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PRODUCT BROCHURE

# HUO YAN JIN JING

Smoke detection and micro-fire monitoring intelligent platform

上海知津信息科技有限公司

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## 01 COMPANY PROFILE

### 企业简介

Shanghai Zhijin Information Technology Co., Ltd. was established in 2012. As a high-tech company focused on providing machine vision products, solutions and systems, the company has a research and development team consisting of more than 10 years of research and development experience and highly educated personnel. The company's rooted product stability concept and reliable quality management genes, based on technology research and development, to the user to bring innovative high-performance machine vision products for the pursuit of comprehensive assistance to industrial enterprises intelligent upgrade and innovative applications. After years of accumulation and development, Zhijin Science and Technology research and development areas include embedded systems, image processing, automotive electronics, motor drives, FPGA technology, machine learning and many other aspects. Around these basic technologies, the company successfully developed the world's smallest high-performance smart camera and machine vision system, which covers automotive manufacturing, semiconductor, mobile phone production, intelligent logistics, and environmental intelligence monitoring. We believe that technology is the driving force behind production and development. We are willing to use our exploration and innovation and efforts to help our customers' development and success.

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## 02 市场痛点

## MARKET REQUESTS

Due to the low performance of the device itself and the inaccuracy of collecting data, it often causes false triggers and false positives.

Strong dependence on the environment. Usually the alarm system must be installed in the field environment and at close range for effective monitoring and evaluation. Existing alarms are concentrated indoors and are difficult to cover outdoors.

High false positive rate    Strong environmental dependence

### High cost

The hardware equipment and network laying cost of the alarm system is too high. Alarm devices cannot be widely placed at locations that need to be monitored due to cost constraints.

### Poor real-time performance

The real-time performance of the alarm is poor. The intelligence of the alarm is limited, so that the fire cannot be reported in time until the fire is already large, which makes the rescue difficult.

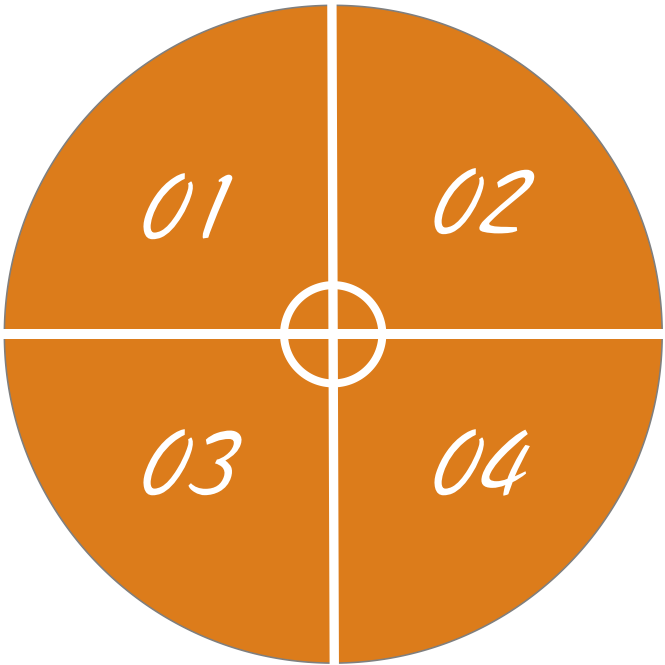




# 03 解决方案

## Visible light and thermal image fusion

Through real-time collection and fusion analysis of visual image data and thermal imaging data, accurate understanding of fireworks conditions and changes, and take relevant measures in advance.



## Intelligent Algorithm

A variety of intelligent algorithms are integrated to make full use of the deep information of video images to achieve more reasonable and reliable real-time monitoring and warning of video fire and smoke.

## Image processing technology

The combination of digital image processing technology with the morphological features of smoke and fire images can be achieved for fire targets.

## Visual video

The real-time monitoring video can easily detect the actual situation of the scene remotely after the alarm is detected by the personnel.



