aws **Learning Days**
State, Local, Education and Health

Artificial Intelligence / Machine learning for your Organization

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Agenda

- Artificial Intelligence definitions
- Challenges in Public Sector
- AI/ML Use cases in Public Sector
    - Speech & Language
    - Intelligent Documents Processing
    - Computer Vision
    - Predictive Analysis
- Generative AI
- Addressing Generative AI in Public Sector

AI/Machine learning (ML) is at an inflection point

Key drivers: Compute capacity increase | Data growth | Model sophistication
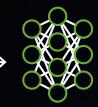
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AI, ML, Deep learning?

Artificial intelligence (AI)

Any technique that allows 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

Generative AI

Powered by large models that are pretrained on vast corpuses of data and commonly referred to as foundation models (FMs)

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Challenges we are hearing from public sector customers

Demand for government services is rising while resources and capacity to deliver them **aren't keeping pace**

Citizens increasingly expect government to **provide modern digital experiences** for conducting online transactions

Aging infrastructure for data capture, storage, and management **creates friction** for leveraging data for analytics and machine learning

Complex security, privacy, and compliance requirements create barriers to change and block adoption of many SaaS solutions

Risk averse culture and institutional inertia slow innovation

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Machine learning is going mainstream in public sector

Emergency management
Emergency management, emergency response

Finance and administration
Tax, revenue, regulatory/compliance, fraud, budget, purchasing/procurement

Assessments and permitting
Planning and zoning, assessment, land admin/recorder of deeds, mapping, watershed, housing

Health and benefits
Local hospitals and clinics, public health, child welfare, homelessness, seniors/youth, health/food, environmental

Economic development
Grants and benefits administration, workforce development, corporate relations, land clearance/redevelopment

Constituent engagement
Contact center, website, mobile

Enforcement
Police, jails, courts, animal control

Elections
Registration, voter management, polling, voting management, candidate management

Utilities
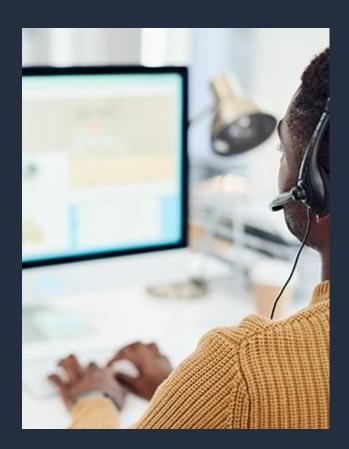Electric/gas/water/sewer, waste management, generation/distribution

Education and library
K–12 and early childhood, adult education, library

Transportation
Traffic, mass transit, parking, airports, ports

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Top AI/ML use cases for state and local government

**Speech
and language**

**Intelligent document
processing**

**Computer
vision**

**Predictions
and insights**

Top AI/ML use cases for state and local government

Speech and language

Intelligent document processing

Computer vision

Predictions and insights

AI/ML-Enabled Citizen Engagement

Engage citizens and drive improvements in customer satisfaction

- Improve contact center agent effectiveness with real-time translation and decision support using Amazon Connect and Contact Center Intelligence

- Analyze call and text interactions with citizens to spot issues and trends and drive improvement
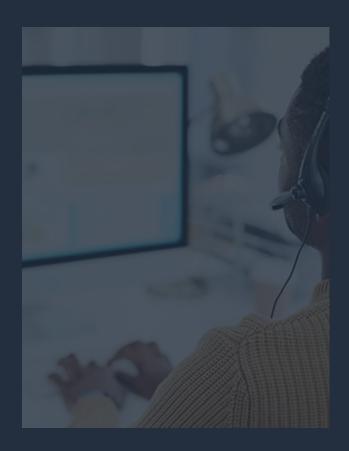
- Improve self service

AWS CCI Solutions

Add AI/ML to existing contact centers

Using AI to improve agent efficiency

"During peak hours, previously you're 45-50 minutes on hold, and now that's has been reduced to about three and a half minutes. One of the other benefits we've gotten from Amazon Connect is sentiment analysis. On a call, we get real-time feedback on whether or not the customer was happy, frustrated, or angry…"

—Benny Chacko, Deputy General – LA County
   Internal Services Department

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Top AI/ML use cases for state and local government

