MKT249-P

Build Machine Learning Powered Applications with Speed

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AWS re:Invent

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aws

Overview

- AWS Marketplace for machine learning on Amazon SageMaker
- Use cases for AWS Marketplace machine learning models
- Example solution for worker safety

Our mission at AWS

Put machine learning in the hands of every developer

THE AWS ML STACK

Broadest and deepest set of capabilities

AI Services

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

ML Services

Ready-to-use Marketplace machine learning model packages (190+) deployed on Amazon SageMaker

Amazon SageMaker

Ground Truth	Notebooks	Algorithms + Marketplace (60+)	Reinforcement Learning	Training	Optimization	Deployment	Hosting

ML Frameworks + Infrastructure

FRAMEWORKS	INTERFACES
TensorFlow, mxnet, PYTORCH	GLUON, Keras

INFRASTRUCTURE

EC2 P3 & P3DN | EC2 G4 | EC2 C5 | FPGAS | DL CONTAINERS & AMIs | GREENGRASS | ELASTIC INFERENCE | INFERENTIA

AWS Marketplace for Machine Learning

Catalog of 253 trusted, curated, machine learning model packages and algorithms

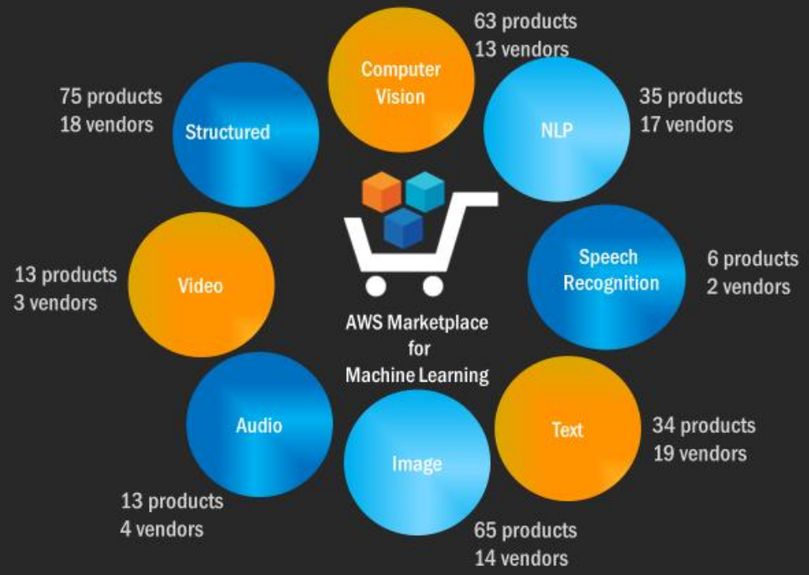
53 machine learning categories

14 industry segments

40 partners

Free | Free trial | Paid licensing types

Seamless integration with Amazon SageMaker



Amazon SageMaker

Amazon SageMaker

Pre-built notebooks for common problems



Collect and prepare training data

Built-in, high performance algorithms



Choose and optimize your ML algorithm

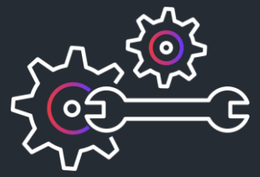
Procure machine learning **algorithm** from AWS Marketplace

One-click training



Set up and manage environments for training

Optimization



Train and tune model (trial and error)