## 火眼金睛 HUO YAN JIN JING

Huoyanjinjing is the new intelligent visual smoke and fire monitoring and testing products developed by Zhijin Technology. The product not only has the advantages of low power consumption, long standby, easy to use, flexible configuration, but also the functionality of multiple hardware and software has been upgraded, adding many innovative features, such as dual lens system. Multi-view multi-screen overlay, live video recording, etc., also greatly improved performance and stability, and better meet the needs of users.

## Double lens

Innovative dual-lens configuration, combined with visible light and thermal imaging, best displays live smoke. The lens cover and surrounding parts are designed to be protected from rain, moisture, dust and dirt.

## Searchlight

The searchlight is used to assist the main operation of the main engine in the case where the light environment is weak and the object cannot be sufficiently distinguished.

## Work indicator

The eye-catching work status indicator shows the working status of the device for easy maintenance and maintenance.

## Rotating gimbal

360° C no dead angle rotation, remote controllable, all-round shooting, observation of the scene.

## Intelligent "brain"

In addition to its beautiful shape, huoyanjinjing is equipped with Zhijin Technology's proprietary intelligent machine vision and data processing unit, which not only "sees" but also "understands".

## Lightning protection

Prevent lightning strikes in bad weather and protect the host from damage.

## Thermal insulation and heat dissipation layer

Effective insulation, hot summer equipment is still working.

## Outer protective layer

The outer protective layer adopts an integrated design, and the material and groove design are carefully selected to protect against rain and rain, moisture and moisture.

## Load-bearing vertical rod

The sturdy and lightweight poles are connected to the gimbal and the special line is anti-twisted. The interior design, all lines can be arranged inside, beautiful and reliable.

## Solar panel

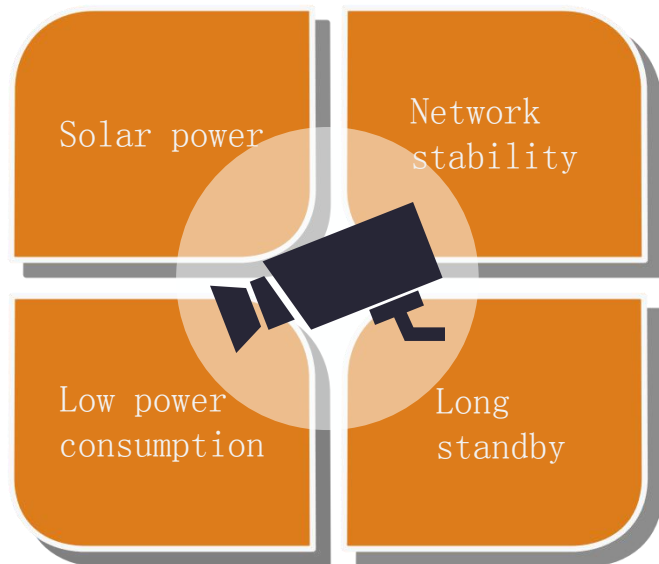
High-power solar panels can adjust the angle and direction according to the direction of sunshine to ensure that the equipment works efficiently around the clock.



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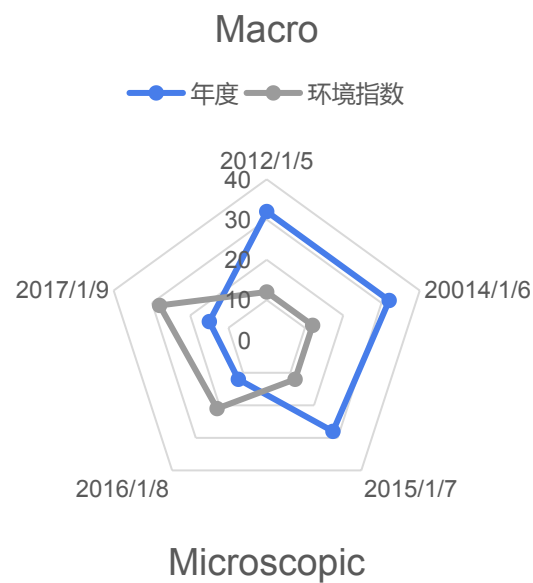
五大优势

