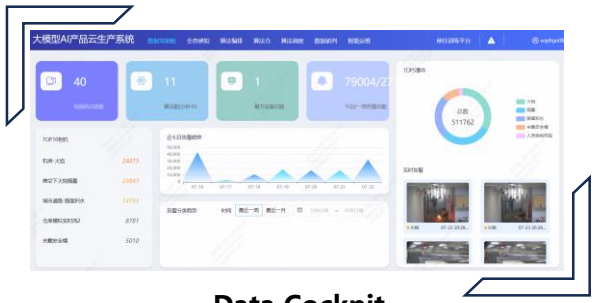
Product Application Plan——RAS631

Self-Training Large Model Integrated Machine

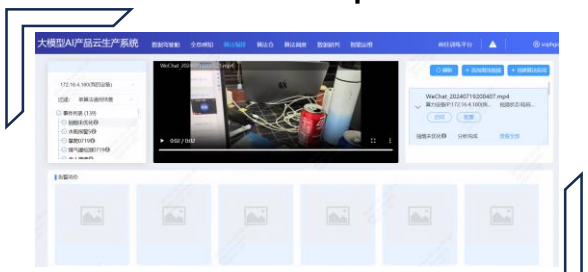
RAS631(Self-Training Large Model Integrated Machine)——Efficiency and Excellence

RAS631, powered by advanced large model pre-training, revolutionizes natural language orchestration by seamlessly integrating with thousands of algorithms. This cutting-edge technology enables precise text-based target depiction in videos, facilitating video event detection and retrievals with unparalleled accuracy.

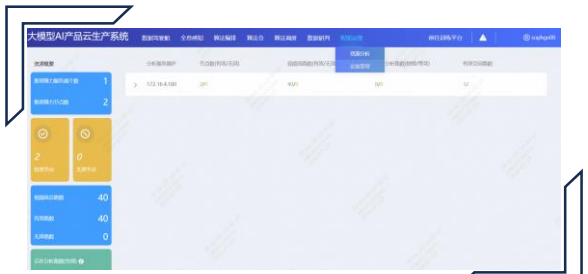
From personnel detection to object and scene recognition, RAS631 empowers clients to swiftly develop algorithms in large model scenarios, **reducing R&D cycles by 90% while achieving over 90% accuracy across 90% of industry scenarios**. Widely adopted in sectors like hazardous chemical parks, urban governance, financial outlets, subways, and transportation, RAS631 drives the digital transformation of diverse industries.



Data Cockpit



Holographic Perception



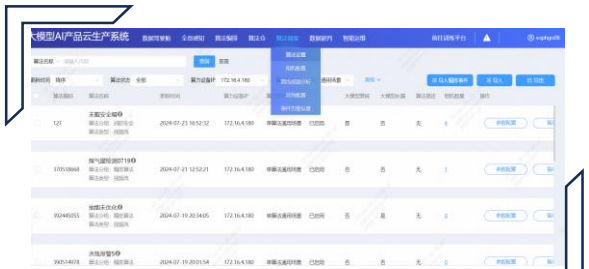
Intelligent Operation and Maintenance

RAS631 Self-training Large Model Integrated Machine

- **Training: Small model training+Large model Orchestration**
- **Inferencing: 240 channels/machine**
- **Error detection reduction: Secondary detection of large models for inference results**
- **Deployment: Can be deployed on a single machine or scaled to a cluster with multiple nodes to increase the number of inference paths**

Self-training large model integrated machine

Mature Algorithm Library



Algorithm Scheduling

Data Analysis and Judgment

Product Architecture for RAS631 Self-training Large Model Integrated Machine

Integration of small and big models, training and inferencing

Small model training and large model orchestration

Algorithm Training

Support training for multiple algorithms such as object detection, image classification, and keypoint detection

Automatic data annotation	Training data analysis
Zero code training	Algorithm evaluation report

Data Engineering

Classic algorithm development

Finishing Large Model Orchestration with One Sentence

Personnel behavior	Scene recognition	Item recognition

Built-in basic CV large model

Multi modal data pre training

Visual Data Voice Data Text Data IoT Data

Prompt Project

Innovative aolgrithm development

Algorithm Library

Inferencing and application side

Inferencing landing

Inferencing & Deployment

Up to 100+mature algorithm models, data-driven support for iteration

Built-in business platform	Inferencing event closed-loop processing
One click deployment	Effective immediately

