

datacentrix



indaba 2021

mining



HUAWEI

Combining the Power of Artificial Intelligence and Humanity in Mine Surveillance

2 September 2021

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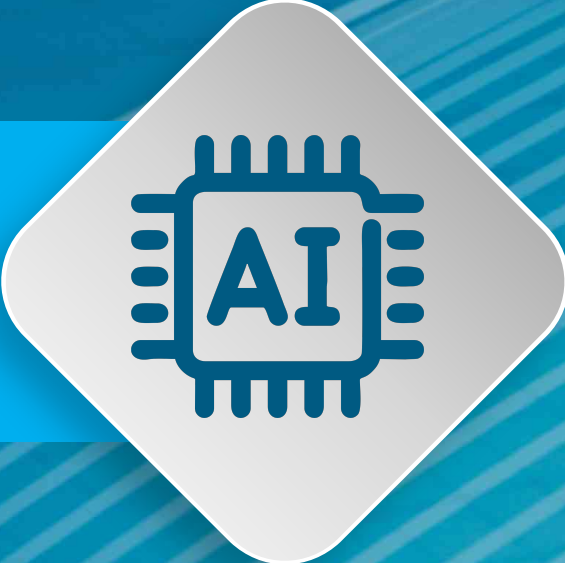
Trends & Debates



Dares & Defies



The Key



Paradigm Proof





Trends & Debates

Evolution of Surveillance & AI

Camera

Powerful multi-purpose device

- Video
- Data
- Audio

“EYE” in IoT

- Production
- Operations
- Health & safety
- Risk management
- Finance

ACTIONABLE INTELLIGENCE

Surveillance & AI trends

Analytics on the Edge

A dark blue background with a central glowing circular pattern of data points and lines, suggesting edge analytics or data processing.

AI Explosion

A blue background featuring a silhouette of a human head with glowing neural connections and a bright light beam passing through it, symbolizing artificial intelligence.

INTEGRATION
Actionable
Intelligence

A central graphic showing a human head profile with a network of blue dots and lines representing data integration and actionable intelligence.

