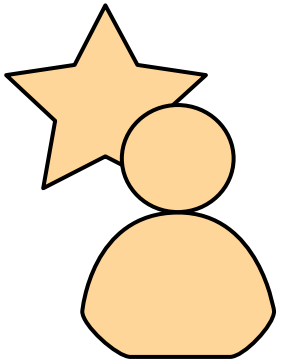# Personalization for everyone

Julien Simon
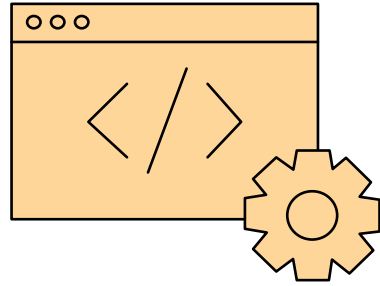Global Evangelist, AI & Machine Learning, Amazon Web Services
@julsimon
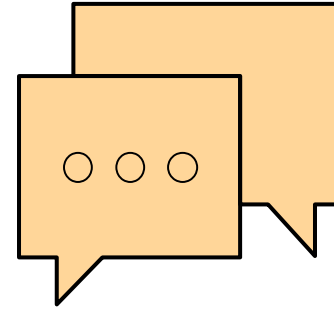
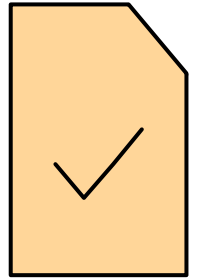# Users expect every interaction to be personalized

Product Recommendation

Search Personalization
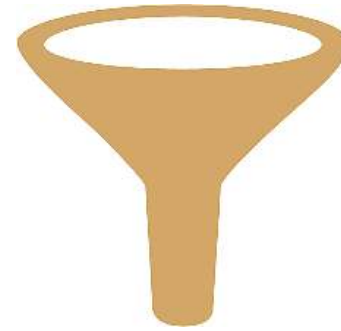
Personalized Notifications

Emails

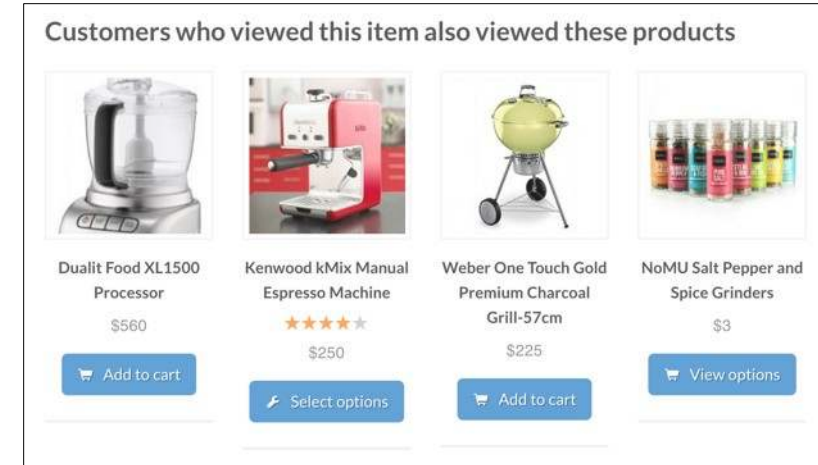# Personalization offers material business results

