

# Accelerating machine learning to achieve your mission

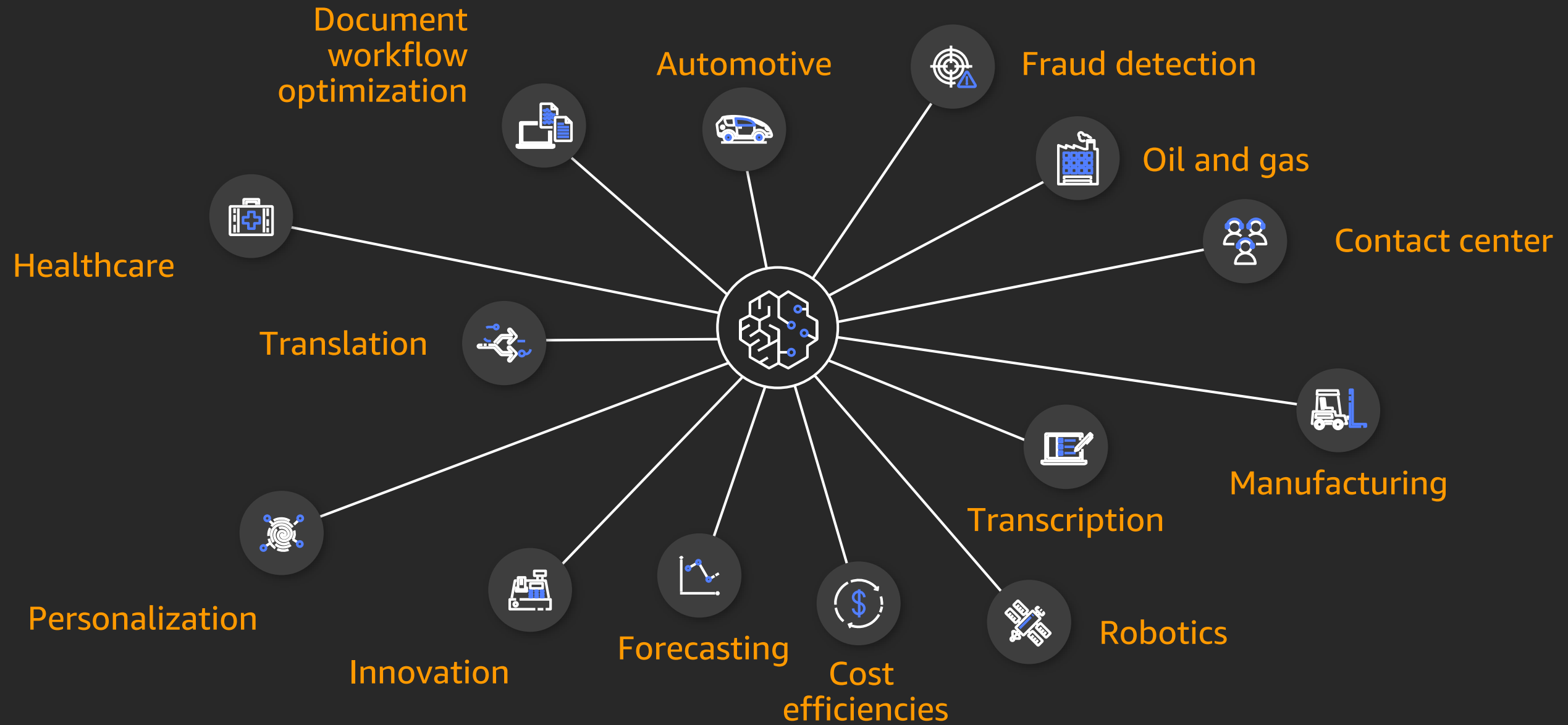
Spencer Marley

Head of AI/ML

Public Sector, Asia Pacific and Japan

Amazon Web Services

# The reach of machine learning (ML) is growing



# The reach of ML is growing



Compute

5x faster



Data

50x growth



Cloud

Pay as you go

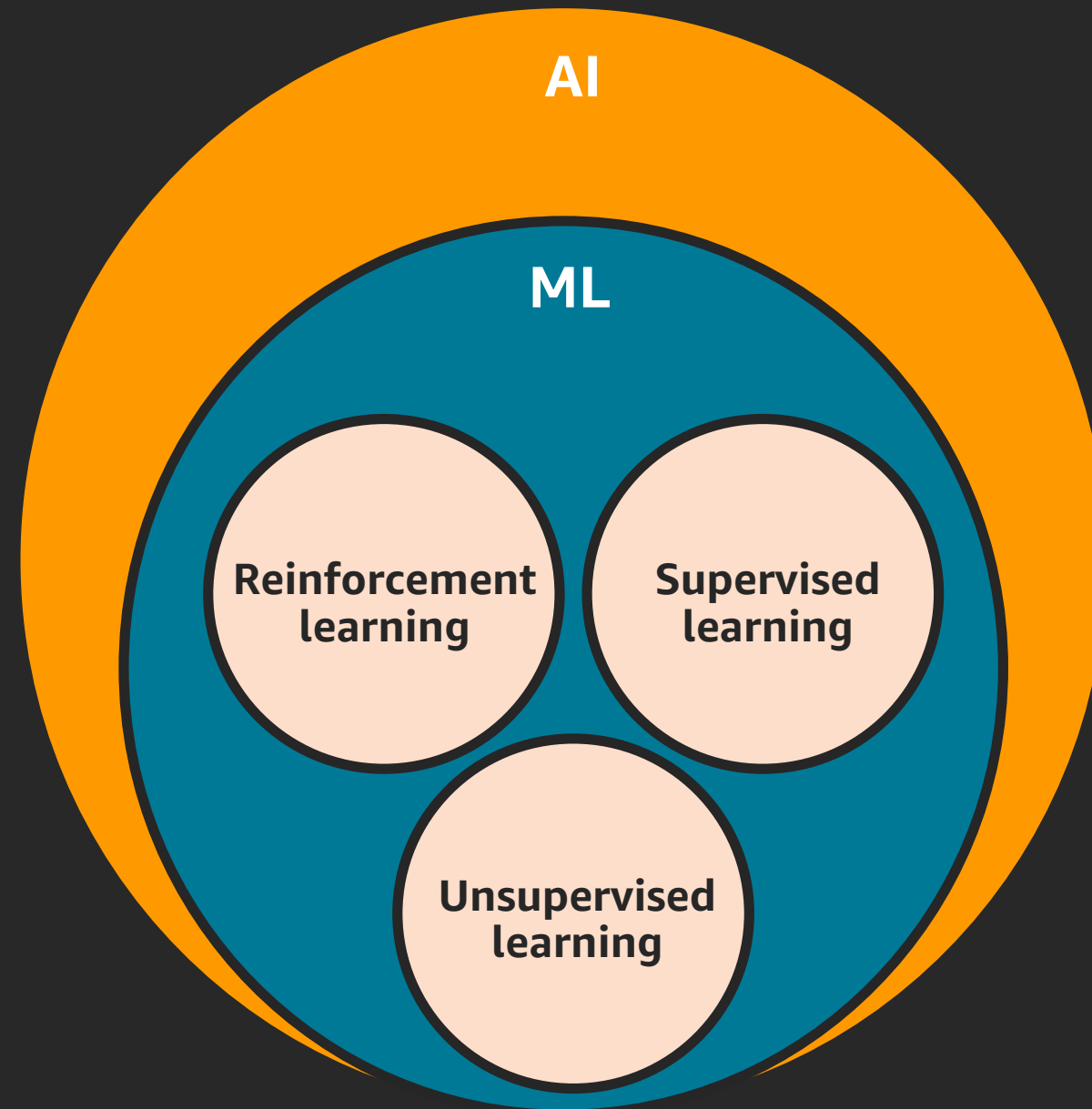


Research

Frameworks