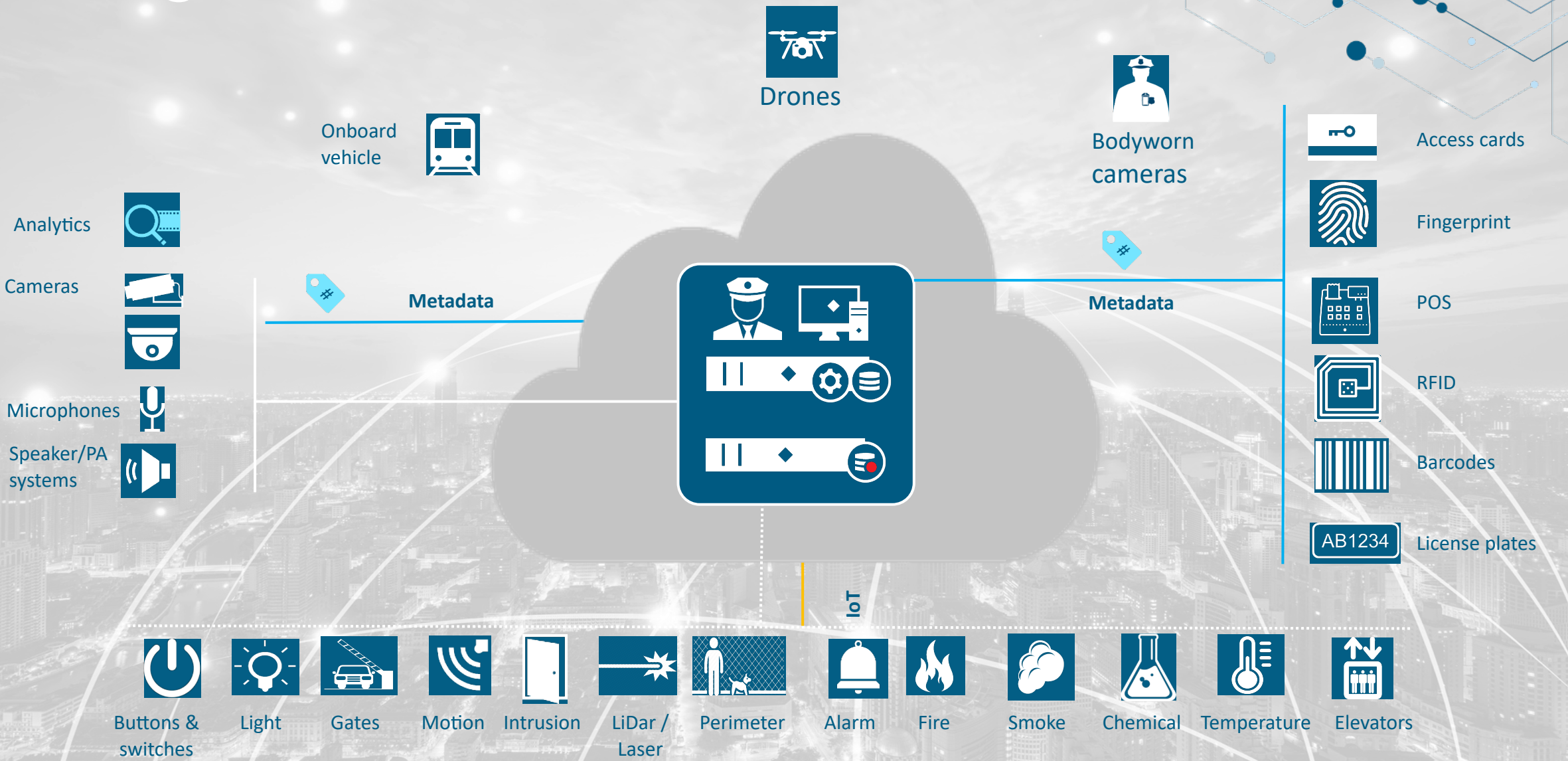
Convergence: IT & Security

A dark blue background with a glowing circular interface element and circuit-like patterns, representing the convergence of IT and security.

Move to Cloud

A blue background with a glowing light beam and a grid pattern, symbolizing cloud migration and data storage.