Speech and language

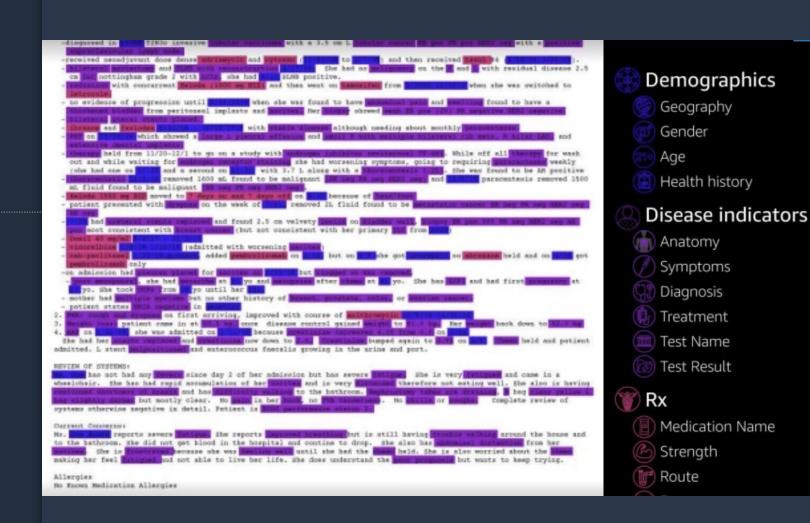**Intelligent document processing**

Computer vision

Predictions and insights

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Extract insights from unstructured content

Extract insights from unstructured documents and forms, like images, PDFs, and audio

- Analyze text with natural language processing (NLP) to identify topics, extract entities, understand sentiment, and classify documents with Amazon Textract, Amazon Rekognition, and Amazon Comprehend

- Translate content at scale with Amazon Translate

King County Assessor's Office.

CHALLENGE

Reduce data entry, eliminate data errors, and improve data time lines.

SOLUTION

Intelligent documents processing for documents and electronic files, streamlining & unlock data and information from paper documents and electronic files
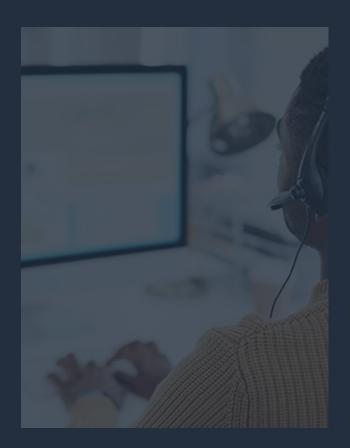
RESULTS

King County employees will focus on higher value, more satisfying work, and ultimately help the County realize its vision for connected communities, connected data, and connected government."

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Top AI/ML use cases for state and local government

Speech and language

Intelligent document processing
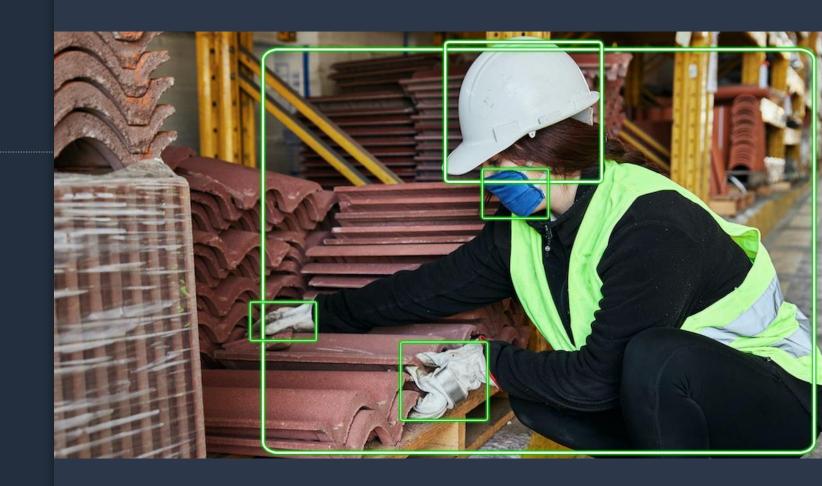
Computer vision

Predictions and insights

Content analysis and object detection

Extract insights and identify objects of interest from large volumes of images and videos with Amazon Rekognition

