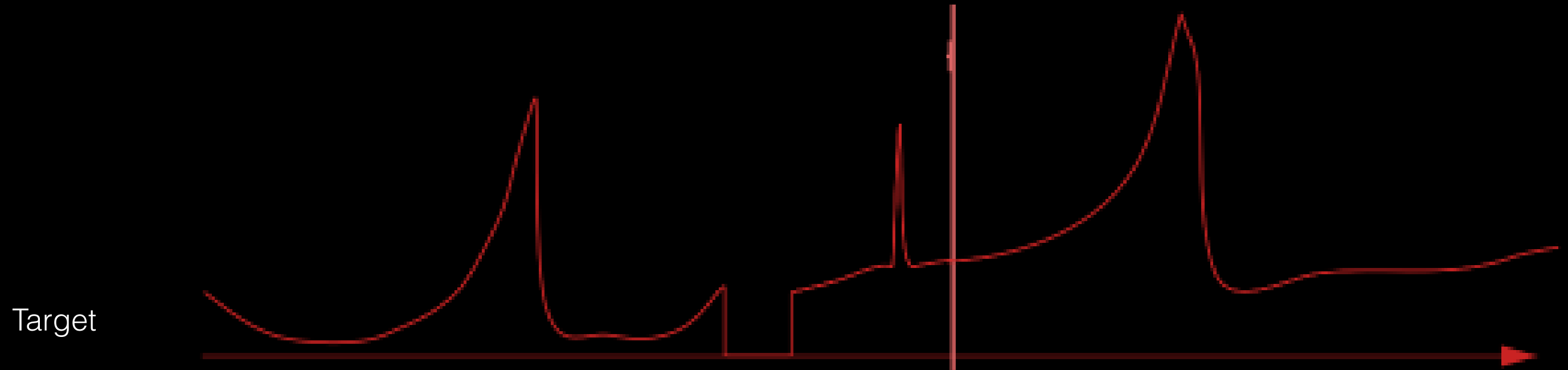
Traditional time-series models



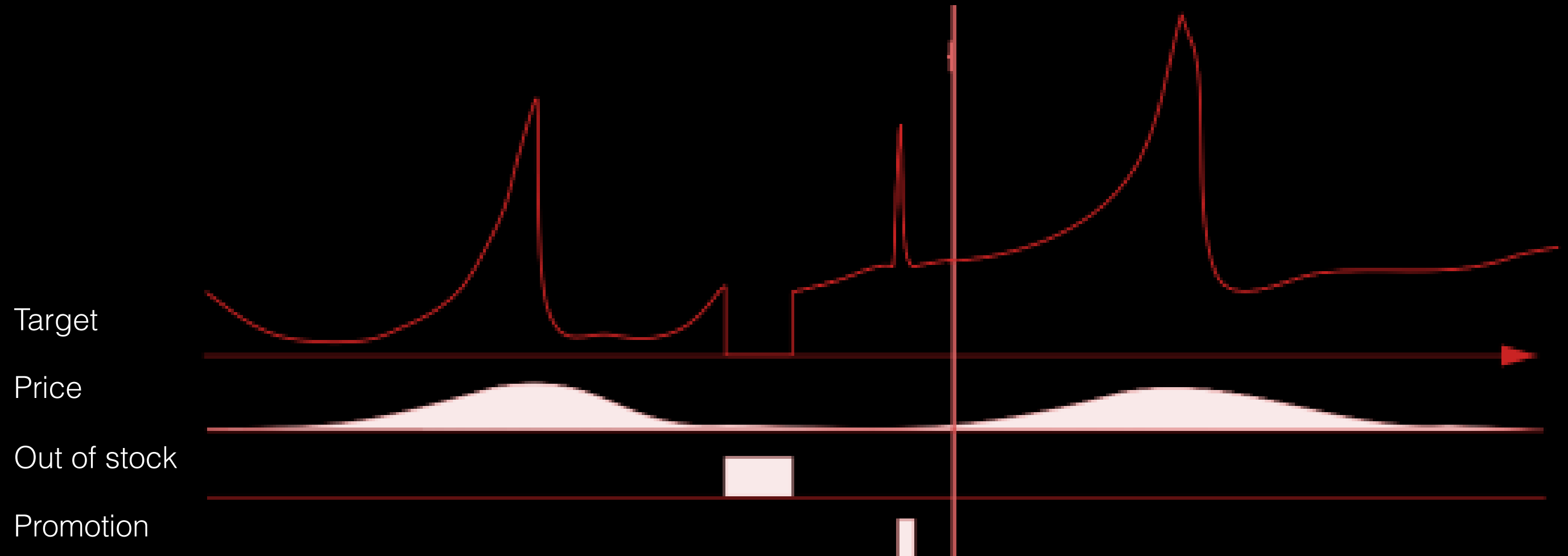
Traditional time-series models



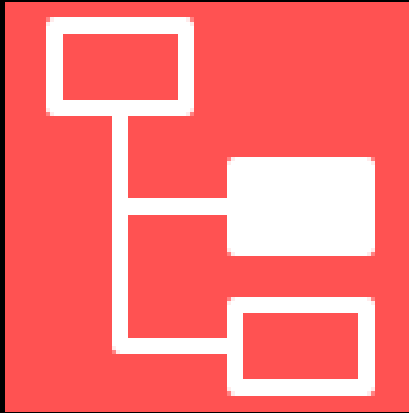
Real-world time-series are often more complex