# What is ML?

# What are ML and artificial intelligence (AI)?

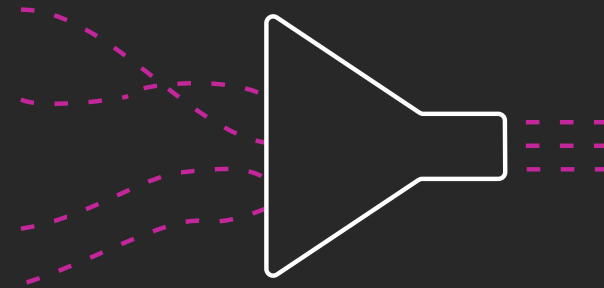


# What are AI and ML?



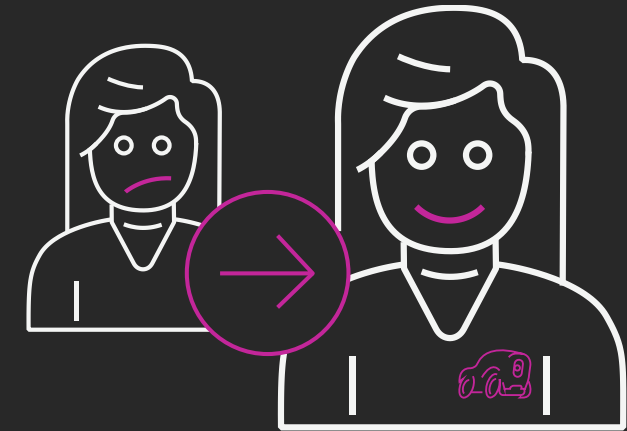
## Supervised

Example driven training—every datum has a corresponding label



## Unsupervised

No labels for training data



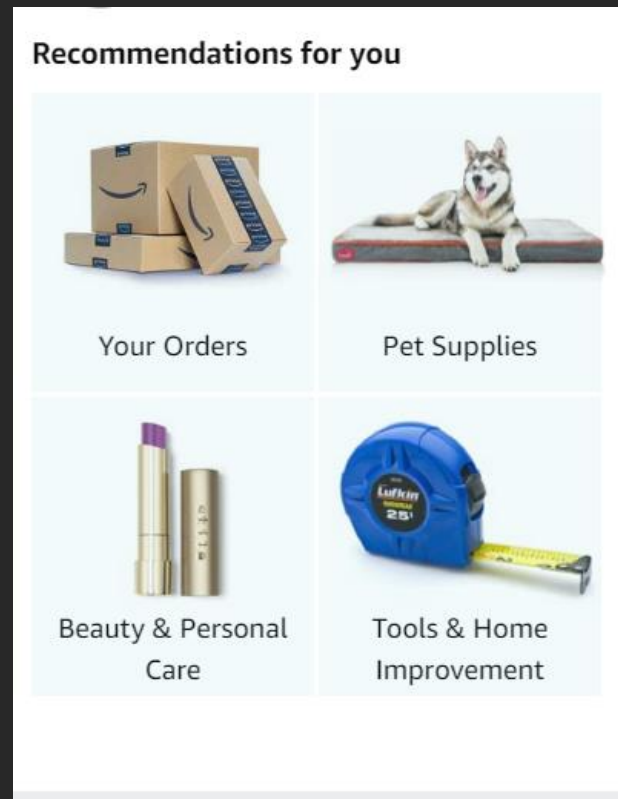
## Reinforcement

Learns through consequences of actions in a specific environment