Integration Layer: Data, Video & Event Management



Tailor your solution to your exact needs

Video Analytics



Video analytics events

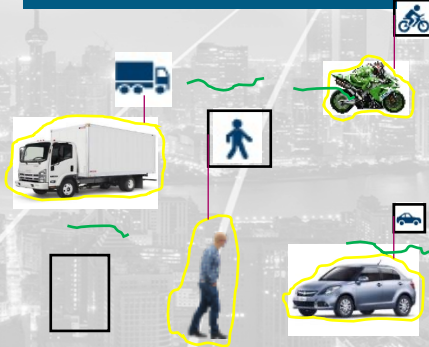


16 Video Analytics rules offered of which **16** can be set in parallel

Object filters



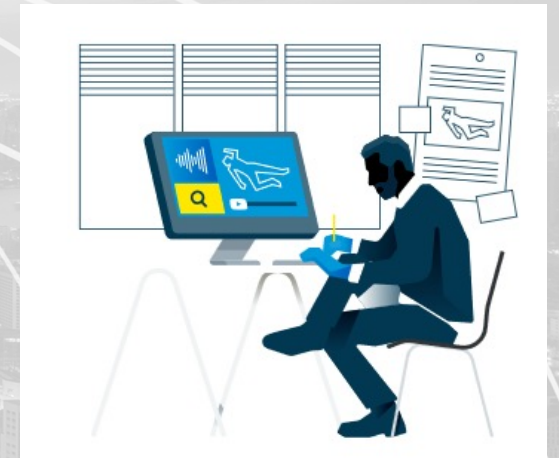
Object classification



Scripting



Centralized search
Smart Client





Dare & Defies

Typical challenges in underground mining operations



Challenge: Personnel safety

Typical violations



No PPE and Smoking



Carrying objects when field workers are on the lift chair



field workers staying on the track

Challenge: Belt System Performance

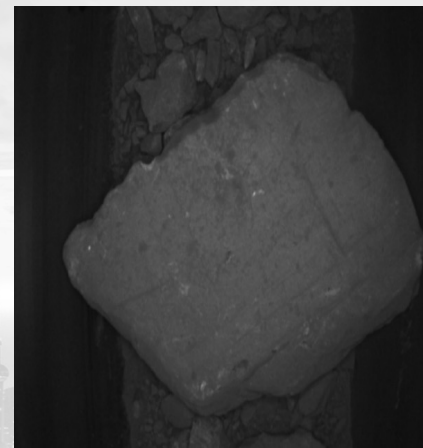
Typical challenges of belt transportation system



- No load on conveyor
- Waste of electricity power



- Foreign object falling on the conveyor
- Oversize ore on the conveyor
- Conveyor tearing and damaging due to foreign objects

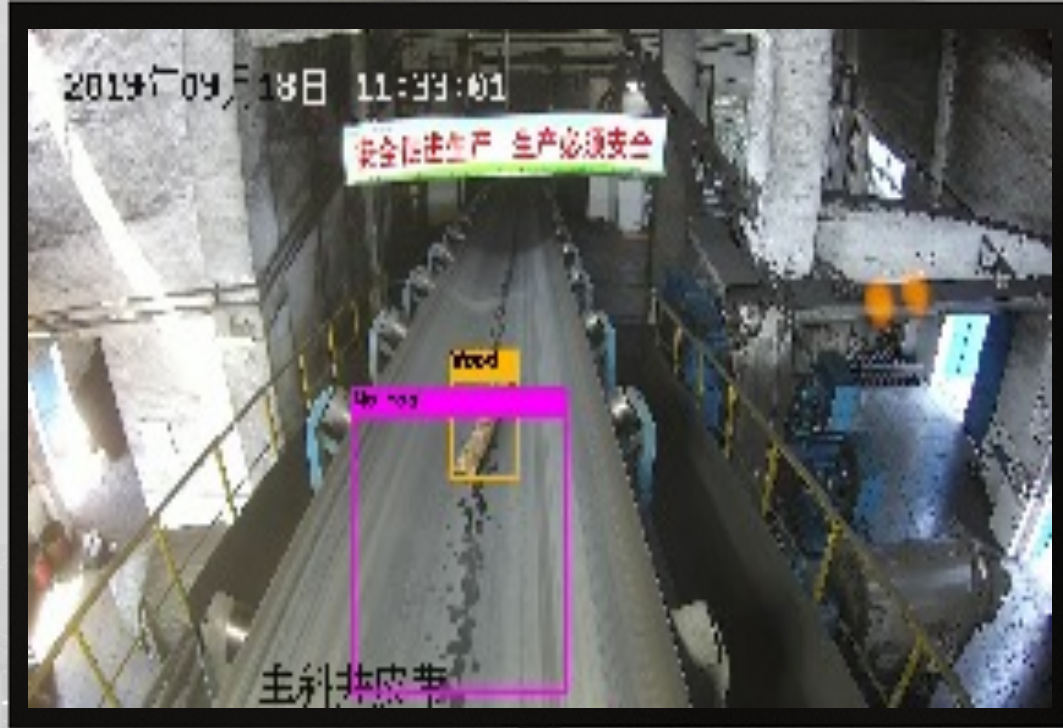


- Abnormal shutdown of the conveyor
- Conveyor deflecting during operation
- People approaching the operating belt