Additional inputs are needed to predict accurately



Traditional methods struggle with real-world series



Don't consider
metadata



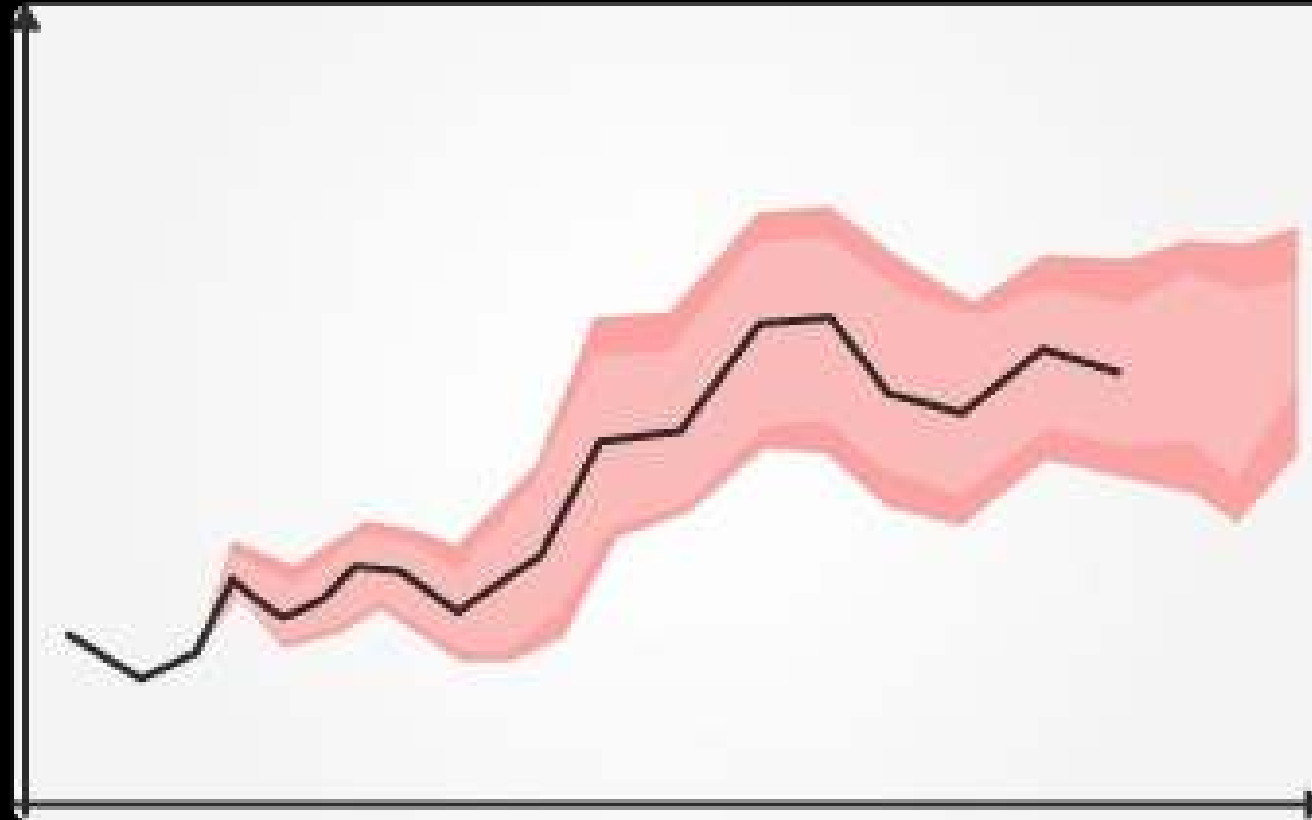
Don't consider
external factors such
as holidays and
promotions