- Detect personal protective equipment (PPE) to improve worker safety

- Analyze vehicle traffic and pedestrian and bicycle safety

- Detect objects of interest in video and reduce human effort required to review footage
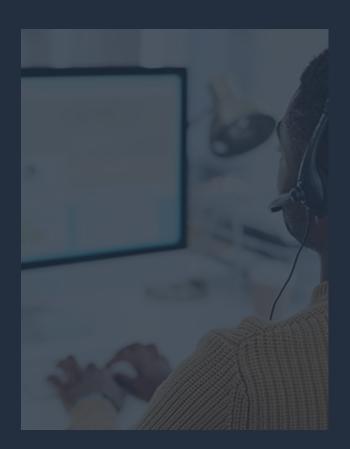
Assessing damage from natural disasters

EagleView runs deep learning models on AWS to make quicker, more accurate assessments of property damage within 24 hours of a natural disaster. Amazon Elastic Inference makes those workflows more cost effective at scale.

Top AI/ML use cases for state and local government

Speech and language

Intelligent document processing
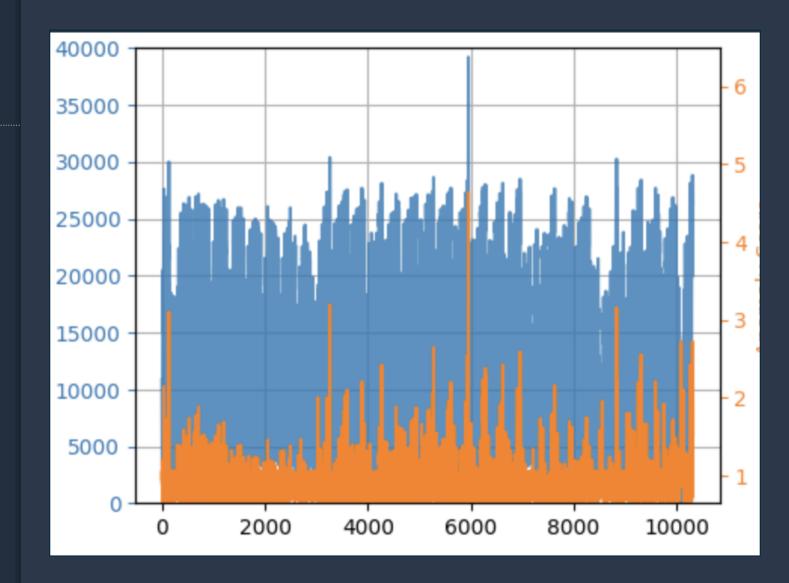
Computer vision

Predictions and insights

Fraud detection and prevention

Detect and prevent fraud, waste, and abuse

- Enhance accuracy and speed to help detect and prevent waste fraud and abuse

- Managed service approach with prebuilt ML models for fraud detection

- Supervised and unsupervised models for developing highly targeted models to utilize customer data as part of fraud prevention efforts

Identify fraud and other anonymous activities

FINRA, one of the largest security regulators in the United States, was established to monitor and regulate financial trading practices; using Amazon EMR, FINRA can capture, analyze, and store a daily influx of 135 billion records in order to identify fraud and other anonymous activities
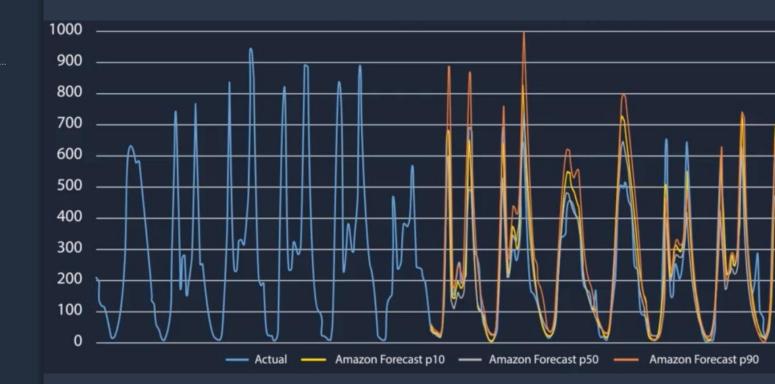
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Machine learning to forecast trends and support decisions