Event review Event investigation

AI Large Model Recognition Service

Secondary testing	False alarm optimization	Algorithm fine-tuning

Definition of Industry Scenario Requirements

Industry long-tail scenario

Urban governance Transportation finance General-security

Organic combination

Scenario based
Small model
Real time
Fast
Efficient

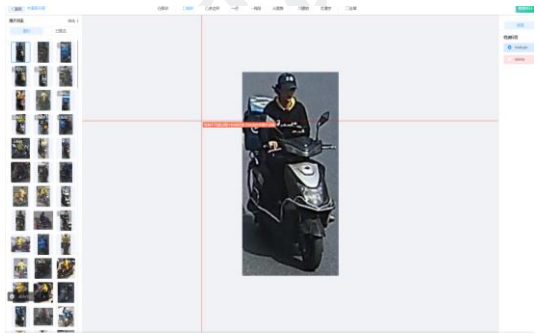
Large model
Screening for abnormal review violations
Comprehensive
Accurat
Strong
Generalization

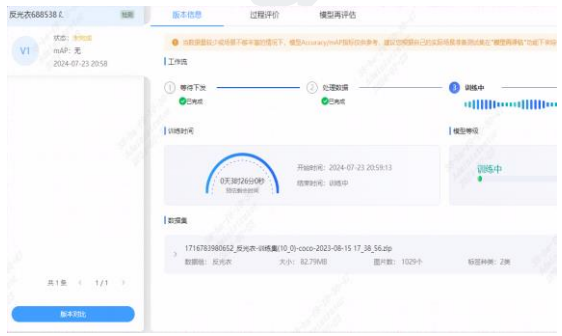
Small model training platform improves efficiency for new AI algorithm development

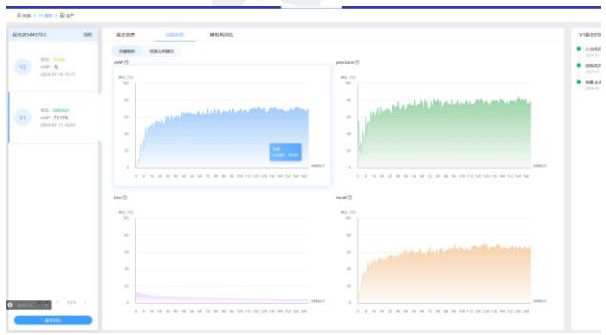
Small model training offers rapid response times, minimal resource requirements, and effortless deployment, significantly enhancing development efficiency.

Training a new algorithm with a small model only requires 4 steps

A. Upload DataB. AutomatedAnnotationC. Algorithm TrainingD. Algorithm Verification







Large scale natural language orchestration and fine-tuning to facilitate efficient production of new AI algorithms

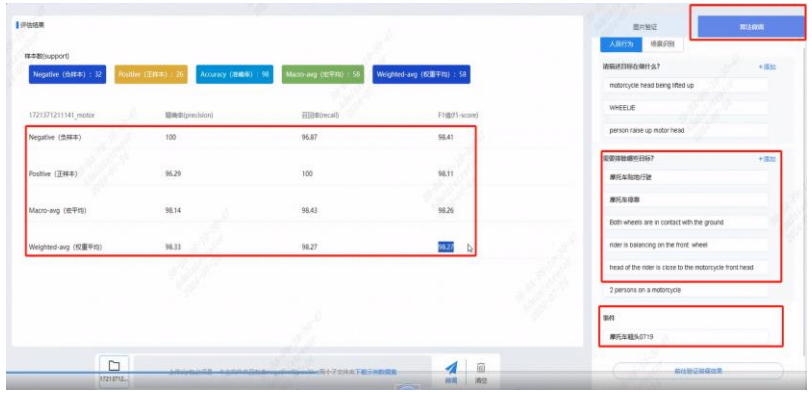
The average accuracy of the motorcycle wheelie algorithm is 70%

No exclusion criteria added

The accuracy of the motorcycle wheelie algorithm reaches over 90%

Add multiple exclusion criteria

Fine tuning and optimization of algorithm performance to over 96%



Small sample size; large model fine-tuning; efficiency improved in a fast manner

More Orchestration Results:

Fight Detection

Cow Detection

River Garbage Detection

Drowning Detection

Poppy Detection

The large model automatically rechecks alarms, with an alarm accuracy rate of over 96%

Through secondary filtering function of a large model, the alarm accuracy rate reaches over 96%

Secondary filtering improves system efficiency

The result of the first inference result of "not wearing a safety helmet" is automatically marked as "recheck"

Large model automatically rechecks results

Industry-related Algorithms

Algorithms for Hazardous Chemical Parks

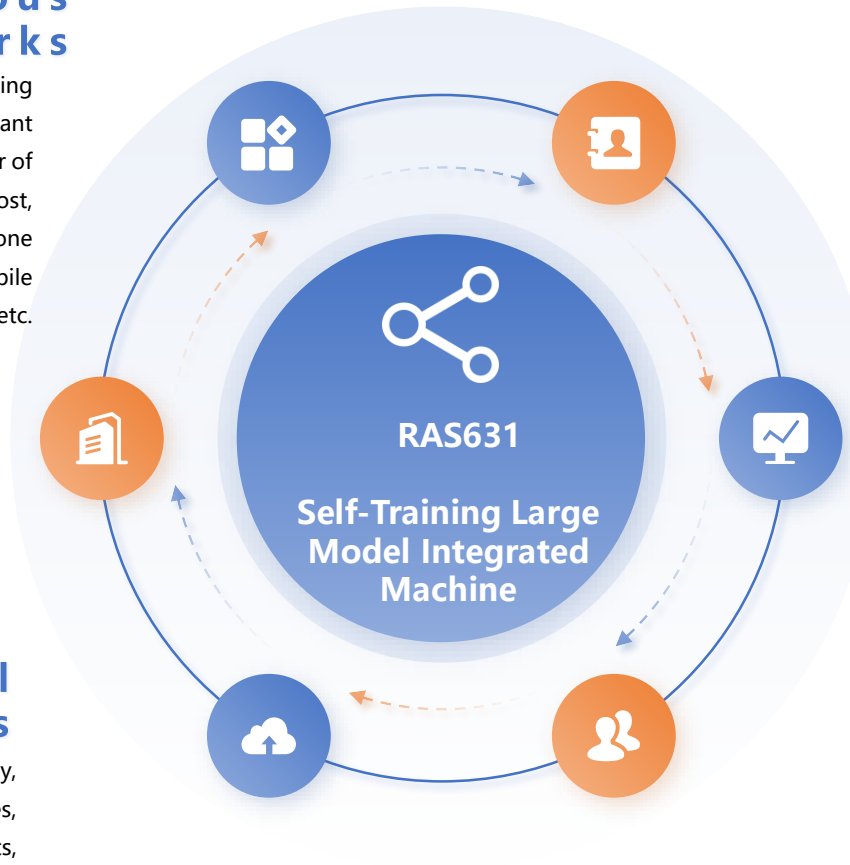
High-risk smoke, flames, trip overs, electric scooter entering elevator detection, not wearing safety helmets, road stagnant water, not wearing working outfits, area intrusion, number of on-site personnel not meeting regulations, leaving post, personnel wandering, duty personnel making phone calls/getting distracted by mobile phones/carrying mobile phones, etc.

Algorithms for Urban Governance

Operating outside the store, disorderly stacking of building materials, stagnant water, dog detection, garbage dumping, garbage dumping, illegal advertising, floating debris in the river, fallen trees, etc.

Algorithms in Rural Scenarios

Personnel wandering detection, prolonged personnel stay, electric scooter detection, illegal parking of vehicles, stagnant water, garbage dumping, cycling without helmets, illegal carrying of people on tricycles or agricultural vehicles, etc.



Financial Branches (Business Halls)

Escort not wearing helmets, customers carrying large luggage, personnel leaving the counter, the security guard absent from the post for a long time, crowding reminding, illegal posting on ATMs, items left on ATMs, bag grabbing, etc.

Algorithms in Subway Scenarios

Long term personnel retention, passenger flow analysis, passenger congestion/density, fighting, abnormal operation of escalators, sudden changes in passenger flow alarms, personnel reversing, dozing off, crossing turnstiles, delivering goods across barriers,etc.