Can't handle
time-series with
no history

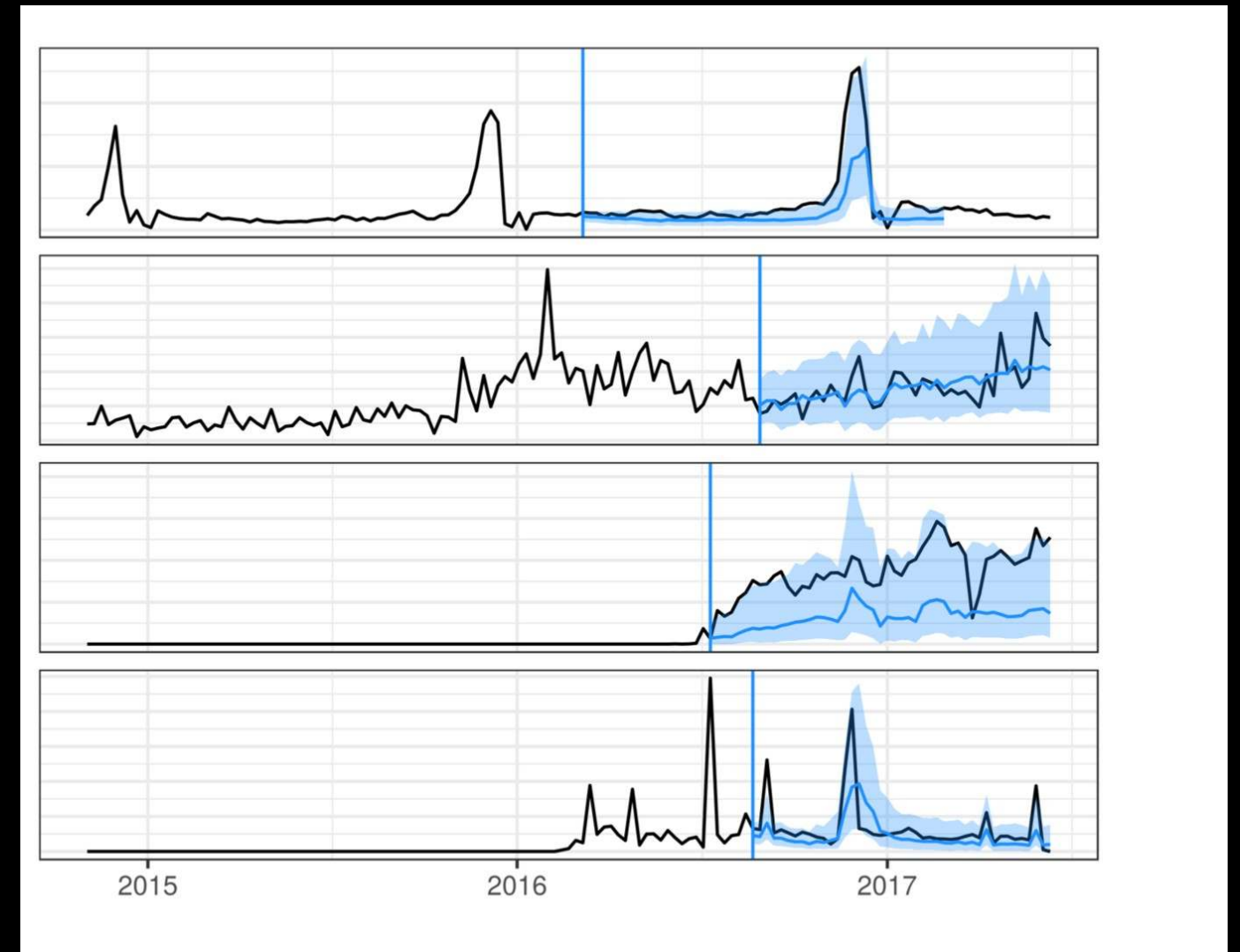
Probabilistic forecasts

Forecasts for specific prediction intervals



Using deep learning increases forecast accuracy

- Deep learning performs best on Amazon.com retail demand data compared to other methods
- The figure illustrates four different products sold on Amazon.com
- Bottom two graphs show how the algorithm can handle **cold start** and **promotional spikes**



<https://arxiv.org/pdf/1711.11053.pdf>

Amazon Forecast

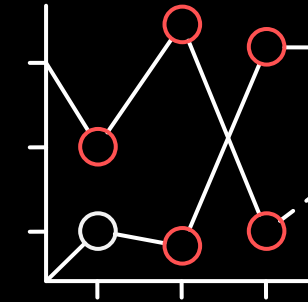
Improve forecasting accuracy by up to 50% at 1/10th the cost



Accurate
forecasts



Get to results
quickly



Works with any historical
time-series

KEY FEATURES

Consider multiple
time-series
at once

Automatic
machine
learning

Evaluate model
accuracy

Visualize forecasts
& import results
into business apps

Schedule
forecasts and
model retraining

Bring existing
algorithms from
Amazon
SageMaker

Privacy
& encryption

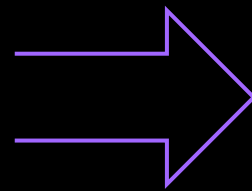
Amazon Forecast: How it works

Historical data

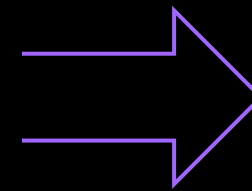
Sales, inventory, pricing, etc.

Related data

Weather, competitive promotions, etc.



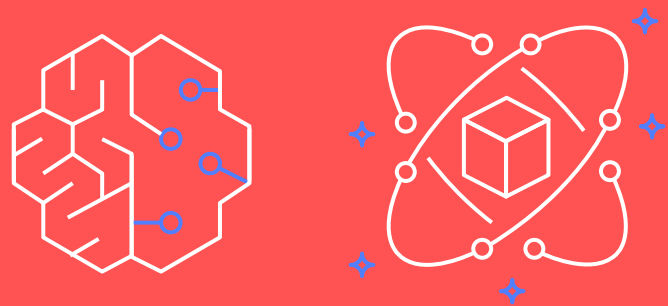
1. Load data
2. Inspect data
3. Identify features
4. Select algorithms
5. Select hyperparameters
6. Train models
7. Optimize models
8. Deploy and host models



Private
Customized
Forecasting
API

Amazon Forecast

Train models on your own data



Use AutoML or pick a predefined algorithm

- Choose a preconfigured algorithm (packaged as **recipes**) or use **AutoML**, and Amazon Forecast will pick the right recipe for you
- Amazon Forecast can use **Hyper Parameter Optimization** to tune models automatically
- You can also train **custom** deep learning models on your data and compare accuracy metrics easily

Demand prediction at scale

« We have been using **Amazon Forecast** to predict demand for over **50,000 different products**, using Amazon Forecast's state-of-the-art deep learning algorithms that we can use right out of the box. »

Amazon Forecast takes care of all the heavy lifting of setting up pipelines, re-training schedules, and re-generating forecasts, so we can experiment with hundreds of models very easily. »

Fernando Croceri, Head of Analytics at Mercado Libre

Demo

NE
W

Amazon Personalize

Real-time personalization and recommendation service,
based on the same technology used at Amazon.com.
No ML experience required.