# ML at Amazon



# Amazon ML innovation at scale



**4,000 products per minute** sold on Amazon.com



**1.6M packages** every day



**Billions** of Alexa interactions each week



First Prime Air delivery on **7 December 2016**



# Our mission at AWS

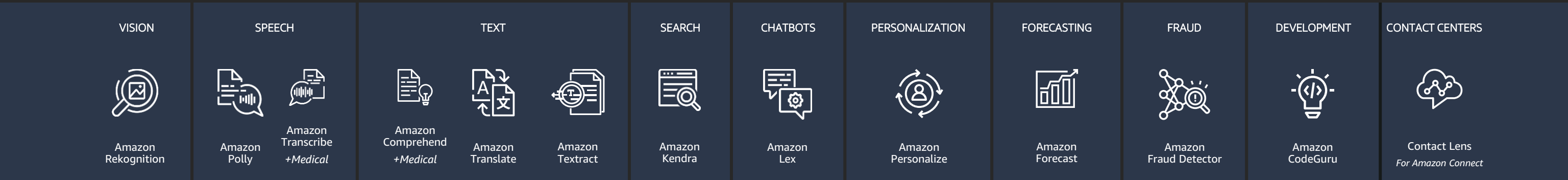
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Put ML in the  
hands of every developer

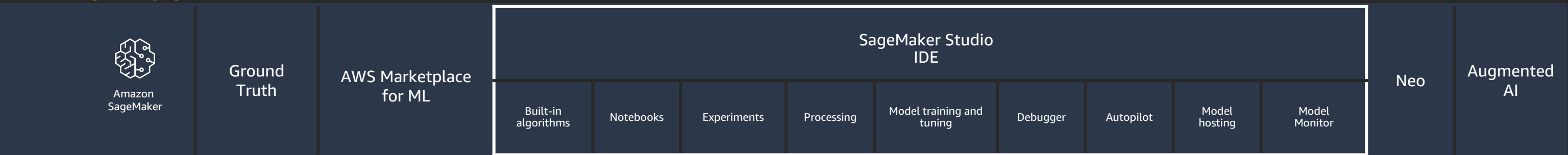
# Amazon Machine Learning (Amazon ML) stack