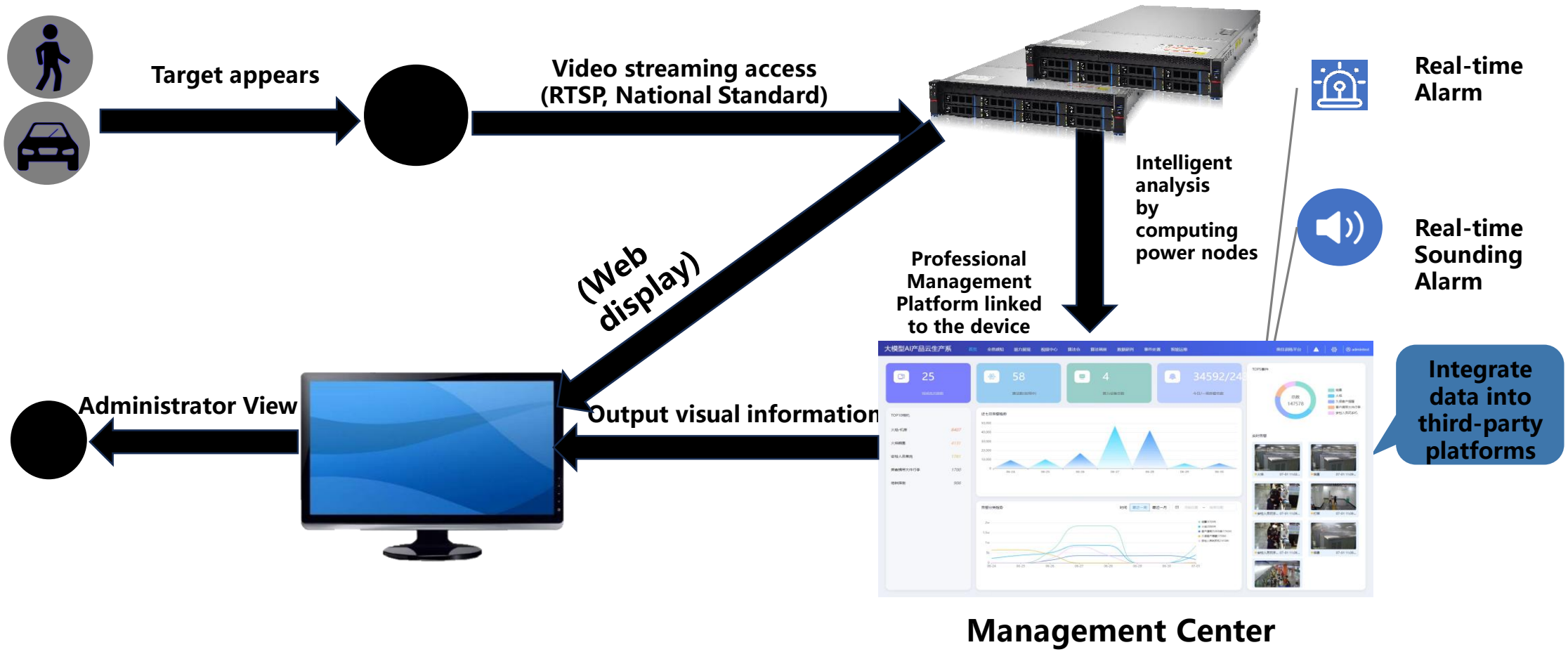
Algorithms in Transportation Scenarios

Littering of items, malfunction of signal lights, damage to signs, failure to yield to pedestrians, illegal lane changes, occupation of bus lanes, illegal parking, motor vehicles driving in the opposite direction, big turns and small twists, not following the designated lane, etc.

More industry algorithm packages will be updated and provided in the future: campus security, smart water management, smart coal mining, etc.

RAS631 Deployment

RAS631 supports both single-machine deployment and cluster deployment, utilizing a unified platform for management.