Common applications & use cases



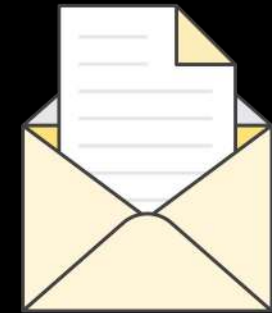
Personalized
recommendations



Related Items



Search
reranking



Notifications
and emails

Personalizing user experience is proven to increase discoverability, engagement, user satisfaction, and revenue

30% of page views on Amazon are from recommendations

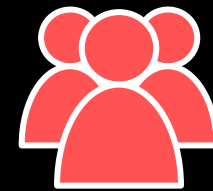


Effective personalization requires solving multiple hard problems

Reacting to user interactions in real time



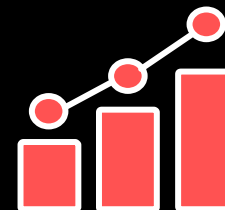
Avoiding mostly showing popular items



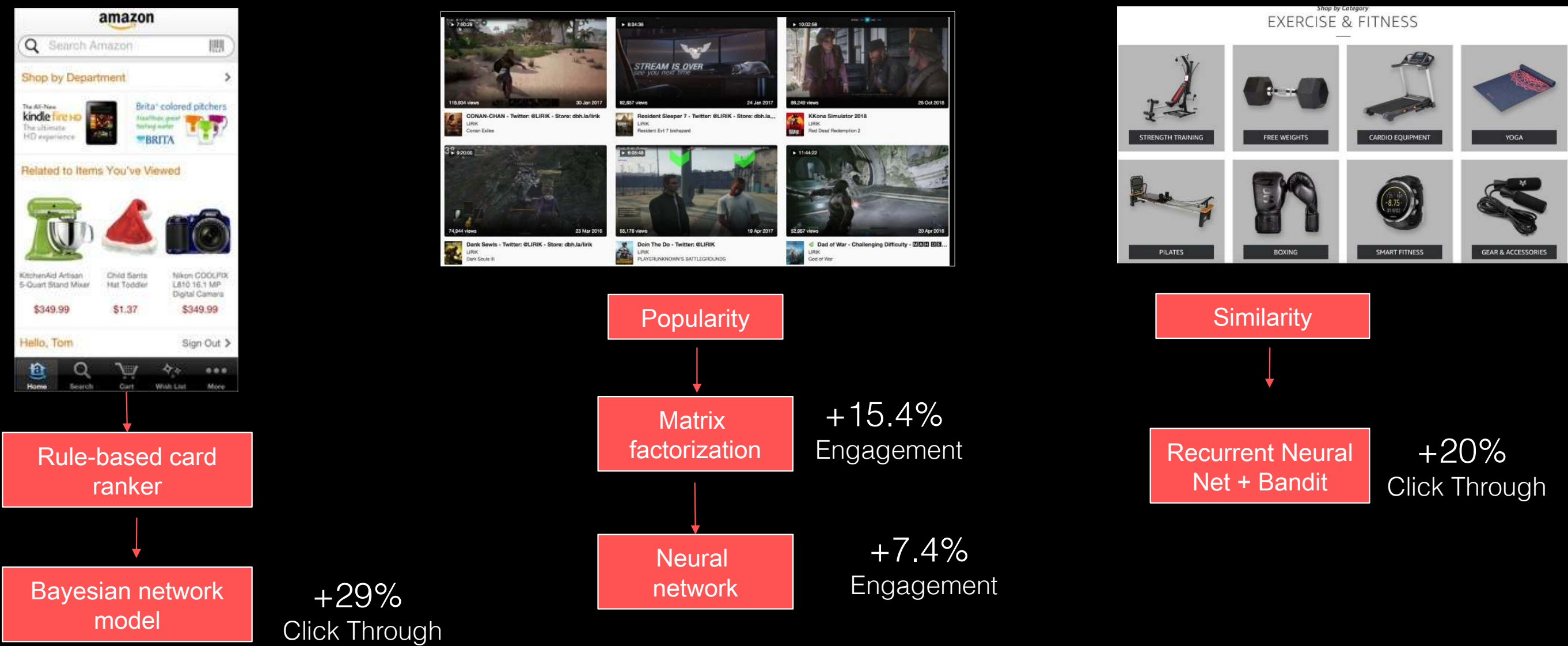
Handling cold start (insufficient data about new users/items)