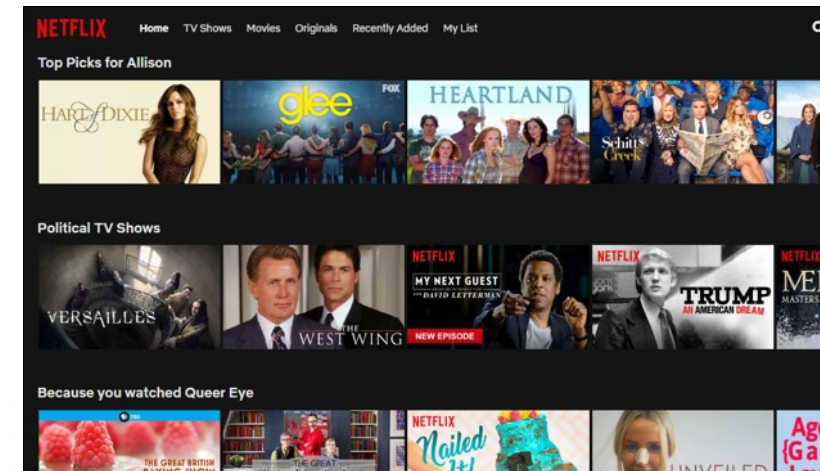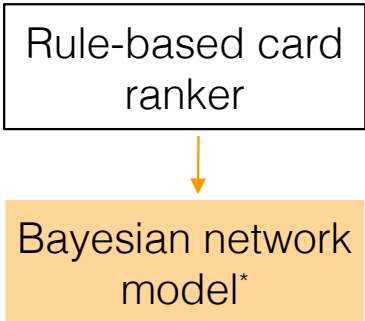Engagement

Product Discovery
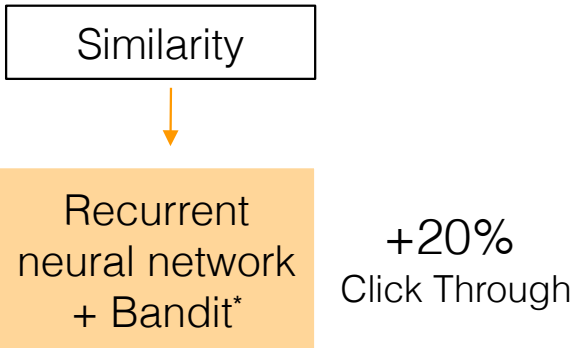
Conversion

Revenue

# More views

**30%** of page views on Amazon
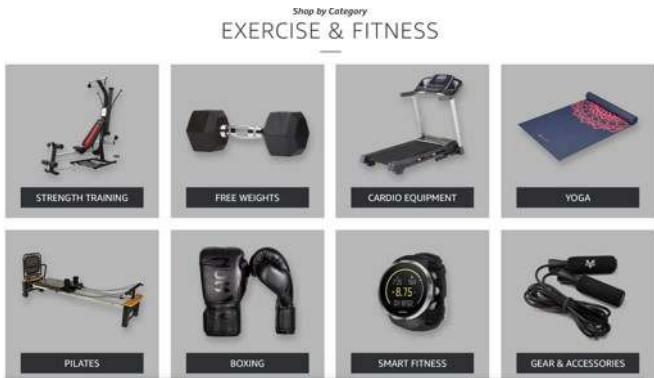


**80%** of views on Netflix

# More engagement



Rule-based card ranker

→

Bayesian network model*

+29%
Click Through

Popularity

→

Matrix factorization    +15.4% Engagement

→

Neural network*    +7.4% Engagement

Similarity

→

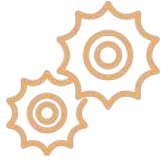Recurrent neural network + Bandit*    +20% Click Through
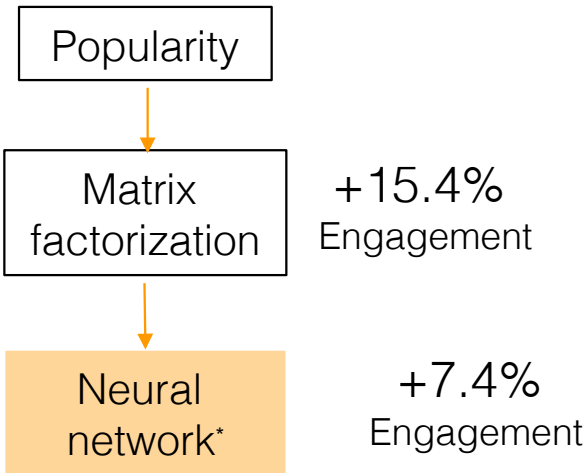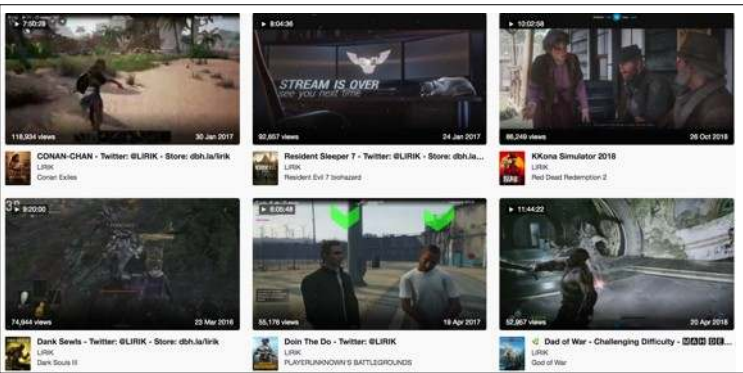
*: Deep Learning algorithm