One-click deployment



Deploy model in production

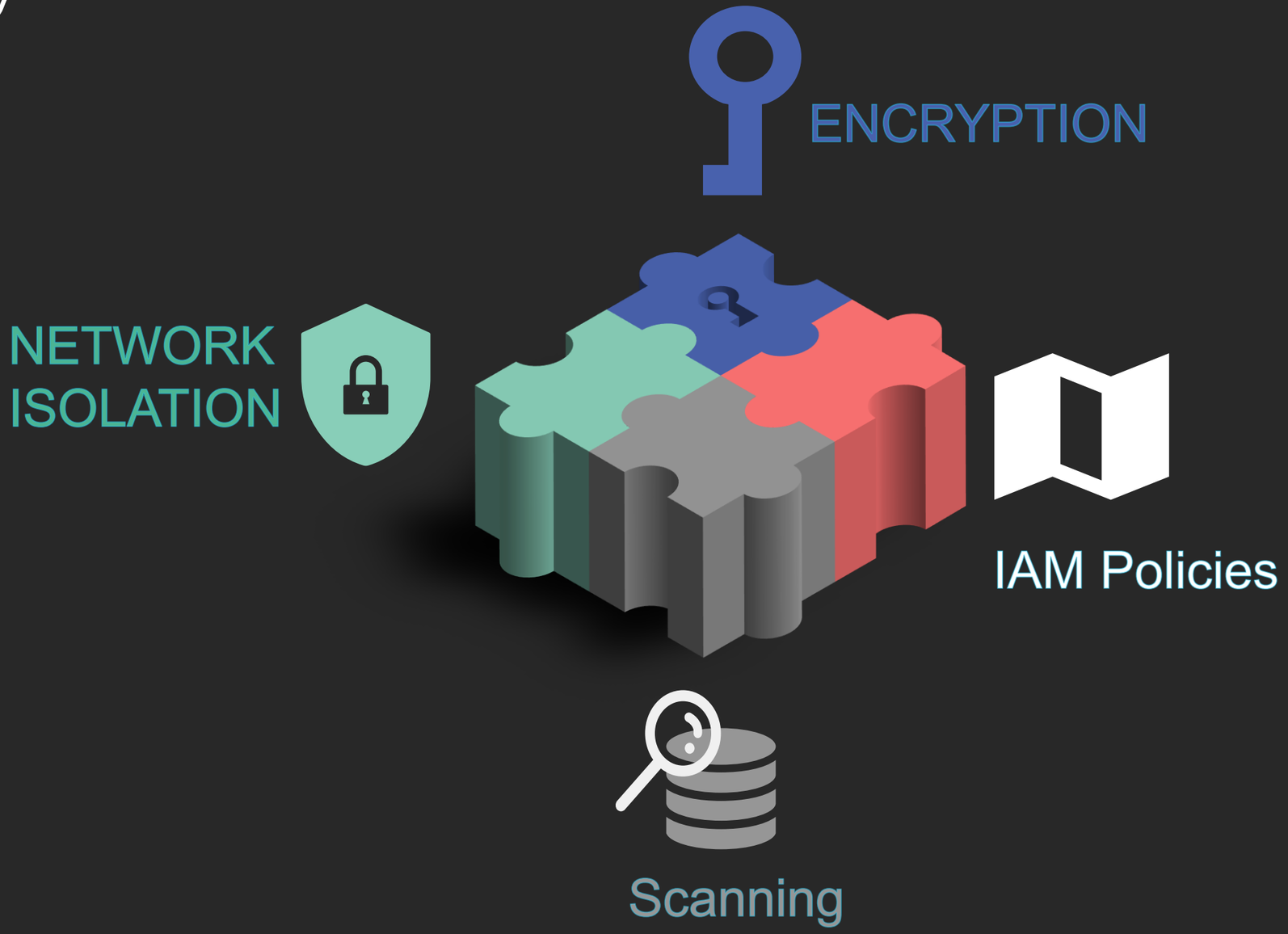
Deploy machine learning **model** from AWS Marketplace

Fully managed with auto-scaling, health checks, automatic handling of node failures, and security checks



Scale and manage the production environment

Security



Use cases for AWS Marketplace machine learning model packages

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Media and Entertainment and Retail Applications

Use cases

Media and Entertainment

- Track brand air time – how long a logo was in the game
- Add searchable information to index video content archive
- Activity detection

Retail

- Visual product search – convert images into product search tag, brands
- Emerging trends – tagging brands, products detected in images
- Web-site product listing quality – detect watermark or text, moderate unsafe content, celebrity picture detection

Computer Vision Machine learning Models

- Sensifai Logo Recognition in Images
- Deep Vision brand recognition
- Cortexica Fashion Localization
- Cortexica Interior Localization
- Deep Vision visual search API
- Deep Vision context recognition API
- Cortexica Person Detector
- Deep Vision face recognition API
- ViSenze Image collage classifier
- ViSenze Image detail classifier
- ViSenze Image text classifier
- Category Recommendation Inference Model
- ViSenze Image human classifier
- ViSenze Image mosaic classifier
- Face Anonymizer
- RocketML Face blurring for Privacy
- Cortexica BodyParts Localizer
- RocketML Barcode Detection
- NSFW Content Recognition in Images
- NSFW Content Recognition in Videos
- Celebrity Recognition in Images
- Celebrity Recognition in Videos
- RocketML Credit Card detection

