



Innovate faster: Reinvent your organization with machine learning

Dean Samuels

Chief Technologist, ASEAN
Amazon Web Services

Kris Howard

Head of Developer Relations, APJ
Amazon Web Services



INNOVATE

DATA AND AI/ML EDITION

FEBRUARY 22, 2023

What will be your learning experience today...



The **reach** of ML is growing

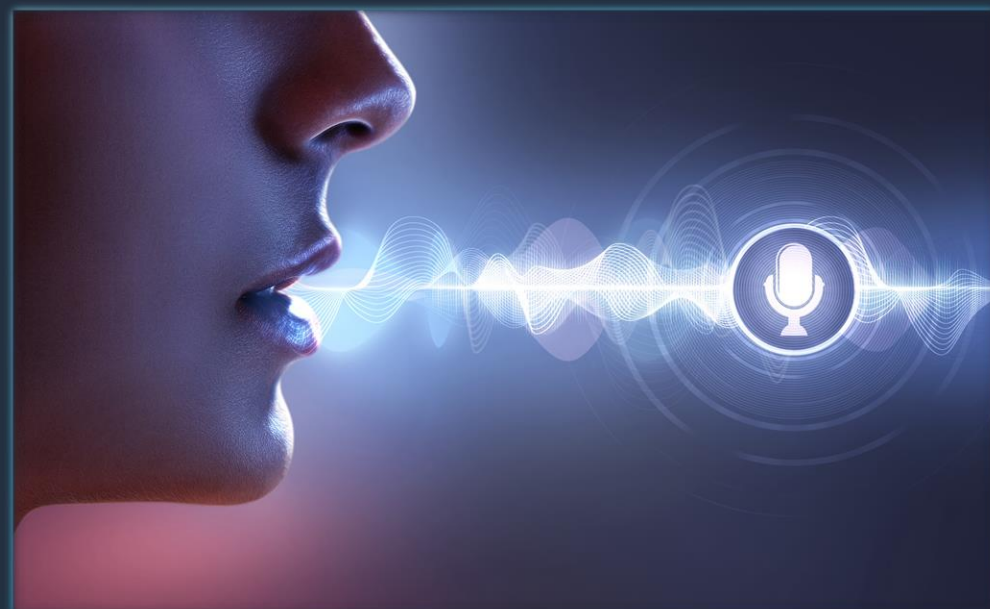


Putting ML into the hands of **every** developer



The **evolution** of AI/ML

ML in our everyday life...



Digital Assistants



Travel



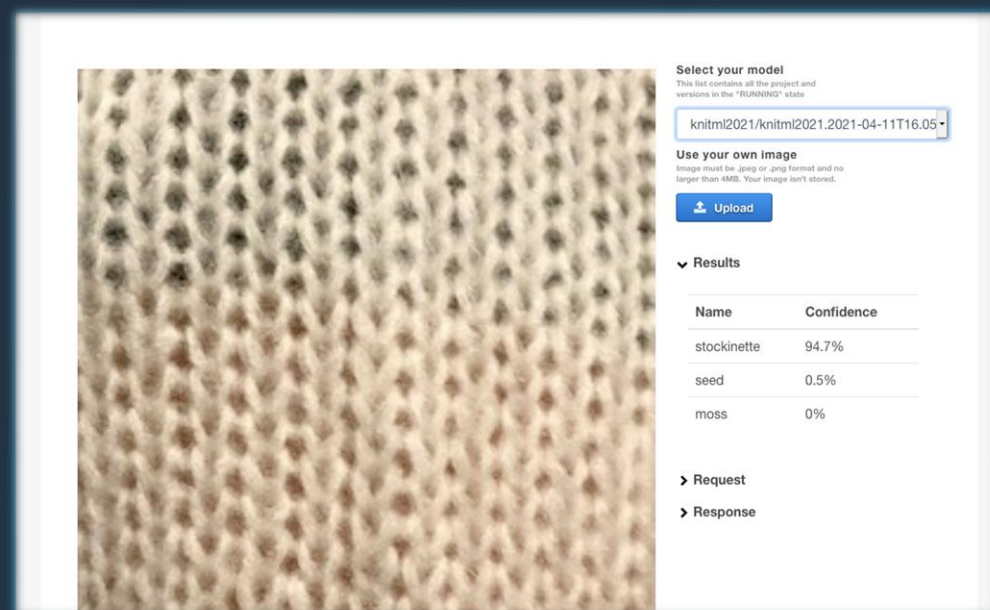
In-home robots



Recommendations



Improved Elderly Care



Combine with Hobbies



Customer Service



Tinkering

agustinus-nalwan.medium.com/



Agustinus Nalwan

Feb 4, 2022 · 22 min read · ✨ Member-only · 🎧 Listen



Building Ellee — A GPT-3 and Computer Vision-Powered Talking Robotic Teddy Bear With Human-Level Conversation Intelligence

How I built a robotic teddy bear that can move its head and converse naturally.



The **reach** of ML is growing



The reach of ML is growing



INCREASED SPENDING

By 2026, global spending on artificial intelligence will reach \$300 billion growing 4.2 faster than average IT spend

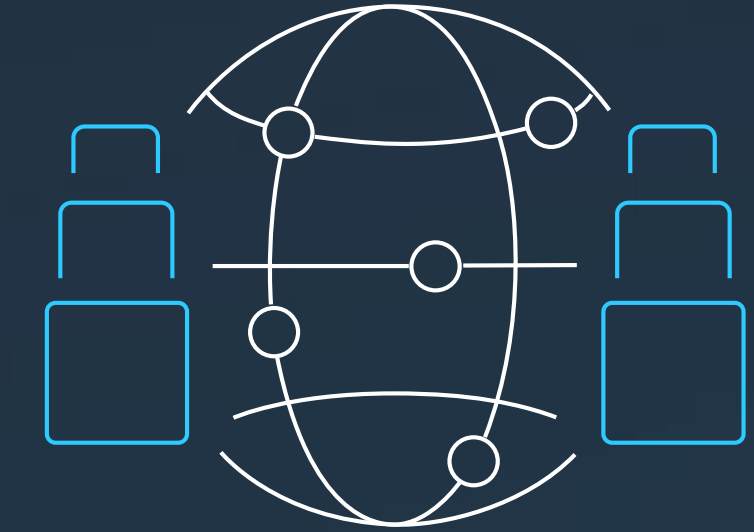
IDC



AI ACROSS SEVERAL BUSINESS UNITS

80% of executives think automation can be applied to any business decision

Gartner



AI IS CRITICAL TO SUCCESS

94% of business leaders surveyed say AI is critical to their success

Deloitte

What is it?



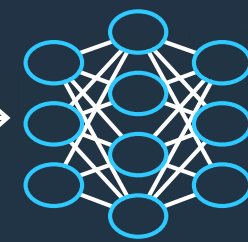
Artificial Intelligence (AI)

Any technique that enables computers to mimic human intelligence using logic, if-then statements, and machine learning



Machine Learning (ML)

A subset of AI that uses machines to search for patterns in data to build logic models automatically



Deep Learning (DL)

A subset of ML composed of deeply multi-layered neural networks that perform tasks like speech and image recognition