Scale



Deep learning techniques have a direct impact on the bottom line

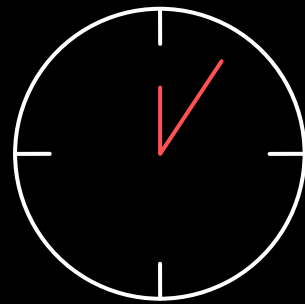


Amazon Personalize

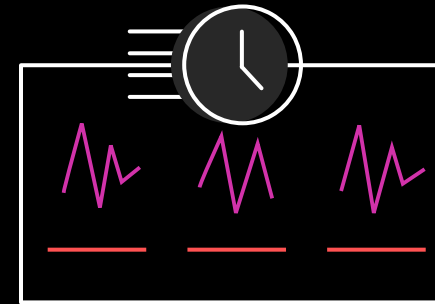
Improve customer experiences with personalization and recommendations



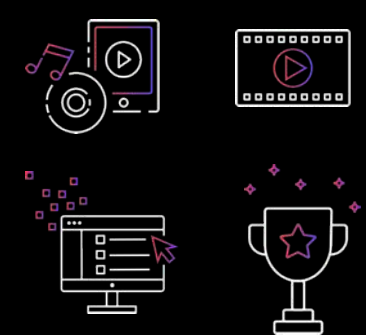
Deliver high quality recommendations



Real-time



Deliver personalization in days, not months



Works with any product or content

KEY FEATURES

Context-aware
Recommendations

Automated
machine learning

Continuous learning
to improve performance

Bring existing algorithms
from Amazon SageMaker

Amazon Personalize: How it works

Activity stream

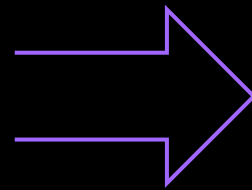
Views, signups, conversion, etc.

Inventory (optional)

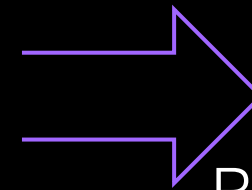
Videos, products, articles, etc.

Demographics (optional)

Name, age, location, etc.



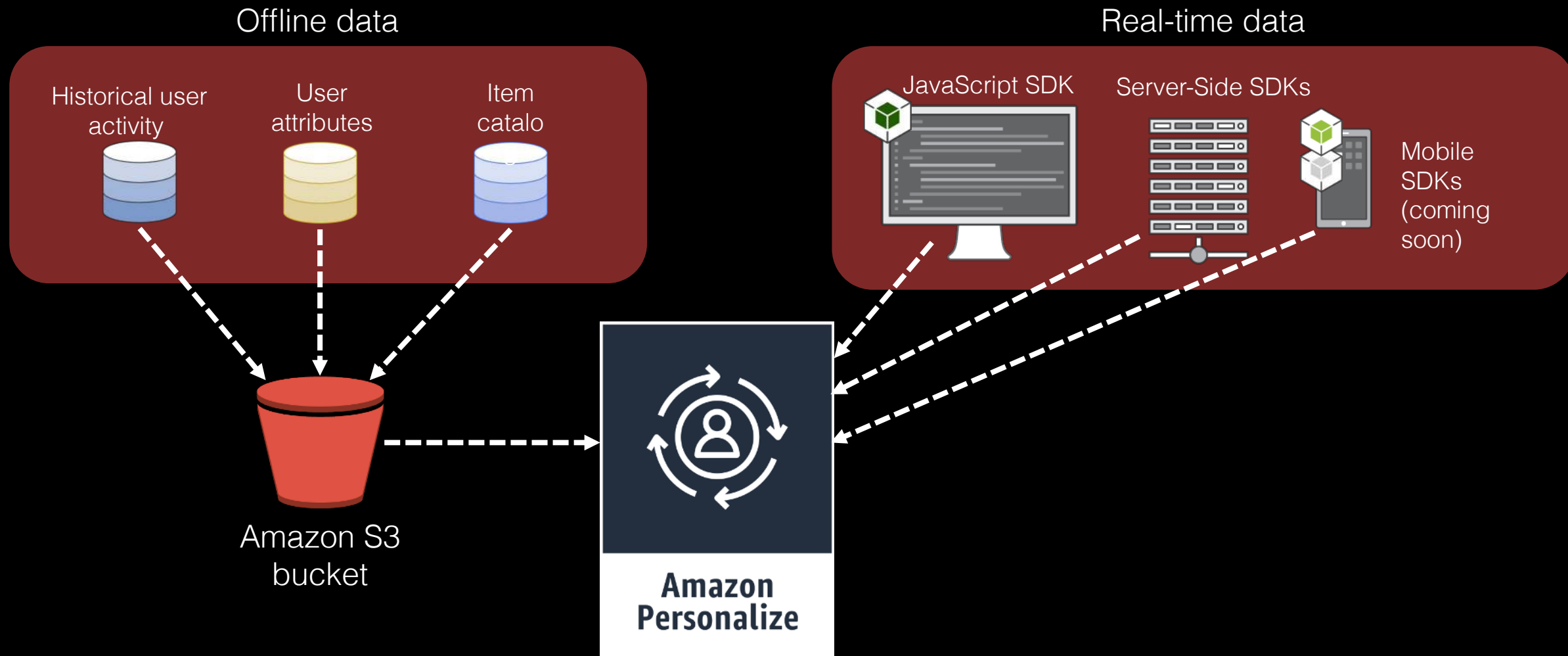
1. Load data
2. Inspect data
3. Identify features
4. Select algorithms
5. Select hyperparameters
6. Train models
7. Optimize models
8. Build feature store
9. Deploy and host models
10. Create real-time caches