Compliance, Insurance and Industrial IoT Applications

Use cases

Compliance
- Know Your Customer - verification checks at scale
- Worker safety – protective gear

Insurance
- Claim processing automation – damage detection
- Claim predictor

IoT
- Industrial Asset utilization – machine use
- Preventive maintenance

Machine learning Models

- GTRIPP Passport Data Page Detection
- Passport Stamp Detection
- Persistent Vehicle damage inspection
- RocketML Vehicle Attribute Detection
- Parking Lot Occupancy Identification
- Deep Vision vehicle recognition
- indus.ai Construction Machines Detector
- Agmis Construction Worker Detection
- Provectus Hard Hat Detector for Worker Safety
- Agmis Personal Protective Equipment
- Mphasis HyperGraf Auto Claims Prediction
- RocketML Person Attribute detection
- Construction Worker Protective Equipment Detection
- Welding classification
- Person and Truck Segmentation
- Modjoul Geo Fence Model
- Modjoul Asset Utilization Model
- Modjoul Stationary Work Model
- Modjoul Walking Model
- Modjoul Motion Model
- Ball Bearings Quality Inspection
- Mphasis DeepInsights Truck Vol Estimate
- Modjoul Automotive Telematics Model

Customer Support, Content Curation and Cyber Security

Use cases

Customer Support
- Domain specific Chatbot – intent matching Legal, HR
- Regulatory compliance – ethical and caring treatment of consumers facing difficulty
- Basic Sentiment Predictor – airline reviews

Cyber Security and Filtering
- Security threat intelligence - phishing
- Web filtering- content control

Content Curation
- Classify text – domain categorization
- Text summarizer

NLP Machine learning Models

- LexisNexis US Legal Taxonomy
- Demisto Phishing Email Classifier
- Abusive Text Content Detection
- Text Similarity
- Named Entity Recognition
- Word Associations Inference Model
- Sentiment Analysis Inference Model
- Mphasis DeepInsights Behavioral AI
- Topic Tagging Inference Model
- Novetta Text Tagger
- Insult detection
- Emotion Analysis Inference Model
- Banking FAQ Intent Matching
- Review Helpfulness Prediction
- Lemmatizer Inference Model
- Text Similarity Inference Model
- Text Similarity Analyzer
- Language Scoring Inference Model
- Lyrics Generator (CPU)
- Neural Paraphrase Generation
- Novetta News Tagger (Foreign Policy)
- Novetta News Tagger (Humanitarian)
- Wipro HOLMES™ E-KYC Controller Extractor
- Sentiment Analysis

Healthcare Life Sciences Applications

Use Cases

- Clinical Decision Support
- Operational improvement- re-admission rate, no-show rate

Machine learning Models

- Modjoul Heat Index Model
- Medical No Show Prediction
- Prediction of Patient Readmission Rate
- Acquired Hypothyroidism Disease State
- AFIB Disease State Predictor
- Alzheimer's Disease State Predictor
- AMI Disease State Predictor
- Anemia / Asthma Disease State Predictor
- Breast Cancer Disease State Predictor/Classification
- Bronchiectasis Disease State Predictor
- Colorectal Cancer Disease Predictor
- COPD Disease State Predictor
- Depression Disease State Predictor
- Fibromyalgia Disease State Predictor
- Heart Failure Disease State Predictor
- Heart Transplant Disease State Predictor
- Hip Replacement Disease State Predictor
- Glaucoma Detection ITP - Inflammation & Immunology
- ITP - Lymphoma
- ITP – Myeloid
- Hypertension Disease State Predictor
- Knee Replacement Disease State Predictor
- Leukemia Disease State Predictor
- Lung Cancer Disease State Predictor
- Lymphoma Disease State Predictor/Subtype Classification
- MS Disease State Predictor
- Opioid Addiction Disease State Predictor
- Ovarian Cancer Disease State Predictor
- Parkinson's Disease State Predictor
- Resuscitation Disease State Predictor
- Senile Dementia Disease State Predictor
- Sleep Apnea Disease State Predictor
- Total Joint Replacement Disease State
- Dementia Prediction
- ITP – Solid Tumor

How to Get Started?