Enhance customer
experience



Better and **faster**
decision-making



Improve business
operations



New products
and services

Customer Personalisation

Virtual assistants

Identity verification

Contact center intelligence

Fraud prevention

Intelligent search

Forecasting demand

Quality inspection

Churn prediction

Customer sentiment analysis

Cyber Security

Content moderation

Predictive maintenance

Intelligent document processing

Coding & DevOps

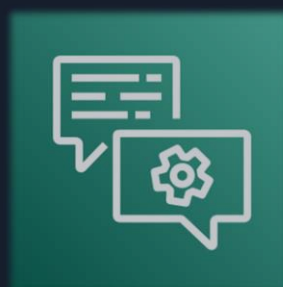
"Lean forward" media

Immersive experiences

5G & IoT integration

Next generation products

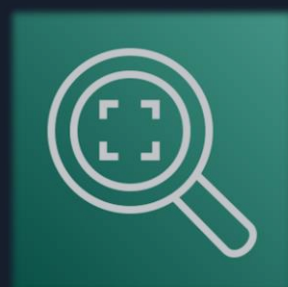
..and more



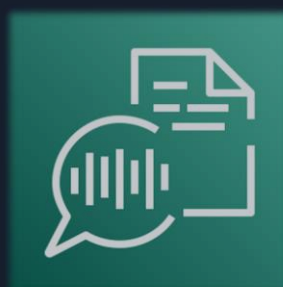
Amazon
Lex



Amazon
Polly



Amazon
Rekognition



Amazon
Transcribe



Amazon
Kendra



Amazon
Comprehend



Amazon
Forecast



Amazon
Translate



Amazon
Personalize



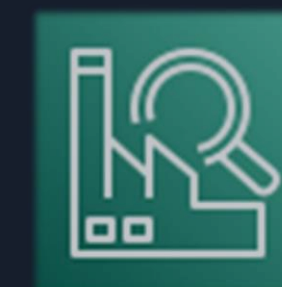
Amazon
Textract



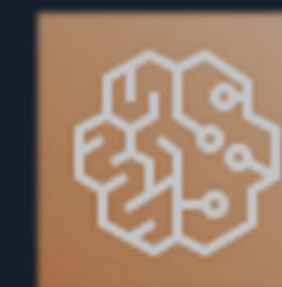
Amazon
Augmented AI




Amazon
Monitron



Amazon
Lookout for
Equipment



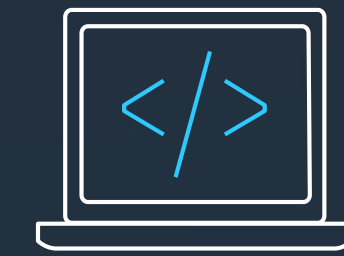
Amazon
SageMaker

A black and white portrait of Werner Vogels, a middle-aged man with a beard and mustache, smiling slightly. He is wearing a dark jacket over a dark shirt. The background is a blurred outdoor scene with trees and foliage.

AI-enabled software development takes hold

(2021)

The DevOps cycle: From the perspective of your code



Code dev



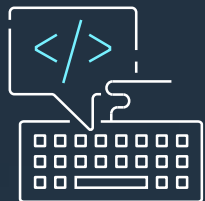
Code review



Monitor &
observe



Developer Challenges



Multiple
programming
languages



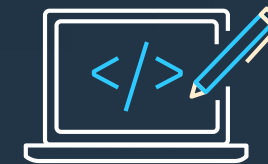
Multiple
frameworks and
libraries



Numerous cloud
services and APIs



Identifying relevant
best practices



Identifying
problematic code



Potential security
issues



Keeping monitoring
up to date



Overwhelming
number of alarms

AI-supported software development takes hold



A black and white portrait of Werner Vogels, a middle-aged man with a beard and mustache, smiling slightly. He is wearing a dark jacket over a dark shirt. The background is a blurred outdoor scene with trees and a building.

Cloud technologies will redefine
sports as we know it
(2022)



Fan engagement



Smart venue experience



Improved player safety & performance

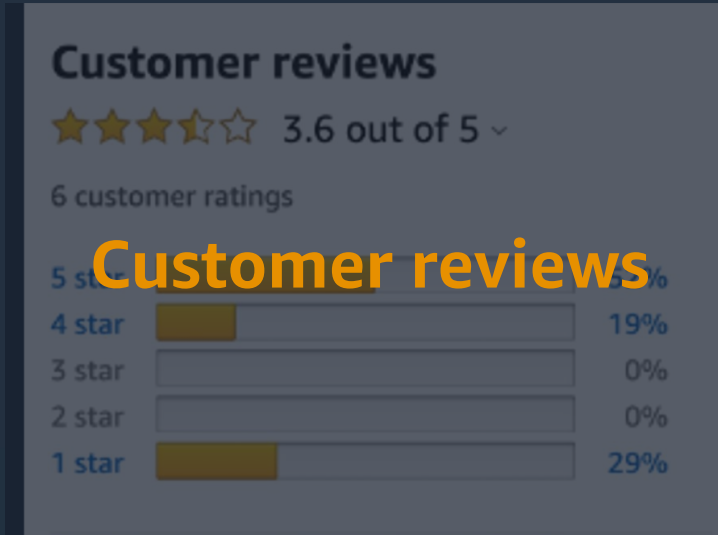


A black and white portrait of Werner Vogels, a middle-aged man with a beard and mustache, smiling slightly. He is wearing a dark jacket over a dark shirt. The background is a blurred outdoor scene with trees and foliage.

The upcoming supply chain transformation

(2022)