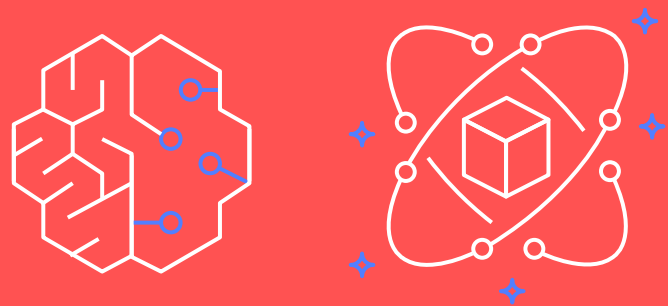
Private Customized
Personalization
API

Amazon Personalize

Feeding data to Amazon Personalize



Train models on your own data



Use AutoML or pick a predefined algorithm

- Choose a preconfigured algorithm (packaged as **recipes**) or use **AutoML**, and Amazon Forecast will pick the right recipe for you
- Amazon Personalize can use **Hyper Parameter Optimization** to tune models automatically
- You can also train **custom** deep learning models on your data and compare accuracy metrics easily

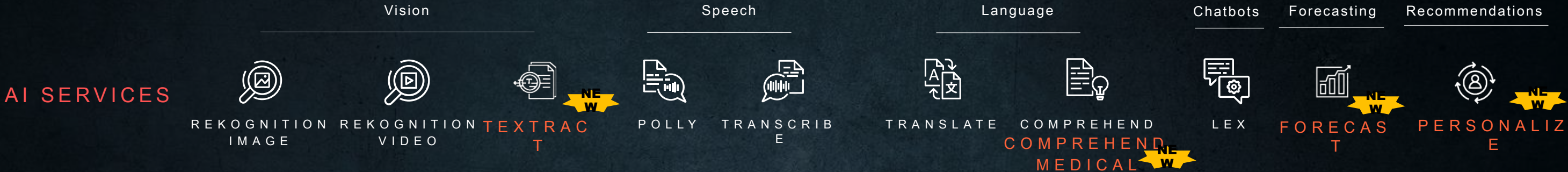
Personalizing customer experiences



Domino's uses **Amazon Personalize** to customize and scale relevant marketing communications to customers based on time, context, and content, thereby improving and enhancing their experience with the Domino's brand.

Demo

The Amazon ML Stack: Broadest & Deepest Set of Capabilities



ml.aws
aws.training/
machinelearning



SUMMIT

<https://aws.amazon.com/blogs/aws/amazon-forecast-time-series-forecasting-made-easy/>

<https://aws.amazon.com/blogs/aws/amazon-personalize-real-time-personalization-and-recommendation-for-everyone/>

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Thank you!

Julien Simon
Global Evangelist, AI and Machine Learning

@julsimon
<https://medium.com/julsimon>



Please complete the
session survey.