1

Discover model packages from Amazon SageMaker and AWS Marketplace

2

Subscribe

3

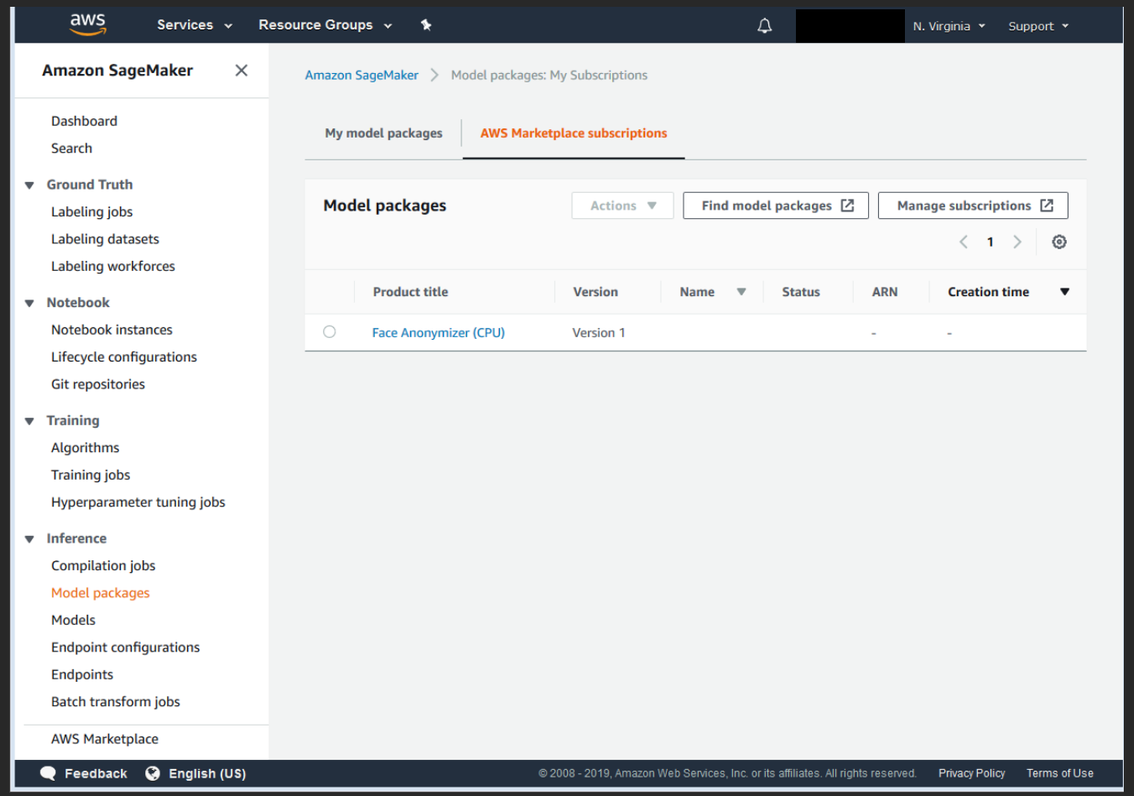
Deploy the model in Amazon SageMaker

4

Run Batch Transform Job



Perform Real-time Inference



Example Solution

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Worker safety concerns



Occupational Safety and Health Administration
U.S. Department of Labor
www.osha.gov



Personal Protective Equipment
OSHA Publication 3155 (2003), 305 KB PDF, 44 pages.

"*Discusses equipment most commonly used for protection for the head, including eyes and face and the torso, arms, hands, and feet. The use of equipment to protect against life-threatening hazards is also discussed.*
http://www.osha.gov/Publications/osha3151.pdf"



Excavations
OSHA Publication 2226 (Revised 2002), 533 KB PDF, 44 pages.

"*A detailed explanation of all aspects of excavation and trenching.*
http://www.osha.gov/Publications/osha2226.pdf"



Head Protection
Hazard: Serious head injuries can result from blows to the head.
Solution:

"Be sure that workers wear **hard hats** where there is a potential for objects falling from above, bumps to their heads from fixed objects, or accidental head contact with electrical hazards."