Leveraging 28+ years of retail innovation experience




Customer reviews


★★★★☆ 3.6 out of 5

6 customer ratings


5 star	100%
4 star	19%
3 star	0%
2 star	0%
1 star	29%




Membership




One Click



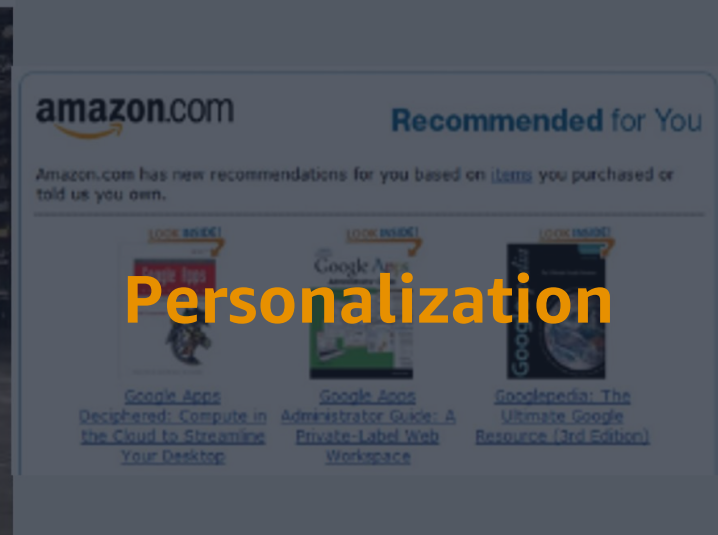
Checkout free



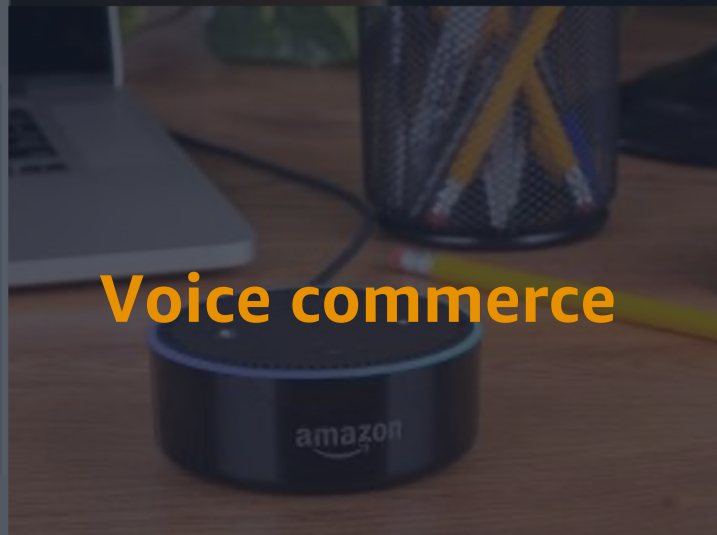
Marketplaces




Robotics




Personalization




Voice commerce



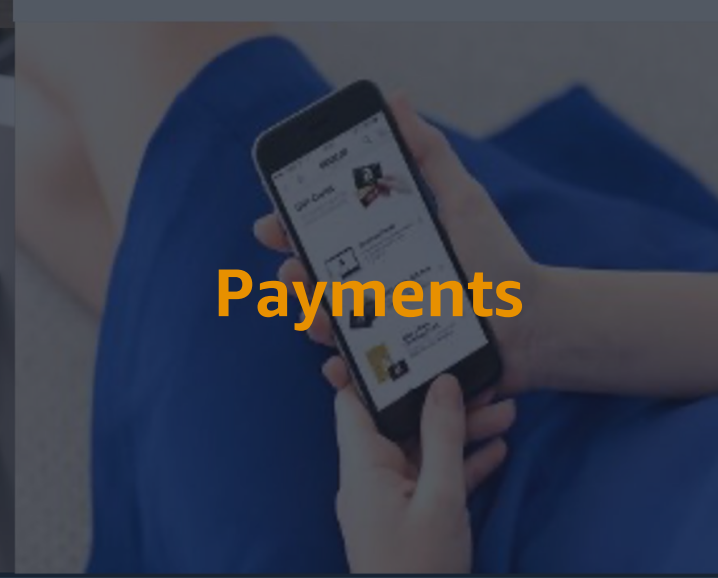
Cloud Services



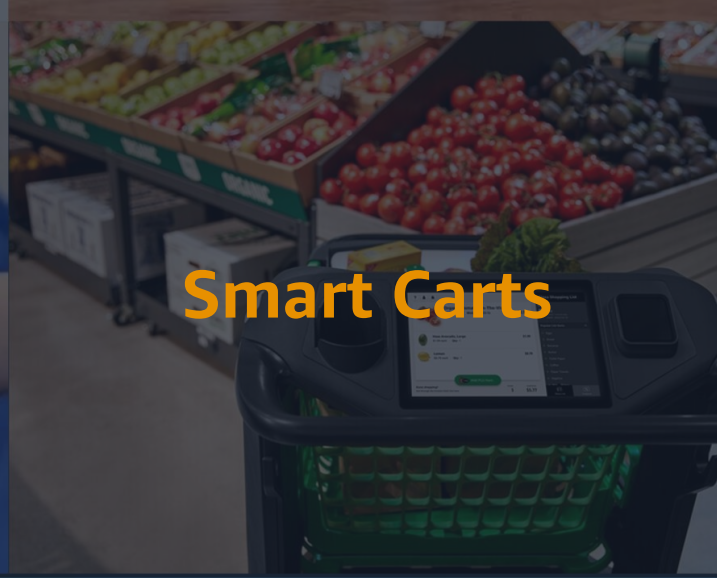
Fulfillment



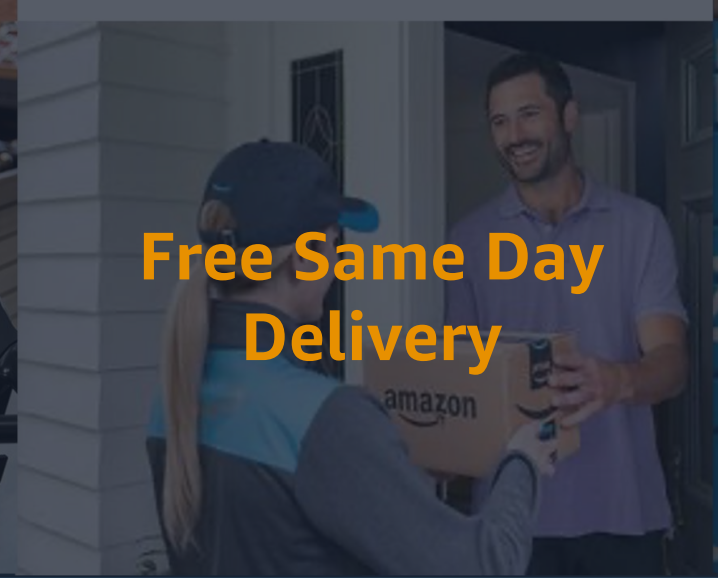
PoS Identity Service




Payments



Smart Carts



Free Same Day Delivery



Lockers



Supply chain transformation



Amazon Personalize
(Launched 2018)



Amazon Forecast
(Launched 2019)



AWS Supply Chain
(Launched 2022)