Broadest and most complete set of machine learning capabilities

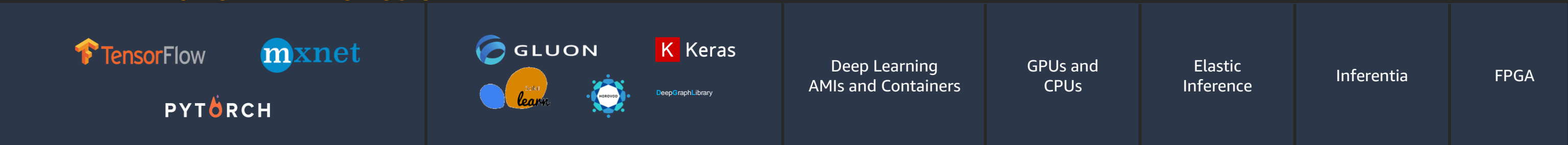
## AI SERVICES



## ML SERVICES



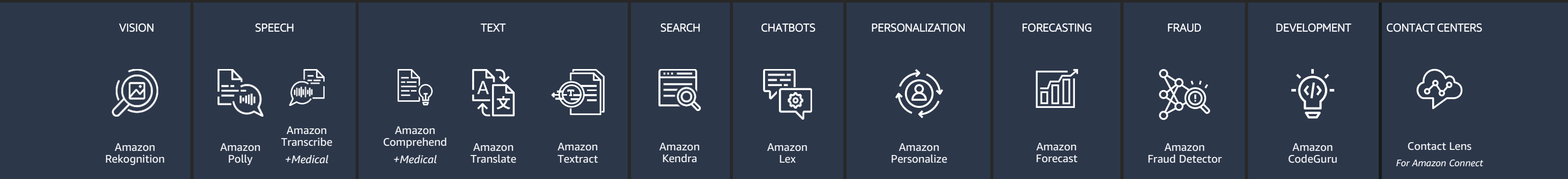
## ML FRAMEWORKS AND INFRASTRUCTURE



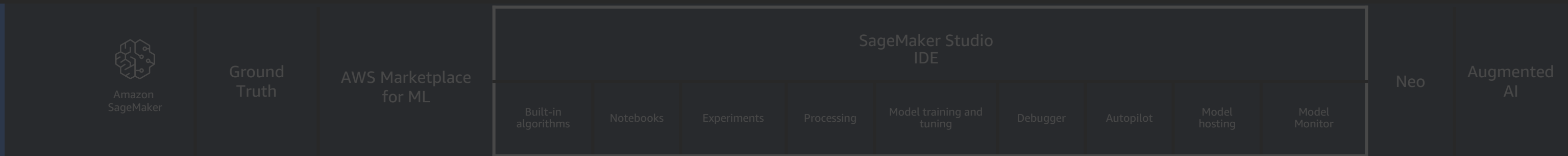
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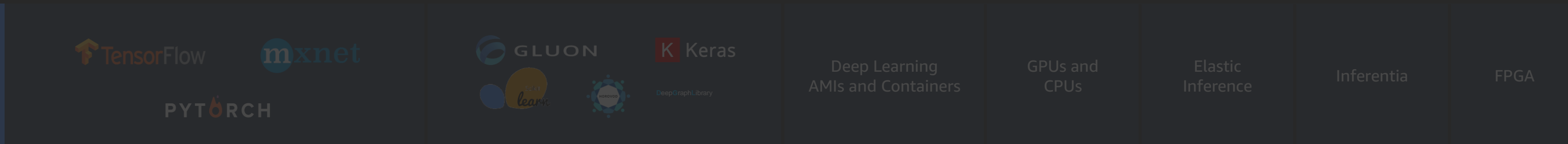
## AI SERVICES