Demo

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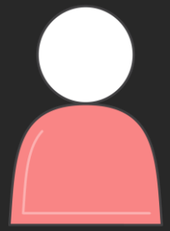
A sample workplace video feed



workers



Hard-hat



Person





Specialized equipment

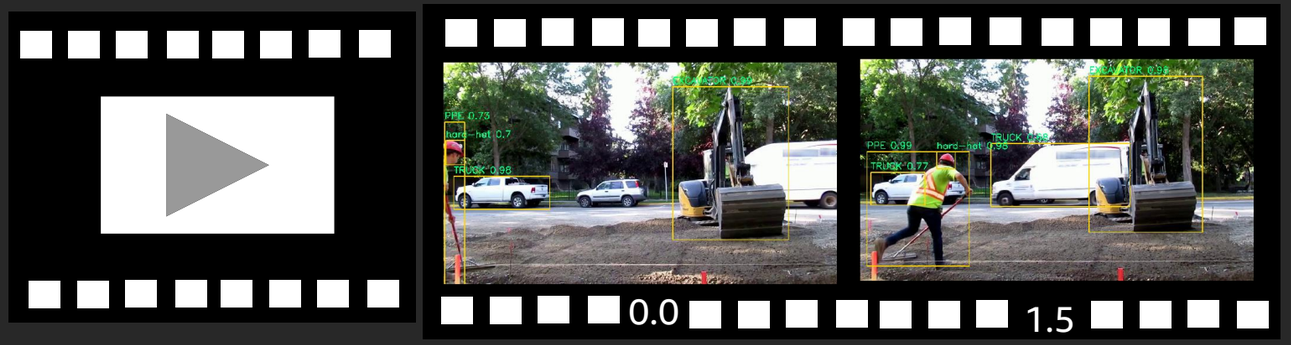


Truck



Car

Courtesy - https://pixabay.com/videos/construction-road-excavator-worker-26239/



Summary Logs

(Start) HH:mm:SSS-(End) HH:mm:SSS : Alarm/No alarm : Status Details

00:00:000-00:00:015 : No Alarm : 1 truck(s), 1 excavator(s), 1 workers found.

00:00:015-00:00:045 : No Alarm : 2 truck(s), 1 excavator(s), 1 workers found.

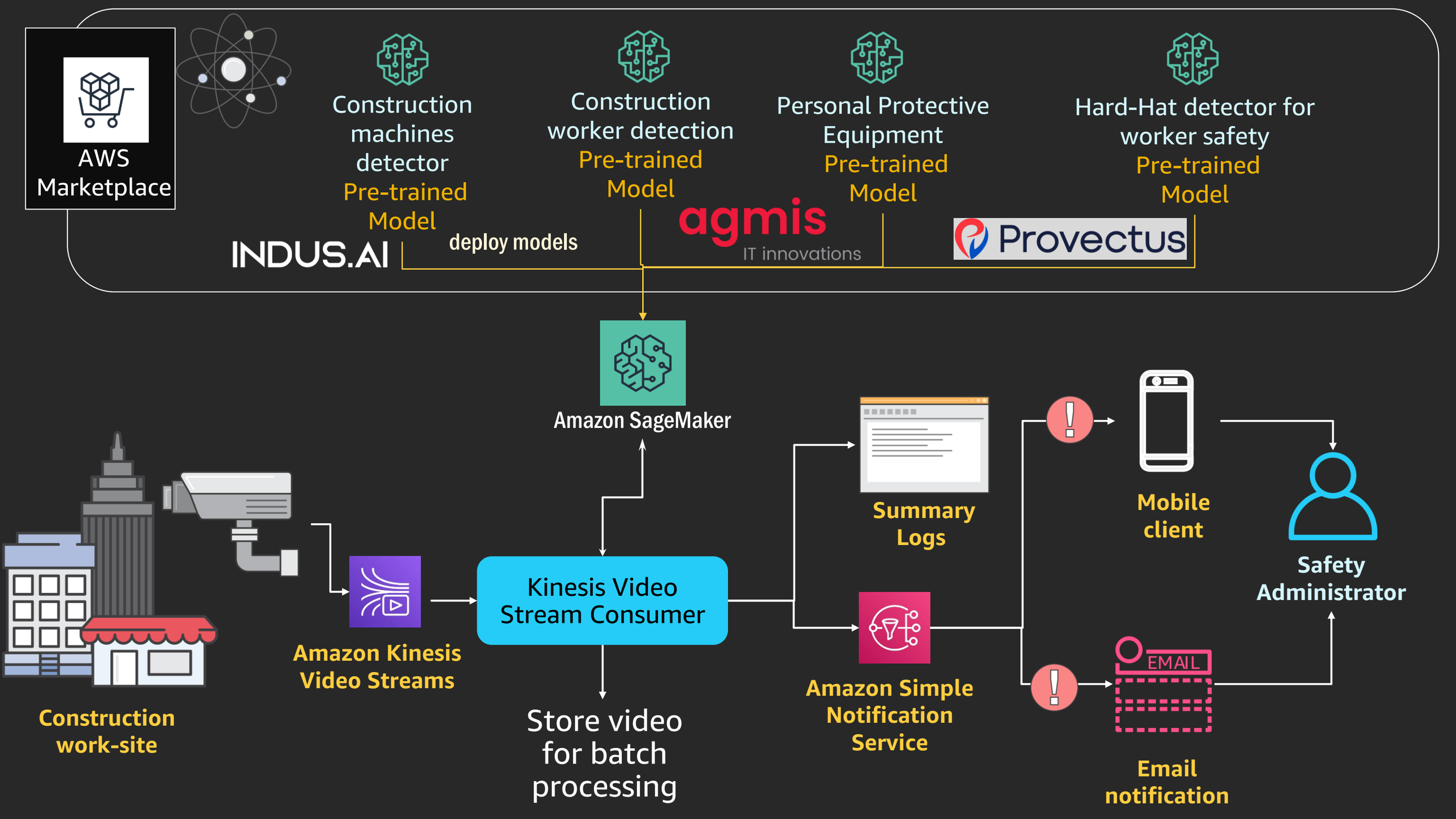
00:00:045-00:00:060 : No Alarm : 1 truck(s), 1 excavator(s), 1 workers found.