Putting ML into the hands of **every** developer



100,000+ customers use AWS for machine learning



**AWS's mission is to put machine learning
in the hands of *every* developer**



The AWS AI/ML stack

BROADEST AND MOST COMPLETE SET OF MACHINE LEARNING CAPABILITIES

AI SERVICES

SPECIALIZED

BUSINESS PROCESSES

Amazon Personalize

Amazon Forecast

Amazon Fraud Detector

Amazon Lookout for Metrics

SEARCH

Amazon Kendra

CONVERSATION

Amazon Lex

Amazon Transcribe

Call Analytics

Contact Lens / Voice ID

CODE + DEVOPS

Amazon CodeGuru

Amazon CodeWhisperer

Amazon DevOps Guru

INDUSTRIAL

Amazon Monitron

Amazon Lookout for Equipment

Amazon Lookout for Vision

HEALTH

Amazon HealthLake

Amazon Comprehend Medical

Amazon Transcribe Medical

Amazon Omics

CORE

TEXT

Amazon Translate

Amazon Comprehend

SPEECH

Amazon Polly

Amazon Transcribe

VISION

Amazon Textract

Amazon Rekognition

AWS Panorama

AMAZON SAGEMAKER

CANVAS

No-code ML for business analysts

STUDIO LAB

Learn ML

GROUND TRUTH

Label data

STUDIO IDE

Prepare data

Store features

Geospatial ML

Build with notebooks

Train models

Tune parameters

Deploy in production

Manage and monitor

CI/CD | GOVERNANCE | RESPONSIBLE ML

EDGE MANAGER

Manage edge devices

ML FRAMEWORKS & INFRASTRUCTURE

PyTorch, Apache MXNet, TensorFlow

Amazon EC2

CPU

GPU

AWS Inferentia

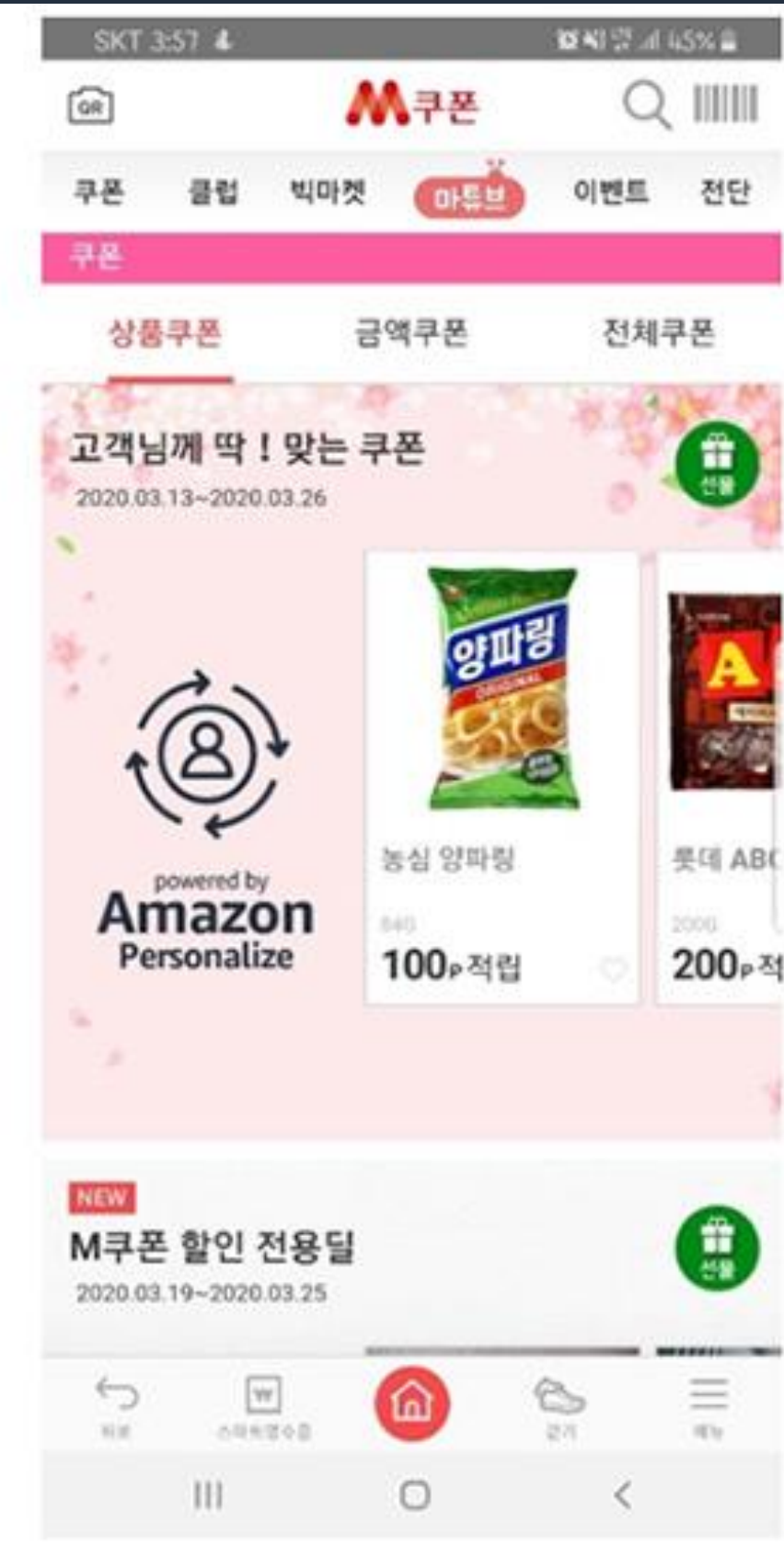
AWS Trainium

Habana Gaudi

FPGA

© 2023, Amazon Web Services, Inc. or its affiliates. All rights reserved.