## ML SERVICES



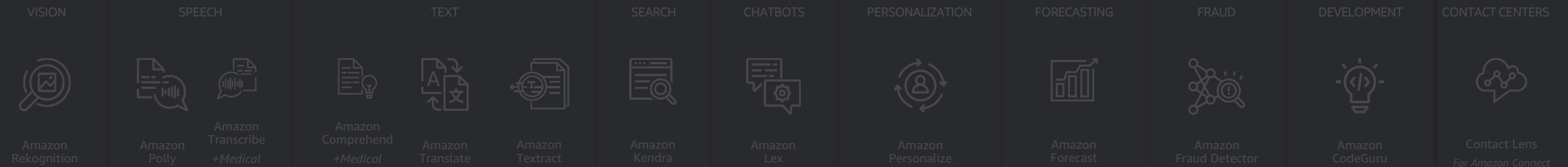
## ML FRAMEWORKS AND INFRASTRUCTURE



# Amazon Machine Learning (Amazon ML) stack

Broadest and most complete set of machine learning capabilities

## AI SERVICES



## ML SERVICES



Ground Truth

AWS Marketplace for ML

SageMaker Studio IDE

Neo

Augmented AI

Built-in algorithms

Notebooks

Experiments

Processing

Model training and tuning

Debugger

Autopilot

Model hosting

Model Monitor

## ML FRAMEWORKS AND INFRASTRUCTURE



Deep Learning AMIs and Containers

GPUs and CPUs

Elastic Inference

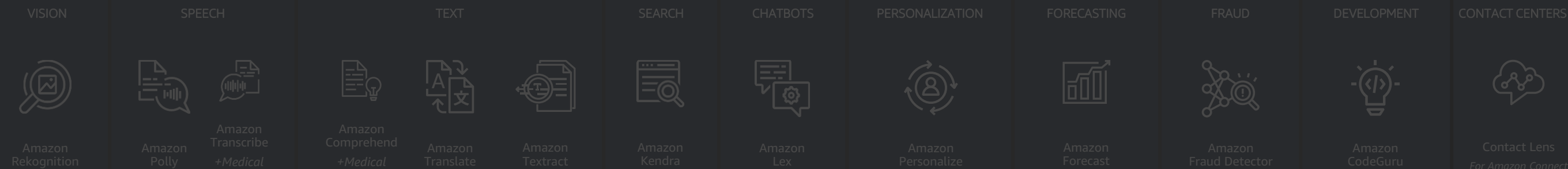
Inferentia

FPGA

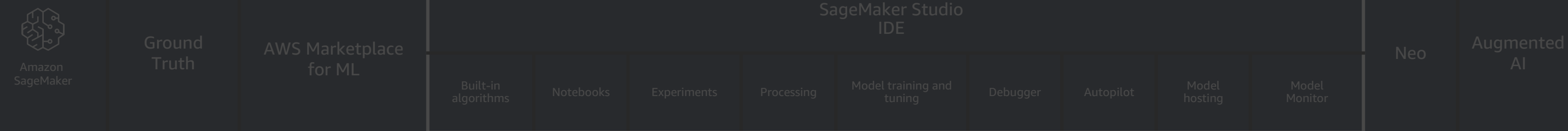
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Broadest and most complete set of machine learning capabilities

## AI SERVICES



## ML SERVICES



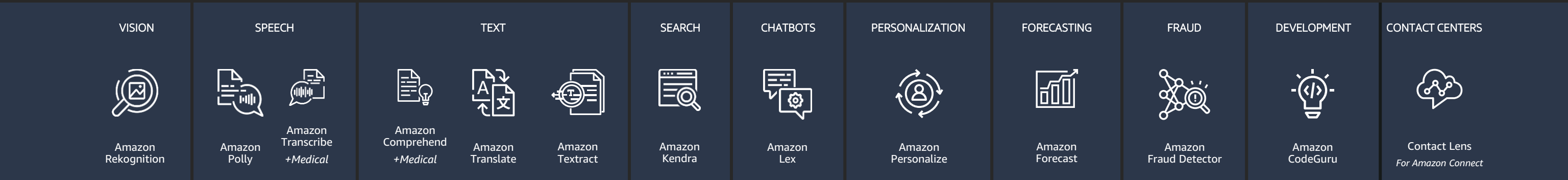
## ML FRAMEWORKS AND INFRASTRUCTURE



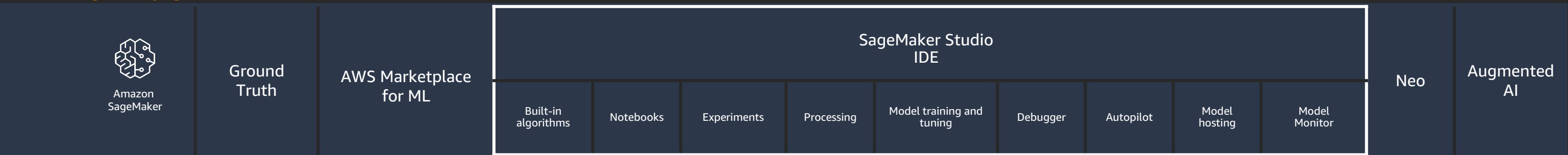
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**Broadest** and most complete set of machine learning capabilities