The Key

AI Intelligent Identification for Belt's Abnormal Operations

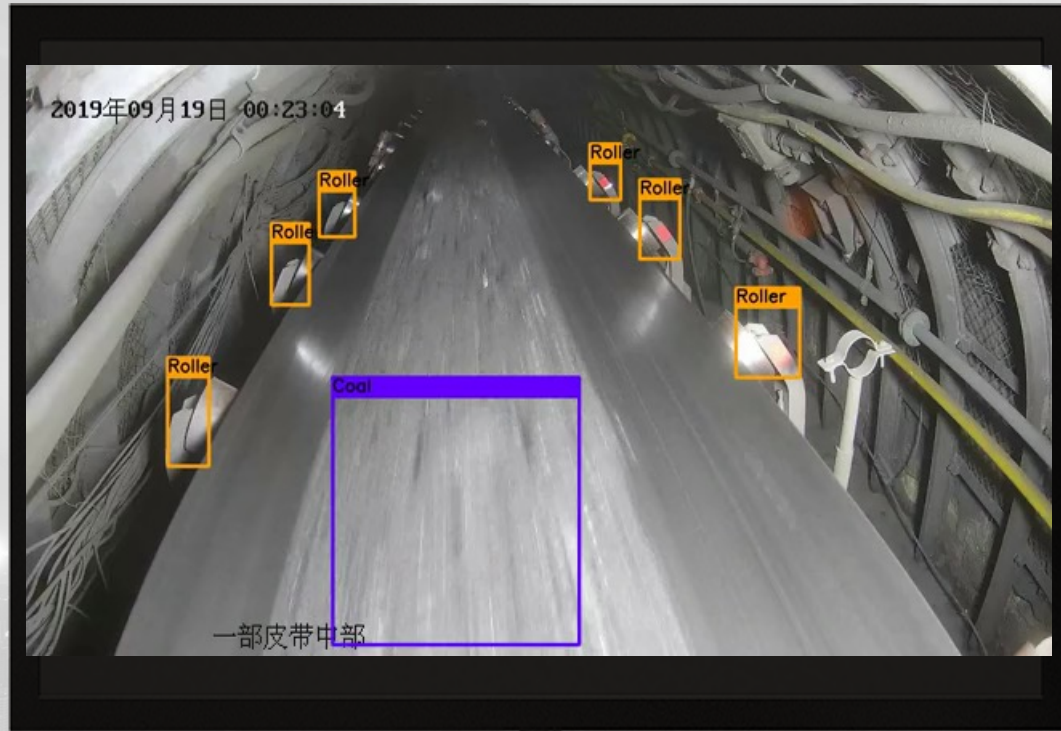


Detecting foreign object on belt



Detecting large block ore on belt or overweight

AI Intelligent Identification for Belt's Abnormal Operations

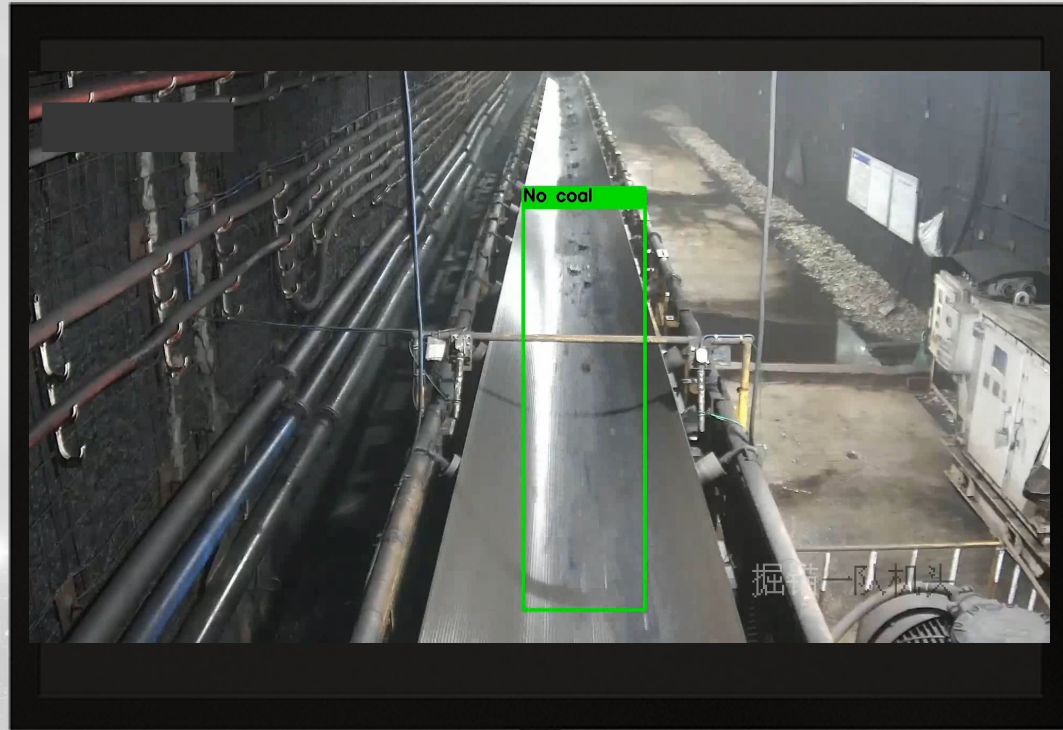


Detecting conveyor deviation