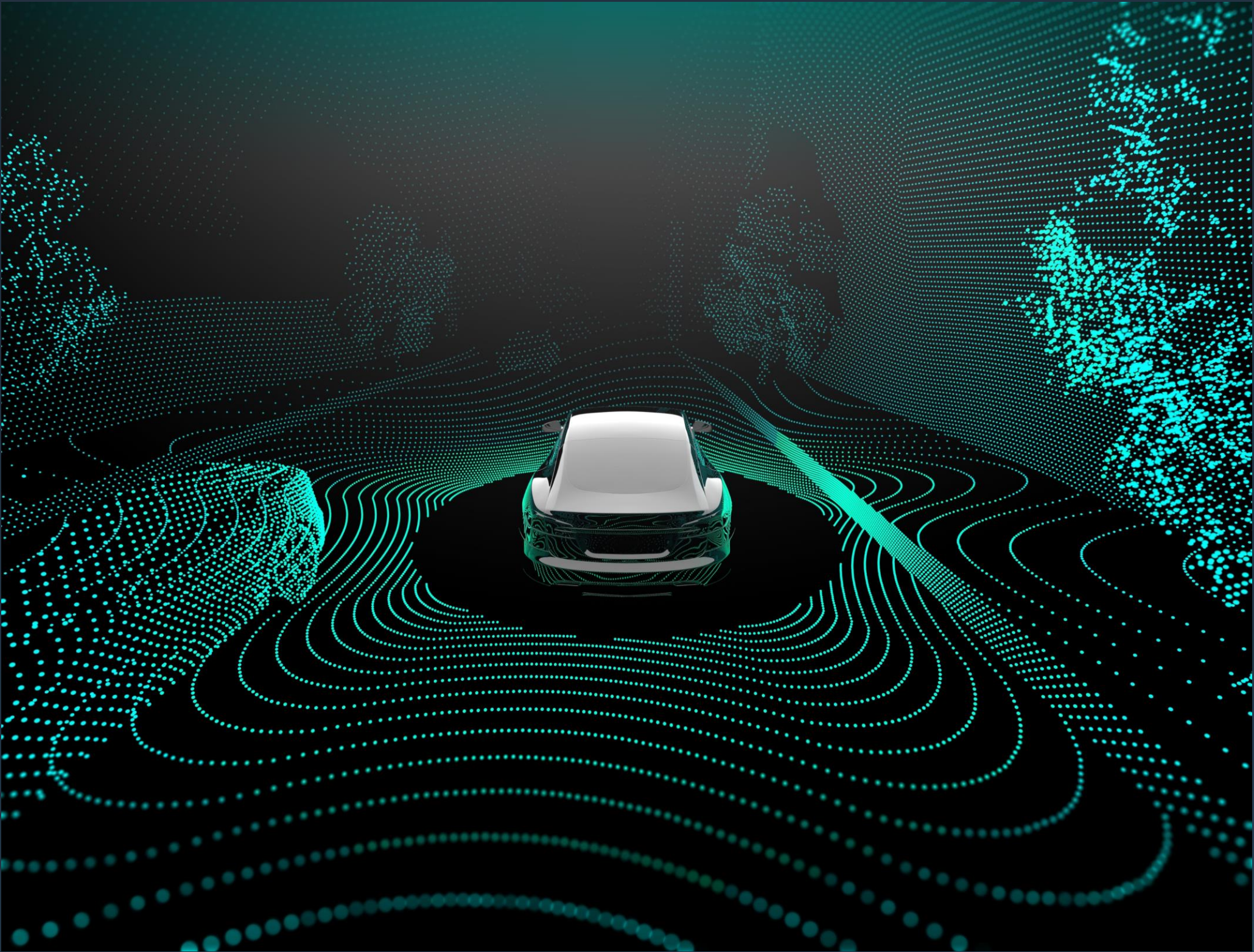
Lotte Mart - Korea



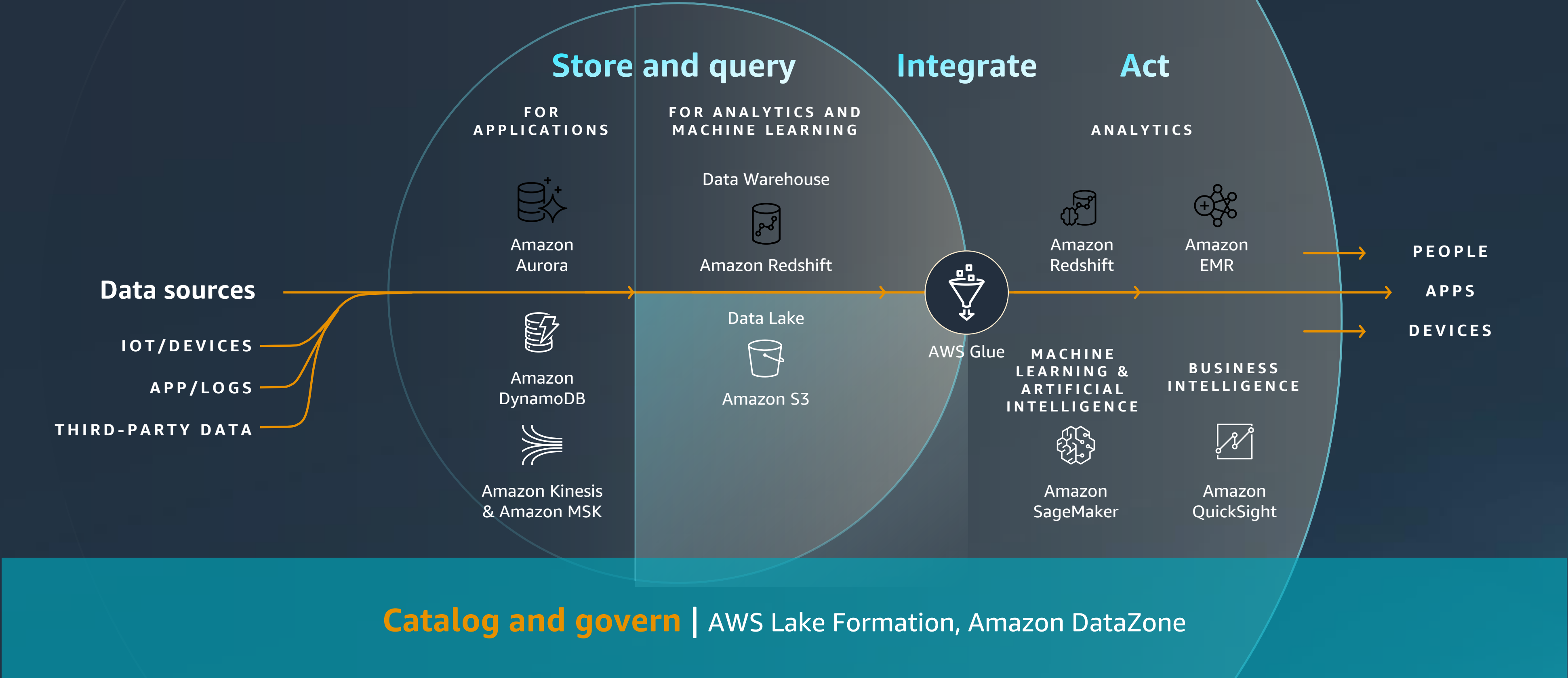
Fi - India



Denso - Japan



Building an end-to-end data strategy



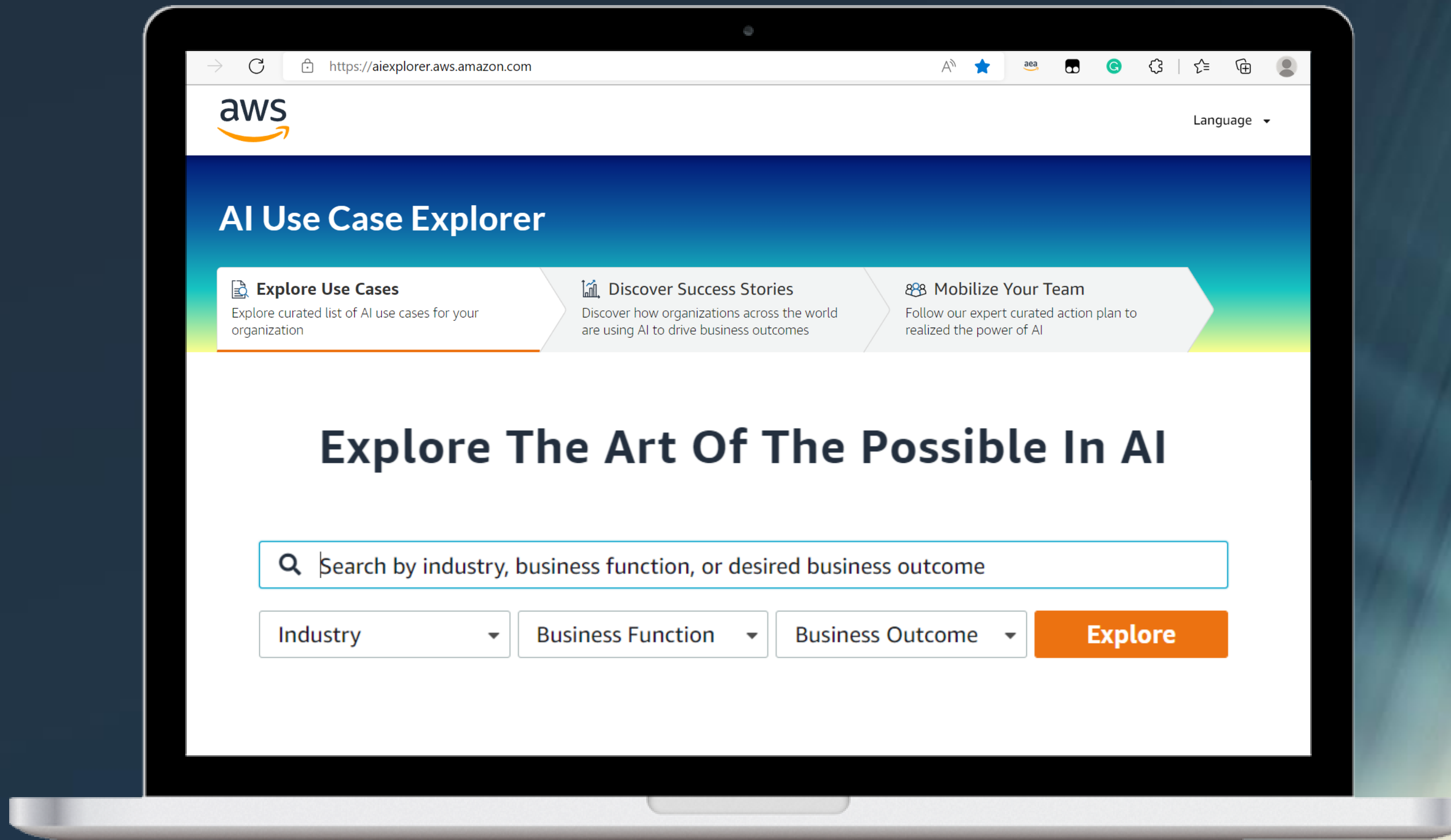
NEW!



AI Use Case Explorer

Easily find the most relevant AI use cases with related content and guidance to make them real