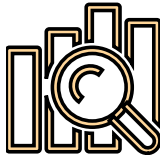# Effective personalization involves hard problems

## Custom models
Personalization models must accurately reflect business context and user behavior
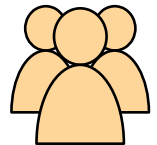
## Real-Time
Personalization must be responsive to the changing user intent

## Cold Starts
New users should get relevant recommendations, new items should show in recommendations

## Popularity Trap
Naïve models give recommendations similar to popular items

## Scale
Recommendations should scale across millions of users and items

Data preparation
Algorithm selection
Model tuning
Infrastructure
…

And I thought SEO/SEM was bad…

# The AWS ML Stack

Broadest and deepest set of capabilities

## AI Services

| | VISION | | | SPEECH | | LANGUAGE | | CHATBOTS | FORECASTING | RECOMMENDATIONS |
|---|---|---|---|---|---|---|---|---|---|---|
| | AMAZON REKOGNITION IMAGE | AMAZON REKOGNITION VIDEO | AMAZON TEXTRACT | AMAZON POLLY | AMAZON TRANSCRIBE | AMAZON TRANSLATE | AMAZON COMPREHEND & AMAZON COMPREHEND MEDICAL | AMAZON LEX | AMAZON FORECAST | AMAZON PERSONALIZE |

## ML Services

| Amazon SageMaker | Ground Truth | Notebooks | Algorithms + Marketplace | Reinforcement Learning | Training | Optimization | Deployment | Hosting |
|---|---|---|---|---|---|---|---|---|

## ML Frameworks + Infrastructure

| FRAMEWORKS | | INTERFACES | INFRASTRUCTURE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TensorFlow  mxnet  PYTORCH | | GLUON  Keras | EC2 P3 & P3DN | EC2 G4 EC2 C5 | FPGAs | AWS DL CONTAINERS & AMIs | AMAZON ELASTIC CONTAINER SERVICE | AMAZON ELASTIC KUBERNETES SERVICE | AWS IoT GREENGRASS | AMAZON ELASTIC INFERENCE | AWS INFERENTIA |

aws

# Amazon Personalize

Improve customer experiences with personalization and recommendations
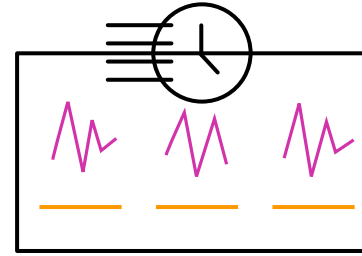
Deliver high quality recommendations
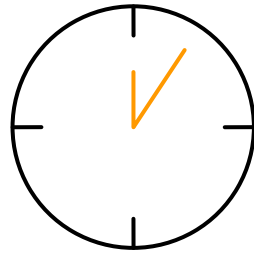
Real-time

Deliver personalization in days, not months
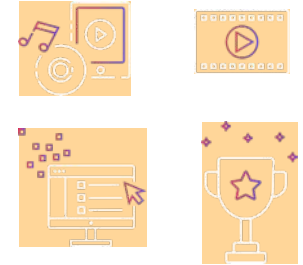
Works with any product or content

KEY FEATURES

Simple data schemas

Pre-defined or custom recipes

Automated machine learning and tuning

Fully-managed infrastructure

Based on the technology used at Amazon.com

# From data set to prediction API



Historical data

User-Item interactions | User attributes | Item catalog

Amazon S3 bucket

Real-time data

JavaScript SDK | Server-Side SDKs | Mobile SDKs (coming soon)