Value of RAS631 (Large Model Self Training Integrated Machine)

Customized Solutions

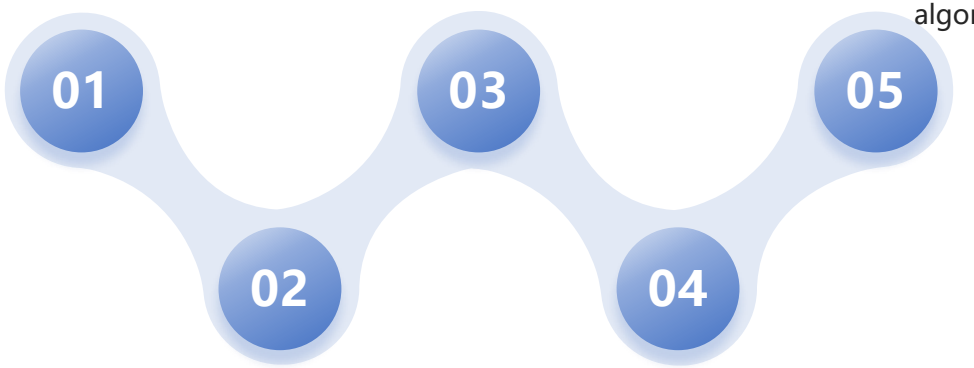
RAS631 provides customized CV large model solutions, reducing deployment barriers and improving performance through optimization and integration between hardware and software.

Multi-scenario mature algorithm package

Five mature algorithms are packaged and provided, which can be deployed to the inference end freely. In actual business implementations, our clients only need to train the algorithms they need to ensure delivery.

Empowered by large models

With the support of various large model capabilities such as algorithm orchestration and event rechecking of large models, the efficiency of algorithm customization is improved, and the problem of low accuracy in traditional small model algorithms is avoided.



Business-based implementations

Equipped with a built-in inference platform, boasting multiple functions such as data cockpit, holographic perception, historical event viewing, alarm event review, etc., completing all the jobs with only one device.

Stable delivery and flexible operation and maintenance

Support localized deployment; Our team can complete the delivery work; subsequent operation and maintenance can be conducted by the end user or local integrator. Algorithm iteration and new algorithm requirements can be conducted by the integrator.

An Application Example in Chemical Industrial Parks

Industry pain points

- High false alarm rate; artificial intelligence effects guaranteed by human assistance
- Lack of regulatory data; difficulty in obtaining data, and no warning
- Frequent occur of unexpected problems or problems caused by blurred recognition in the safety production sector
- Lack of digitalized and intelligent means to regulate enterprises
- Clarifying responsibilities encounters problems

Customer Demands

- Platform: algorithms for video analysis in the park, which have strong scalability and need to be integrated with the internal platform of the park.
- Business: must adopt a large model and training platform, real-time processing and optimization and operations can be done by the integrators.
- Deployment: Deploy 3 * RAS631 (3 large model self training integrated machines) +25 * 1U boxes to be placed in each enterprise, with each enterprise analyzing 16 channels.
- Operation and maintenance: The equipment and platform have a long service life, and future optimization and operation and maintenance work can be done by the manufacturers or local integrators.

Solutions and Examples

Centered around hazards, assist the park and emergency management departments in achieving real-time monitoring, dynamic warning, risk prevention, and dynamic control of major hazard source enterprises. Promote the regulatory institutions and enterprises in the park to clarify and shoulder relative responsibilities so as to effectively resolve major safety risks, significantly improve the level of emergency management digitalization and intelligence level and greatly reduce the occurrences of accidents.

A chemical industrial park in Chengdu

Algorithms

Major hazard sources

High-risk operations

Safety helmet inspection

Off duty inspection

Flame detection

Smoke detection

Production equipment

High risk locations

Fireworks detection

Smoking detection

Fire escape blocked

Electric scooter detection

Application Platform

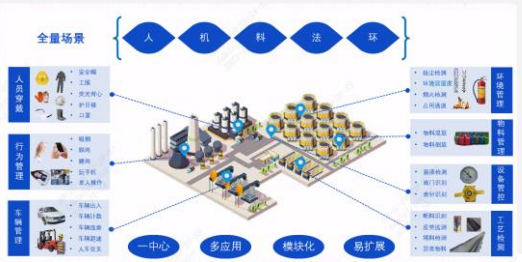
Core products

RAS631

Solution Value

- Delivery of all-in-one machine
- Rapid deployment
- Business closed loop

Supervision of All Elements



Thanks

Intelligent Computing Empowers the Future