Detecting mineral piling up at transfer site

AI Intelligent Identification for Belt's Abnormal Operations



Detecting belt idling



Detecting violation of personnel approaching

AI Intelligent Identification for Abnormal Operations



PPE detection



Lift chair operation
identification

AI Intelligent Identification for Abnormal Operations



Pump station
inspection
identification

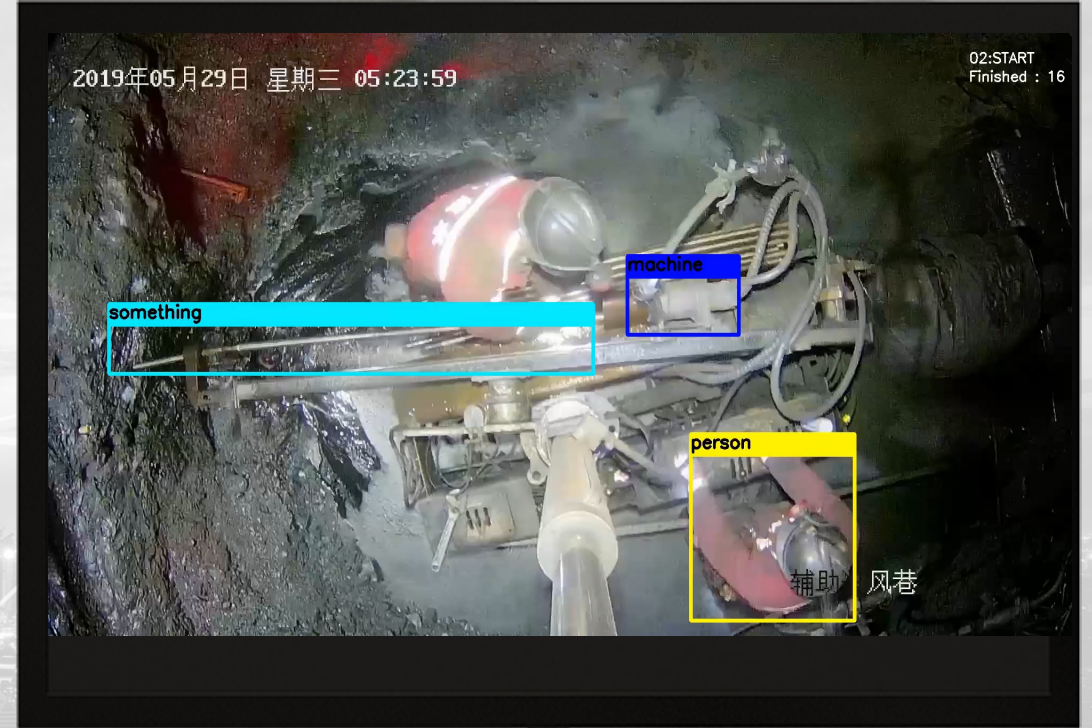


Power station
inspection
identification

AI Intelligent Identification for Abnormal Operations

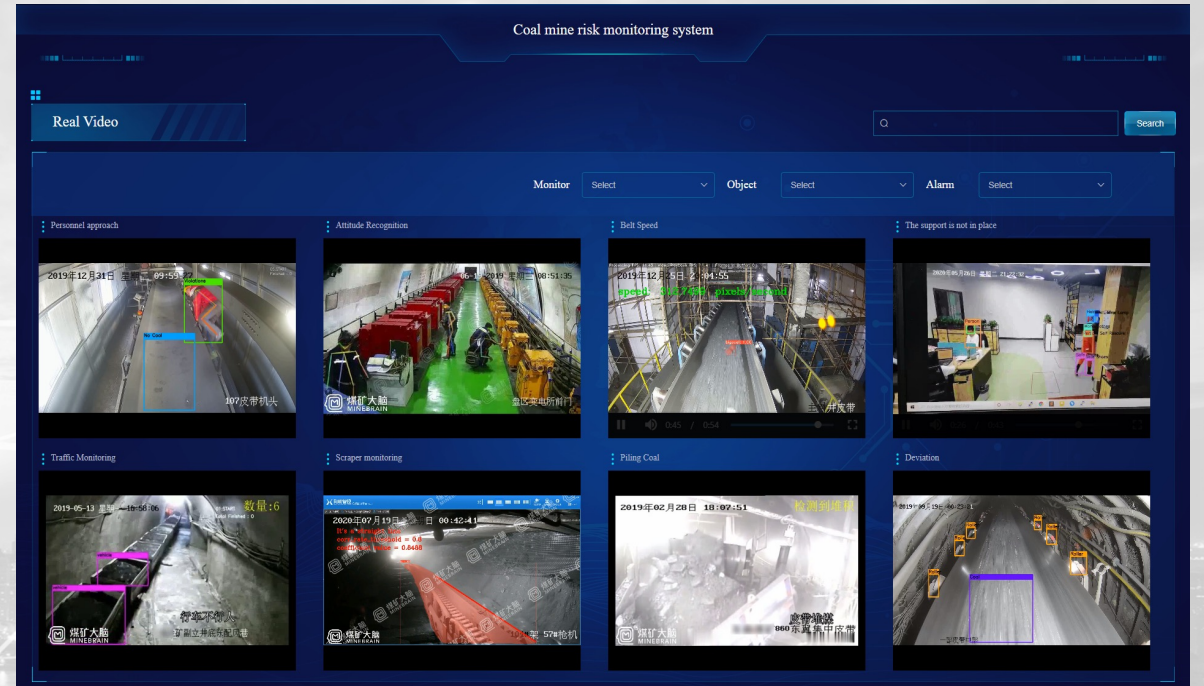


Crasher operation
detection



Manual operation
detection

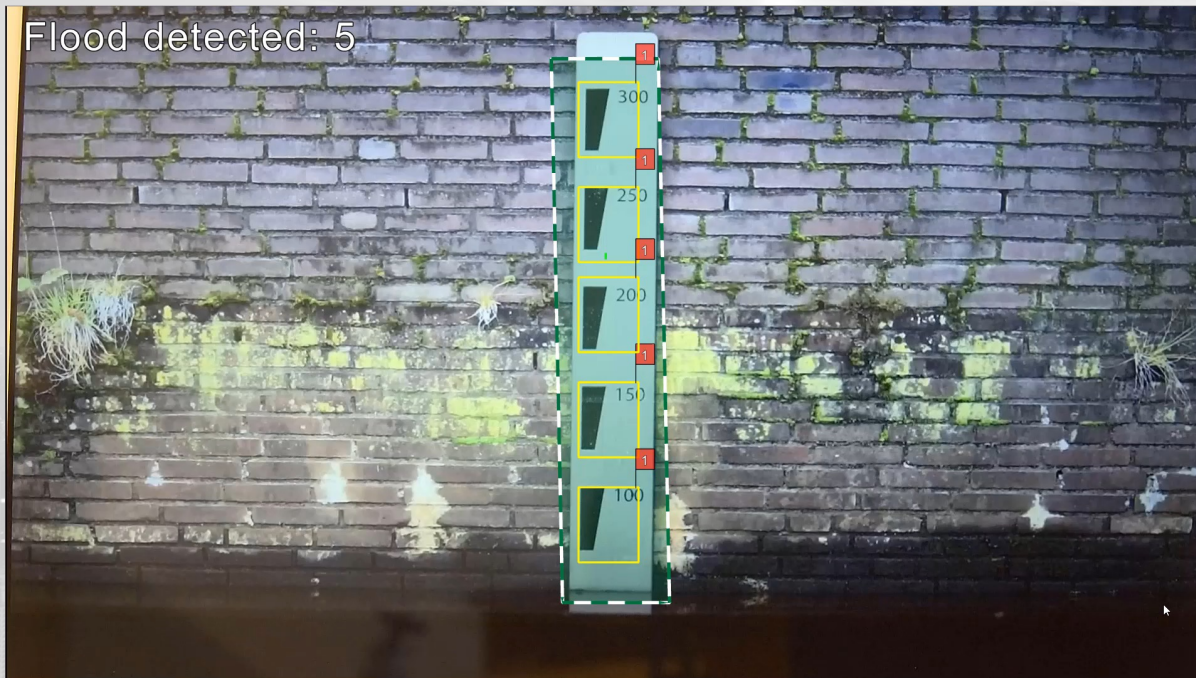
Unified Portal Manage the AI Application System