Amazon Personalize

Customized personalization & recommendation API

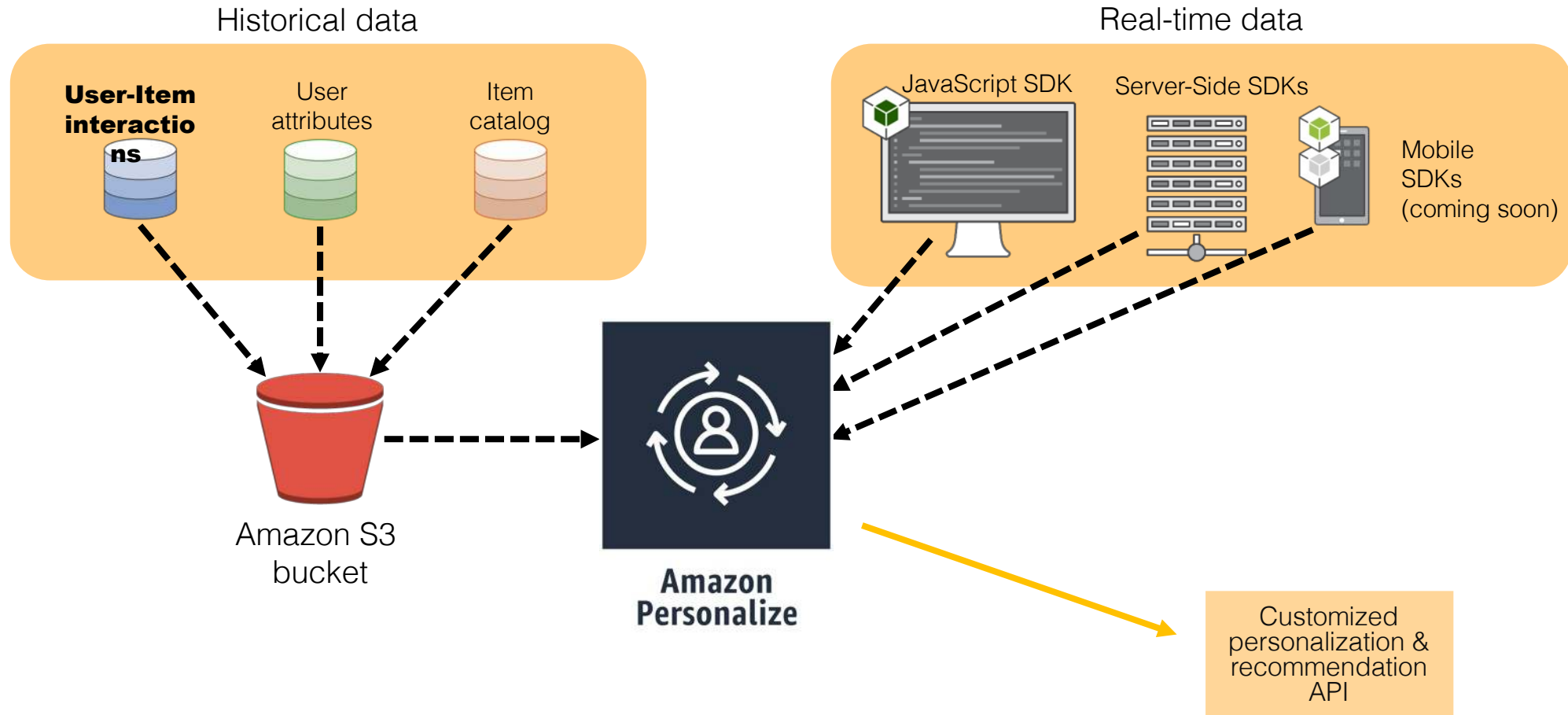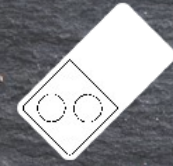# Domino's

## 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.

# Getting started

https://ml.aws

https://aws.amazon.com/personalize

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

https://aws.amazon.com/blogs/aws/amazon-personalize-is-now-generally-available

# Thank you!

Julien Simon
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@julsimon