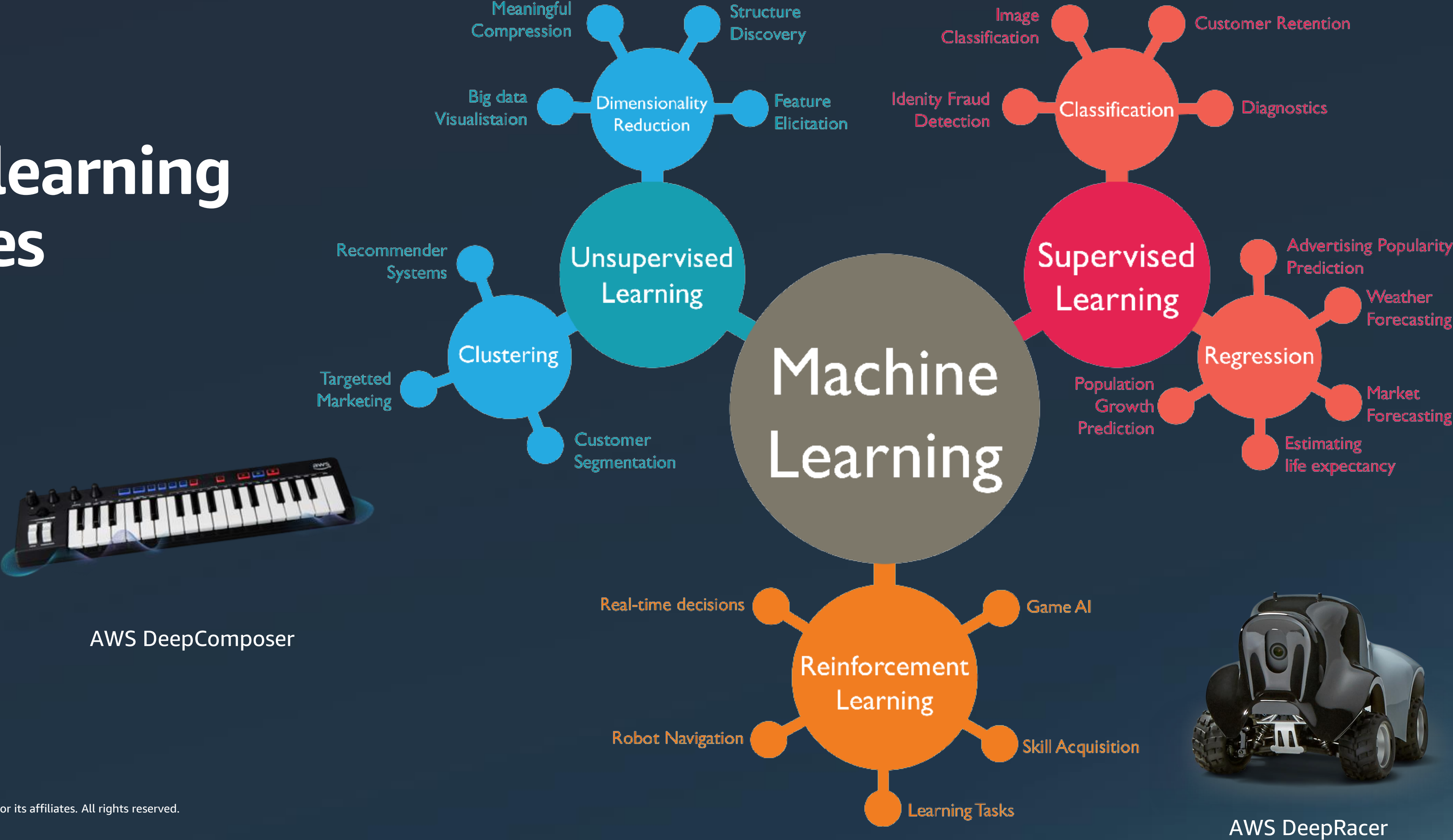
aiexplorer.aws.amazon.com



The **evolution** of AI/ML



Machine learning techniques



AWS DeepComposer



AWS DeepLens



AWS DeepRacer



A REVOLUTION IS HAPPENING IN THE FIELD OF ARTIFICIAL INTELLIGENCE

Traditional AI **predicts**

Generative AI **creates**

Generate anything

Text

Images

Videos

Product descriptions and storylines

Materials and CAD designs

Software, websites and applications

Source code

Hyper-personalise everything

Marketing content

Advertisements

Media-rich user experiences

Virtual assistants

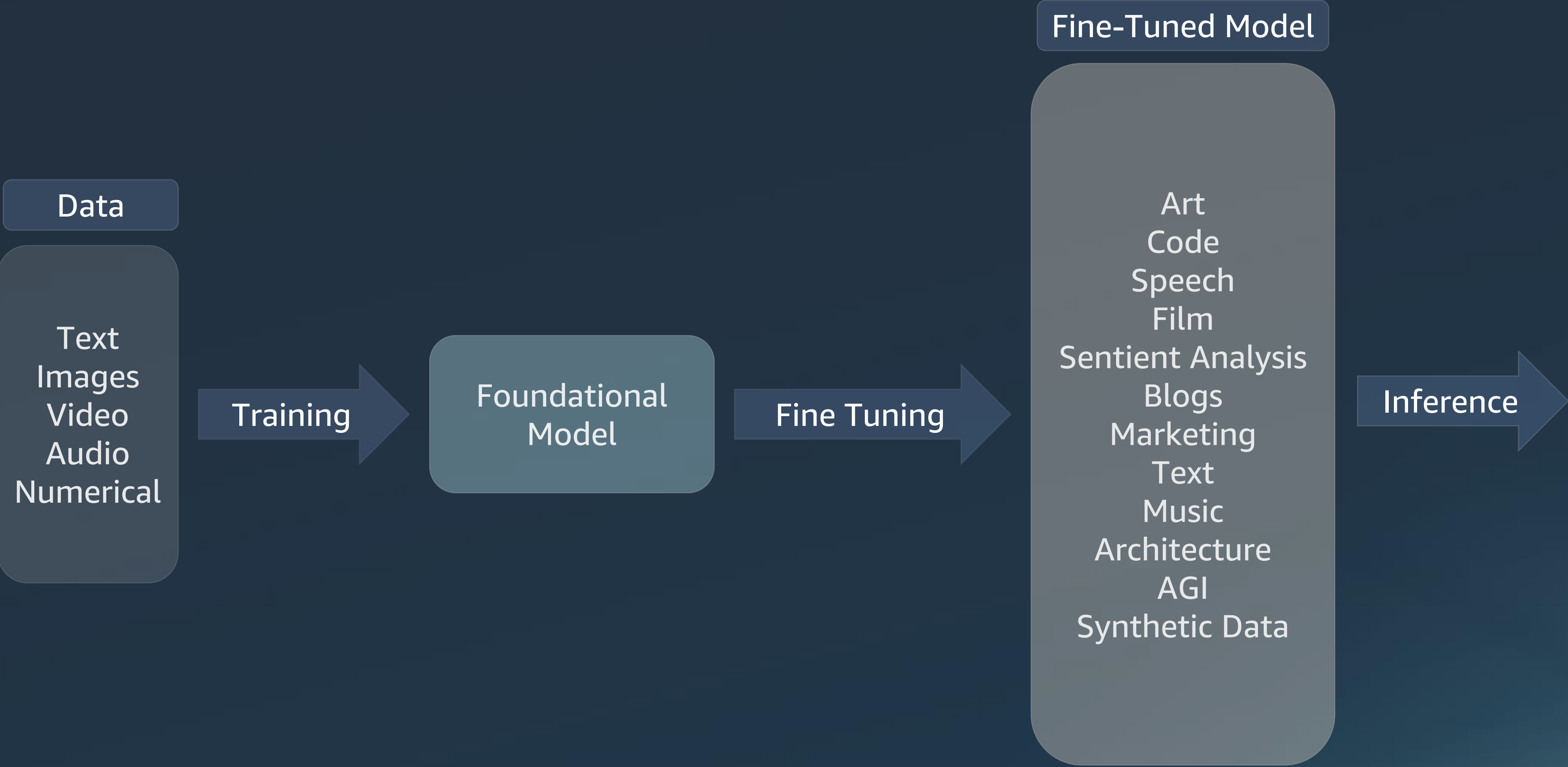
Medicine and drug development

Content generation

... and much more



Generative AI workflow

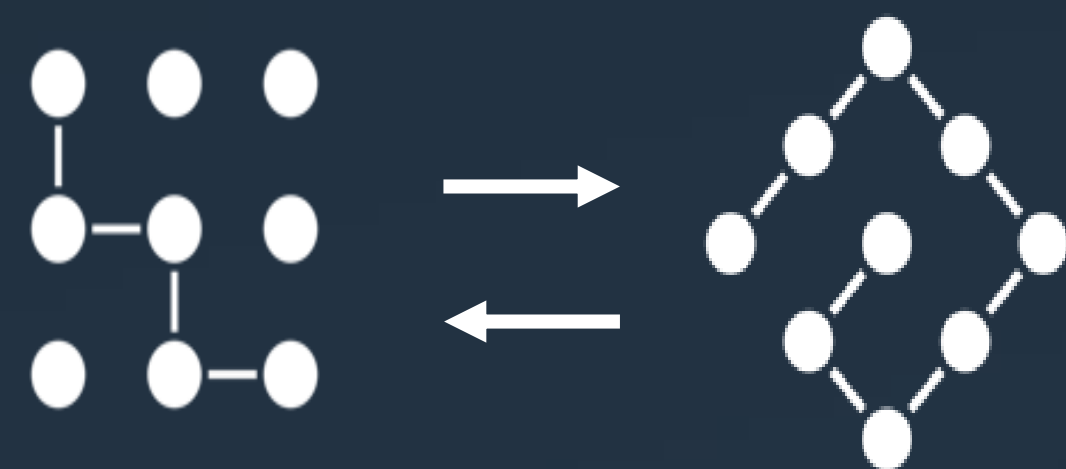


DeepComposer



Generative AI models

Generative adversarial networks (GANs)



Generator network
produces new data

Discriminator network
measures similarity

Autoregressive models (AR-CNN)



Data evolves
over time

Transformer-based models



Data with sequential
structure

Large Language Models (LLMs)