00:00:060-00:00:075 : No Alarm : 1 truck(s), 1 excavator(s), no workers found.

00:00:075-00:00:090 : **ALARM** : 1 worker(s) wearing PPE but 0 wearing hard hats, 1 truck(s), 1 excavator(s) found.

00:00:090-00:00:105 : No Alarm : 1 truck(s), 1 excavator(s), no workers found.

00:00:105-End : **ALARM** : 1 worker(s) wearing PPE but 0 wearing hard hats, 1 truck(s), 1 excavator(s) found.


AWS Marketplace
Construction machines detector Pre-trained Model
Construction worker detection Pre-trained Model
Personal Protective Equipment Pre-trained Model
Hard-Hat detector for worker safety Pre-trained Model
INDUS.AI
deploy models
agmis
IT innovations
Provectus
Amazon SageMaker
Construction work-site
Amazon Kinesis Video Streams
Kinesis Video Stream Consumer
Store video for batch processing
Summary Logs
Amazon Simple Notification Service
Mobile client
Safety Administrator
EMAIL
Email notification

Resources

AWS Marketplace Amazon SageMaker Examples on GitHub-

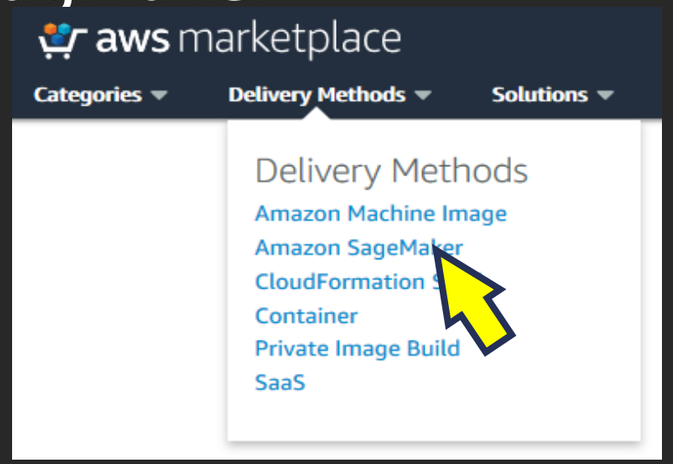
https://github.com/awslabs/amazon-sagemaker-examples/tree/master/aws_marketplace/using_model_packages

re:MARS 2019 - Automating Insurance Claims using machine learning models

https://www.youtube.com/watch?v=GkKZt0s_ku0

AWS Marketplace for machine learning on Amazon SagMaker

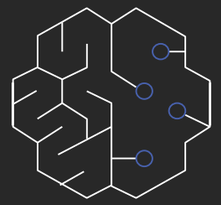
https://aws.amazon.com/marketplace/



Hundreds of pre-trained ML models on Amazon SageMaker to accelerate your ML adoption



Find and buy from hundreds of model packages and algorithms in AWS Marketplace



Deploy Marketplace machine learning model packages and algorithms securely on Amazon SageMaker



Seamless procurement and fulfillment through AWS Marketplace

Thank you!

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