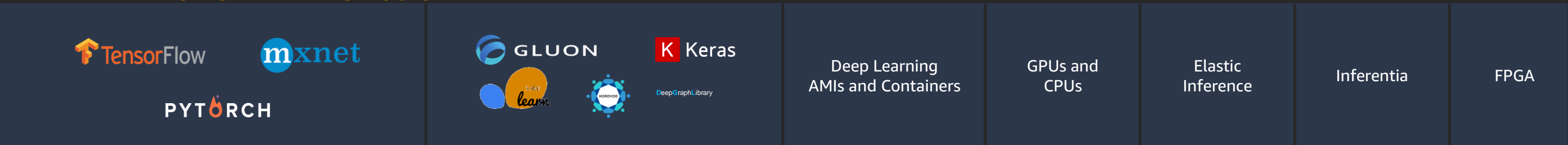
## AI SERVICES



## ML SERVICES



## ML FRAMEWORKS AND INFRASTRUCTURE





# ML in the public sector

# eLearning gets more personal

Coursera uses Amazon Personalize to provide their 40 million users with highly personalized recommendations by adapting to individual preferences in real time.

The Coursera logo is displayed in white on a dark background. It features a stylized infinity symbol or 'C' shape on the left, followed by the word 'coursera' in a lowercase, bold, sans-serif font.

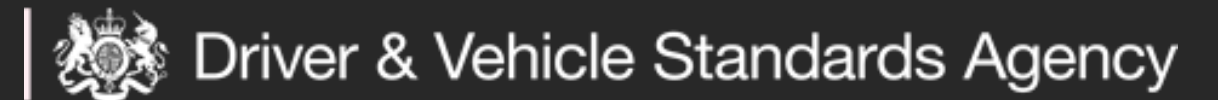
# Improve accessibility for students

ETS uses Amazon Polly to give a blind and low vision GRE and a timed college admissions assessment. They also give test takers an auditory glance at the clock, creating a more equitable test taking scenario for these students.



# Improving road safety

Using Amazon SageMaker, the DVSA has made their spot checks an objective, data-driven process. Since implementation, the model has prompted 3,200 site reviews, 74 percent of which resulted in an “unsatisfactory” or “needs improvement” rating.



# Catering to public transport demand in near real time

Using Amazon Sagemaker and other AWS services to predict patronage figures up to 48 hours in advance, Transport for NSW now has access to real-time contextual insight on impending weather events. Its management can provide more transport services to customers when they need them.



Transport  
for NSW

# Identifying critical medical forms

Beth Israel Deaconess Medical Center uses Amazon SageMaker to identify completed patient consent forms before a surgery, lowering the number of delayed or cancelled procedures.



Beth Israel Deaconess  
Medical Center



# Accelerating investigation timelines

FINRA uses Amazon Comprehend to process and review millions of documents with unstructured data, helping flag records of interest that should be reviewed by human investigators.



# Scaling video indexing

C-SPAN uses Amazon Rekognition to automatically index video news footage for search. With Rekognition, C-SPAN reduced indexing time per video from one hour to 20 minutes and uploaded 97,000 images in under two hours.

**C-SPAN**

# Getting started

# Building your team's skills



## Hands-on learning



## Training + certification



AWS DeepRacer  
reinforcement  
learning

AWS DeepComposer  
generative AI

AWS DeepLens  
deep learning

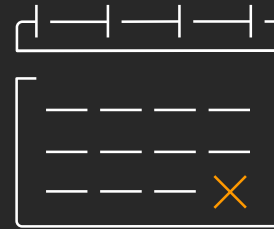
ML training  
and certification

Partnerships  
with MOOCs

# The Amazon Machine Learning Solutions Lab



More than 100  
deployed  
engagements



Ideation through  
to production



Global  
footprint

# The AWS machine learning Embark program



## Discovery

Cross-functional workshops



## Training

In-person training



## Development

ML Solutions Lab



## Engagement

Get hands-on with AWS DeepRacer



# Thank you!

Spencer Marley

[www.linkedin.com/in/spencermarley/](https://www.linkedin.com/in/spencermarley/)