Accurate, time series forecast with machine learning

- Predicting service demand or program activities

- Allocating resources to optimize impact and outcomes for citizens

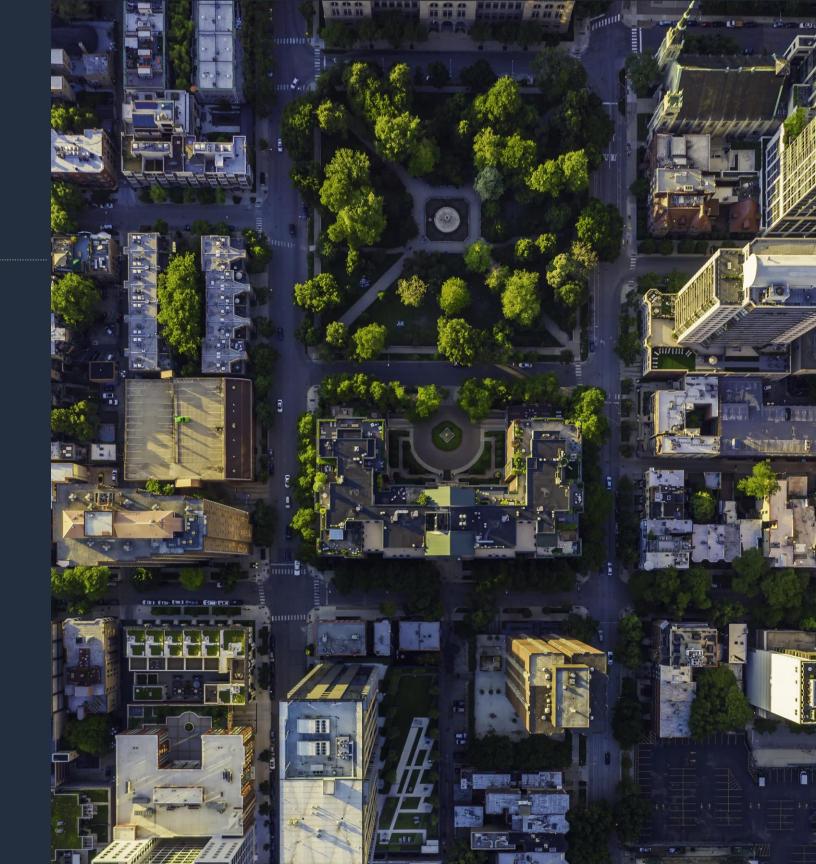- Financial planning and revenue / cost forecasts

Predictions and forecasts from IoT and sensor data
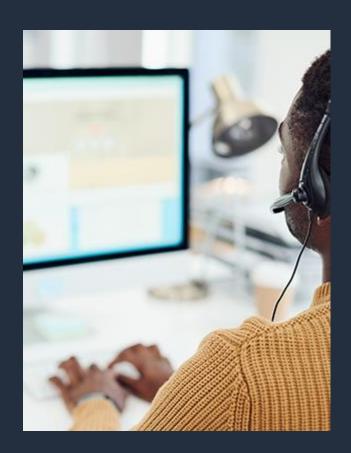
Leverage data from smart cities and facilities

- Smart cities

- Predictive maintenance

- Facility management

Learn more about
Amazon Monitron

What and with whom would you like to explore?

**Speech
and language**

**Intelligent document
processing**

**Computer
vision**

**Predictions
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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

ML SERVICES

Amazon Bedrock

Amazon SageMaker

STUDIO IDE

| Prepare data | Build with notebooks | Train models | Deploy in production |
| Store features | Geospatial ML | Tune parameters | Manage and monitor |

---------------- **CI/CD | GOVERNANCE | RESPONSIBLE ML** ----------------

CANVAS
No-code ML for business analysts

GROUND TRUTH
Label data

STUDIO LAB
Learn ML

EDGE MANAGER
Manage edge devices

ML FRAMEWORKS & INFRASTRUCTURE

PyTorch, Apache MXNet, TensorFlow | Amazon EC2 | CPUs | GPUs | AWS Inferentia | AWS Trainium | Habana Gaudi | FPGA

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Please fill out the session survey

Thank you!

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