- Monitor the overall status of underground environment in real-time
- Display alarm information of each camera at monitoring position in real-time

- View the video footage of each camera in real time
- View the running status of the camera in real-time, the running status of the belt, machinery & personnel

Video Analytics in action: Early flood detection



Reduce the risk of damage from floods

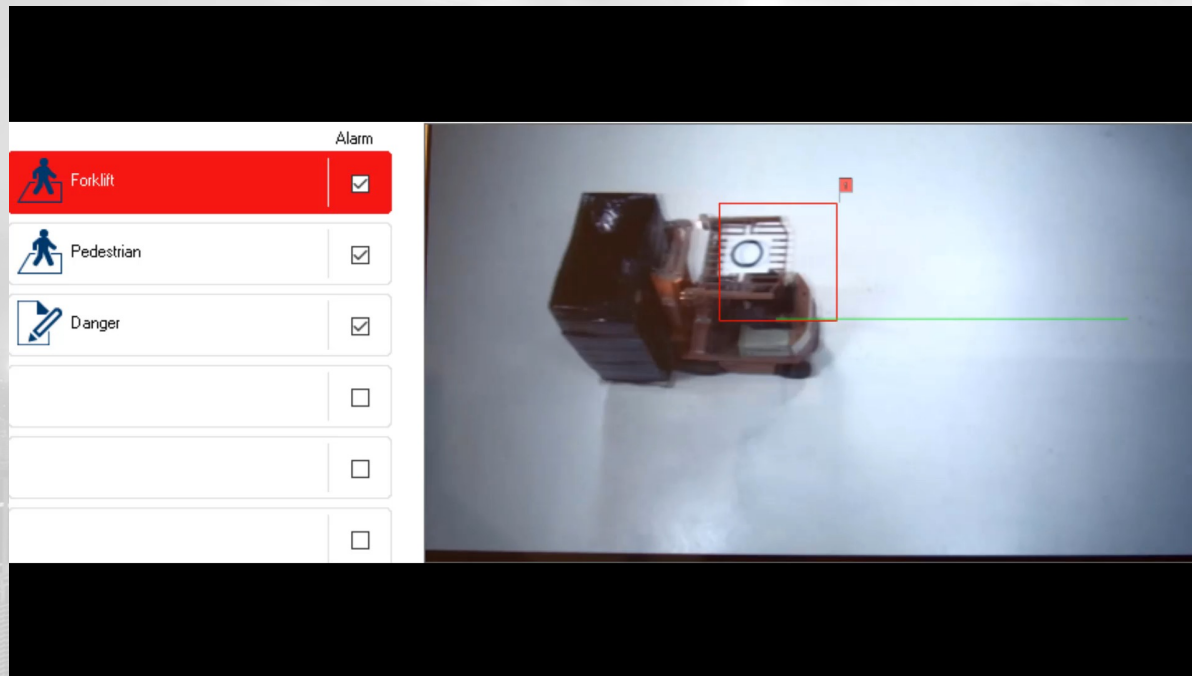


Informed decisions using intelligent cameras



Automatically detect any change in water levels to provide actionable data

Video Analytics in action: safety regulations in warehouses



Improve the safety of workers with the help of data



Create a safe environment using intelligent cameras



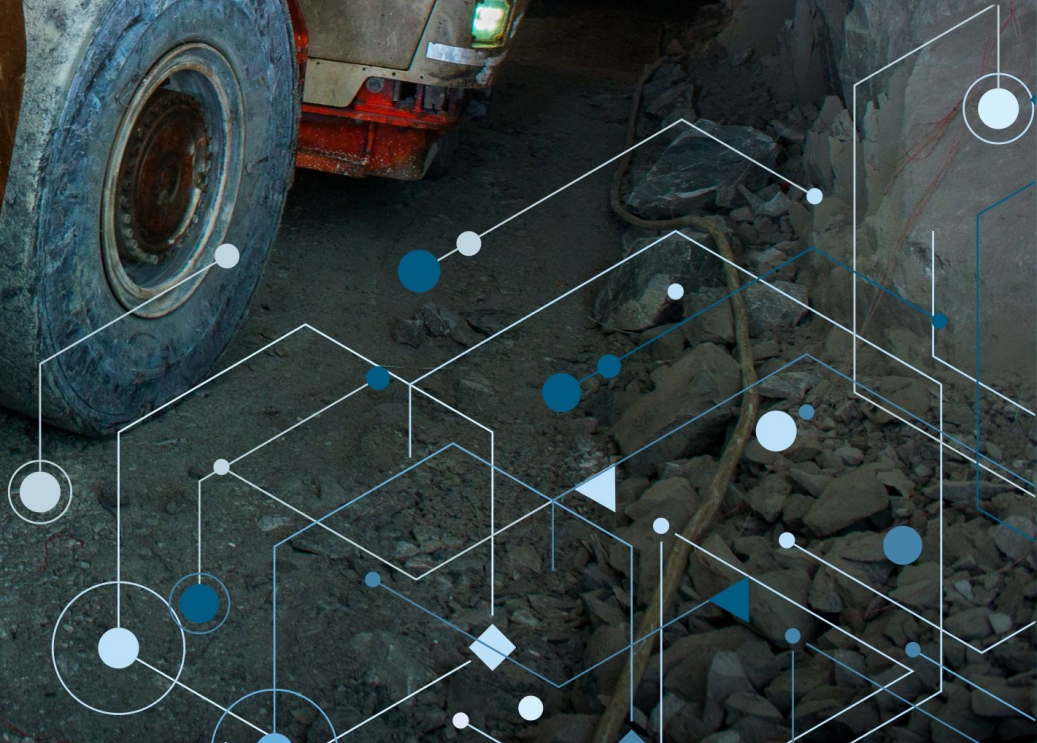
Help enforce health and safety regulations

Video Analytics in action: PTZ





Paradigm Proof



Benefits from the AI solution for mining operations

Benefits for saving costs

- Reduce the unexpected downtime of belt transportation system

Conveyer belt system downtime
3 days/month

Conveyer belt system downtime
1 day/month

- Reduce no-load power consumption of belt transportation system

No-load power consumption
650K USD/year

- 2Mt/year of production mine.
- 1km belt no-load power consumption is 35% of running power (350Kw).
- Electricity tariff is 0.06USD/KWh.
- No-load power consumption of 10 belts:
 $10 * 350Kw * 35% * 0.06 * 24h * 365d \approx 650K \text{ USD/year}$

No-load power consumption
280K USD/year

- 2Mt/year of production mine.
- 1km belt no-load power consumption reduced to 15%.
- No-load power consumption of 10 belts:
 $10 * 350Kw * 15% * 0.06 * 24h * 365d \approx 280K \text{ USD/year}$

Benefits for enhancing management

- Anticipate major risks, identify personnel violations, and contain major accidents.
- Avoid mine shutdown due to severe accidents
- Provide intuitive measures for mining operation supervision
- Provide reliable evidence for accidents retrospection
- Provide statistical report of abnormal mining operations to support scientific decision making



Thank you