AI21labs

stability.ai

Lightton

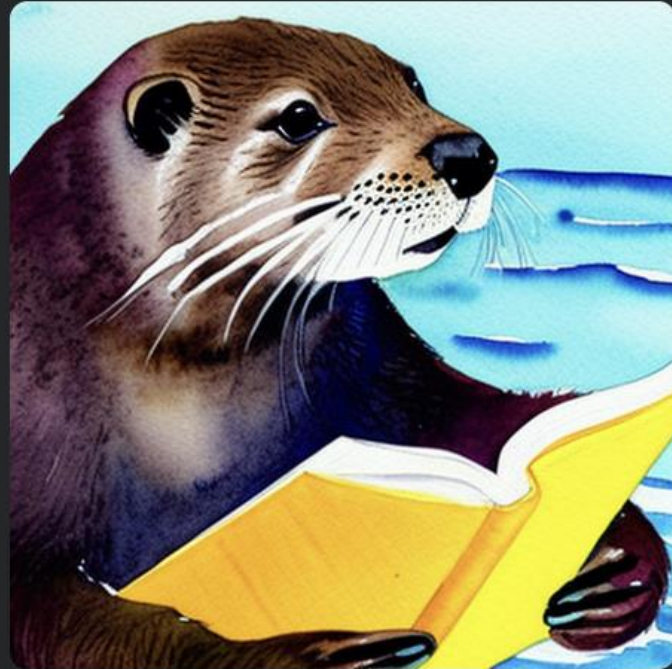
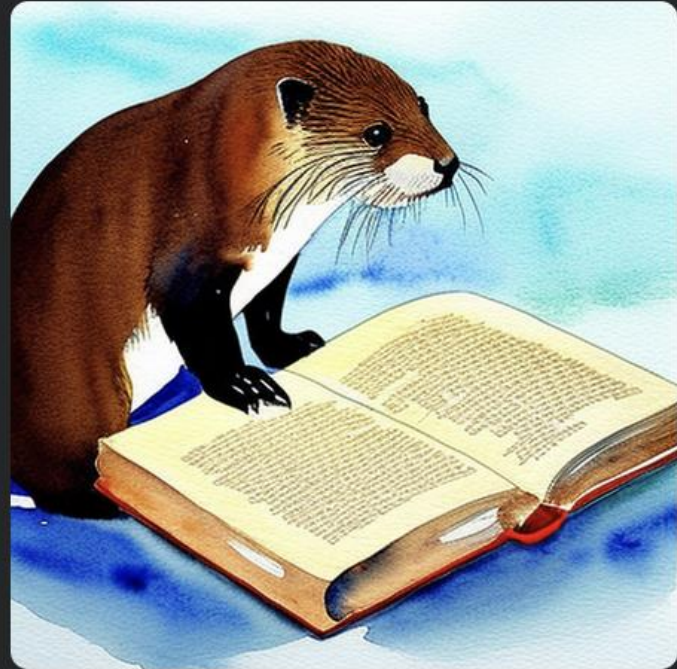
co:here



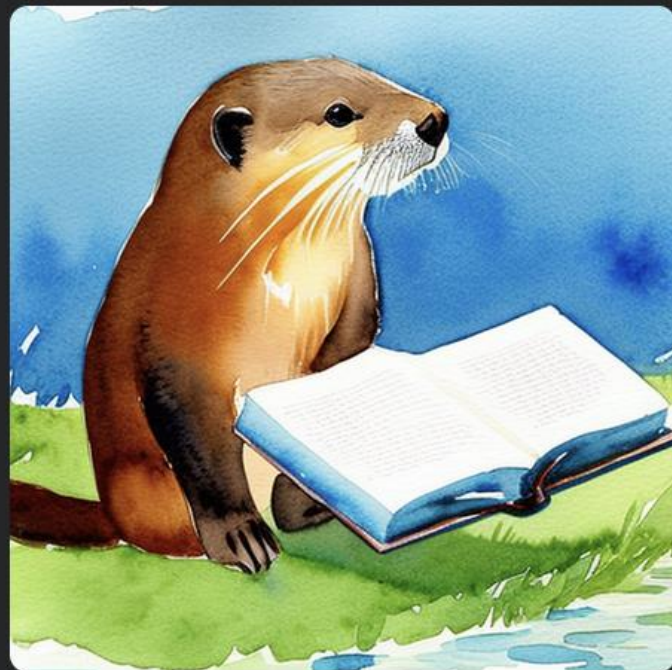
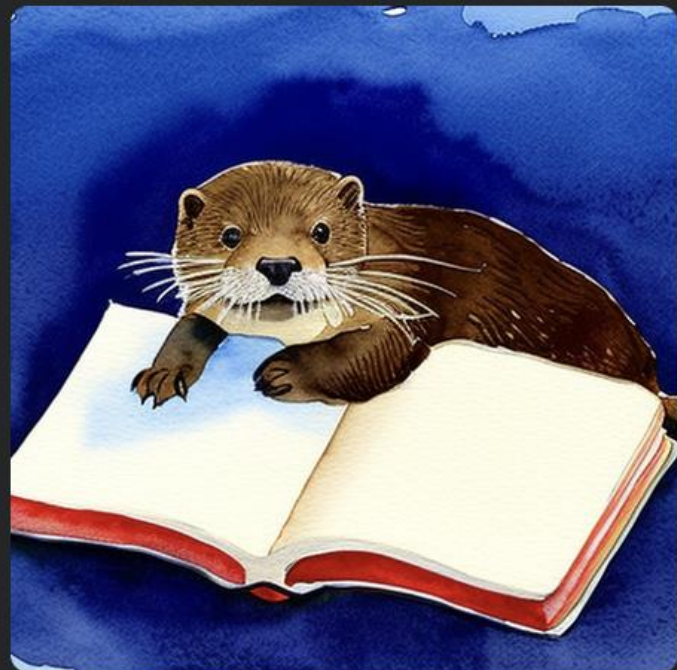
alexa

Stable Diffusion

A MACHINE LEARNING MODEL THAT CONVERTS TEXT DESCRIPTIONS INTO REALISTIC, HIGH RESOLUTION IMAGES



A watercolour painting of an otter reading a book



A photograph of a dinosaur trying to eat an ice cream cone

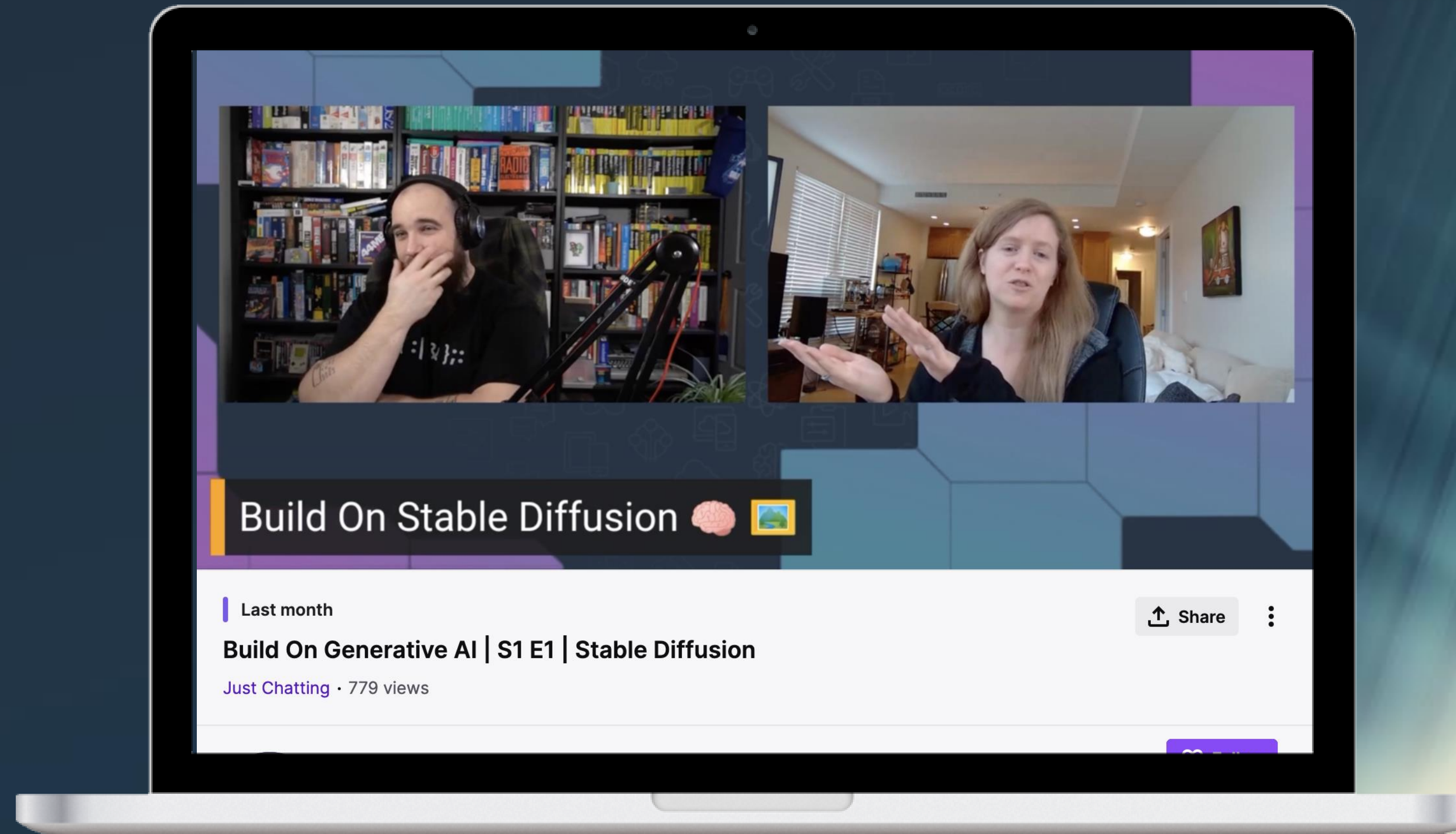


NEW!

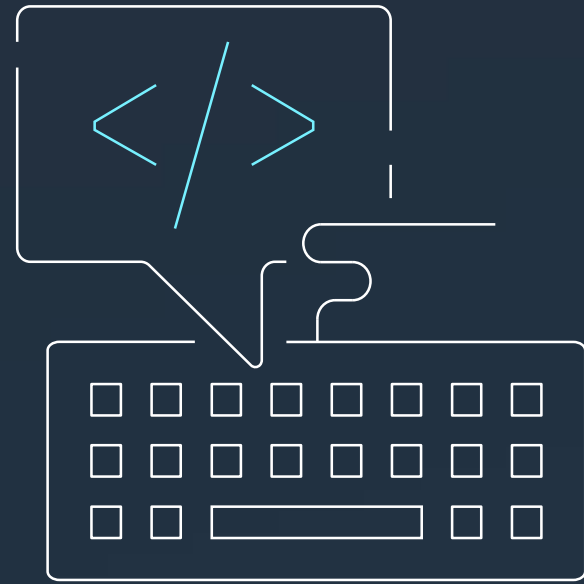
twitch.tv/aws



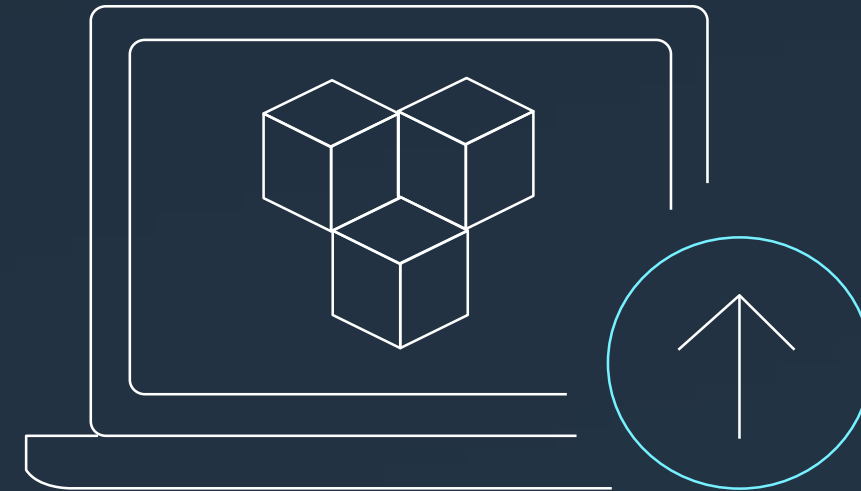
Build On Generative AI



Current developer challenges



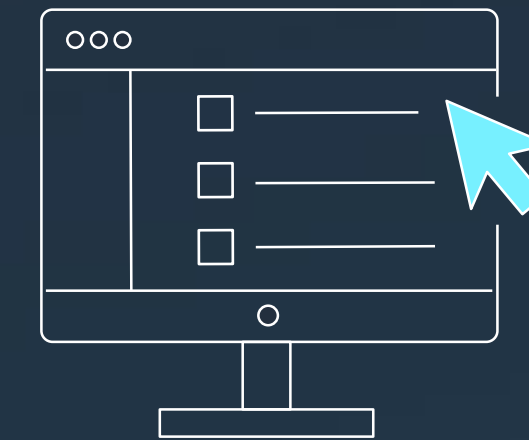
**Multiple
programming
languages**



**Multiple
frameworks and
libraries**



**Numerous cloud
services and APIs**



**Identifying
relevant best
practices**

CodeWhisperer

GENERATES:

- Entirely new code based on context
- Code from plain English comments
- Complete functions

Available in all major integrated development environments (IDEs) as an extension

```
upload-s3.py x
1  import boto3
2  from botocore.exceptions import ClientError
3  import logging
4
5  """
6  Function to upload a file to S3 using server-side encryption.
7      :param file_name: File to upload
8      :param bucket: Bucket to upload to
9      :param object_name: S3 object name. If not specified then file_name is used
10     :param s3_client: If not specified then a new client is created.
11  """
12
13
14  |
```

What will be your learning experience today...



The **reach** of ML is growing



Putting ML into the hands of **every** developer



The **evolution** of AI/ML

Overview



Live Keynote and Closing



FOR BUSINESS 2 TRACKS

Data-driven organizations of tomorrow

Rethink Possible: Accelerate AI & ML innovations



FOR BUILDERS 6 TRACKS

AI/ML use case
solutions track 1 & 2

Build, train, and deploy
ML models track 1 & 2

Data infrastructure
for ML workloads

ML for developers
and builders



3 LOCALIZED LANGUAGE AGENDA

Japanese

Korean

Bahasa Indonesia



ACTIVITIES



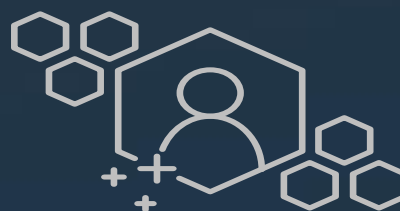
60+ breakout
sessions



Builders
zone



Hands-on
demos & labs



Customer
stories



AWS e-books
& guides



Ask the
experts



Visit the Data & AI/ML resource hub

Dive deeper into these resources, get inspired and learn how you can use AI and machine learning to accelerate your business outcomes.

- 6 steps to machine learning success e-book
- 7 leading machine learning use cases e-book
- Machine learning at scale e-book
- Achieving transformative business results with machine learning e-book
- Tackling our world's hardest problems with machine learning e-book
- Accelerating machine learning innovation through security e-book
- ... and more!

Visit resource hub



<https://bityl.co/FqdC>



AWS Training and Certification

Access the AI & ML learning plan courses built by AWS experts on AWS Skill Builder

- Get started with digital self-paced, on-demand training and ramp-up guides to help you grow your technical skills
- Learn how to apply machine learning, artificial intelligence, and deep learning to unlock new insights and value in your role
- Take the steps today, towards validating your expertise with an AWS Certified Machine Learning – Specialty Certification



<https://bit.ly/3FnxDH7>

Learn your way [explore.skillbuilder.aws](https://skillbuilder.aws) »



Thank you for attending AWS Innovate – Data & AI/ML Edition

We hope you found it interesting! A kind reminder to **complete the survey**.

Let us know what you thought of today's event and how we can improve the event experience for you in the future.



aws-apj-marketing@amazon.com



twitter.com/AWSCloud



facebook.com/AmazonWebServices



youtube.com/user/AmazonWebServices



slideshare.net/AmazonWebServices



twitch.tv/aws