ADVANTAGES

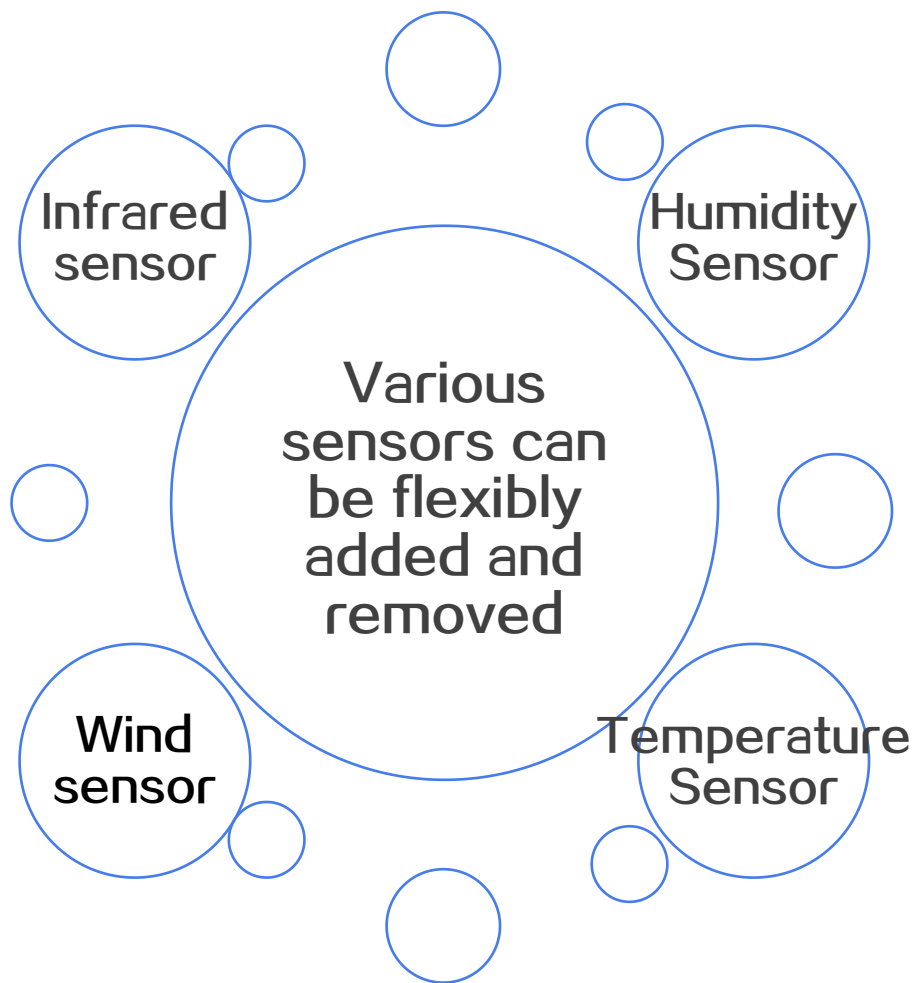


Huoyanjinjing is powered by solar energy and work continuously for 24 hours. Data can be collected regularly. When there is any change in the monitored environment or signs of fire, the data will be automatically uploaded in time. In addition, the product can work for a long time in the rainy weather. The transmission is stable.

1. Good stability



2. Multidimensional data analysis



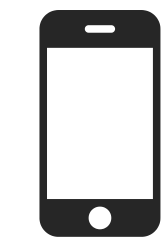
4. Water quality sensor flexible configuration



The picture shows satellite shooting

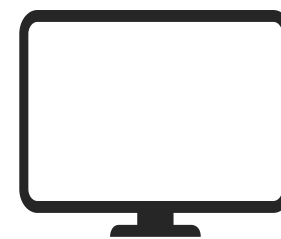
1. Real-time monitoring of smoke information and data warning.
2. Basic information management, location/smoke indicator information management.
3. Real-time map monitoring.
4. Monitor real-time photos of the area.

5. Application development



Convenient app

APP application on the mobile side, real-time monitoring of the surrounding environment, collecting valid data storage



Web online monitoring

PC-side APP application, with a better visual interface, real-time viewing of the monitoring area for evaluation

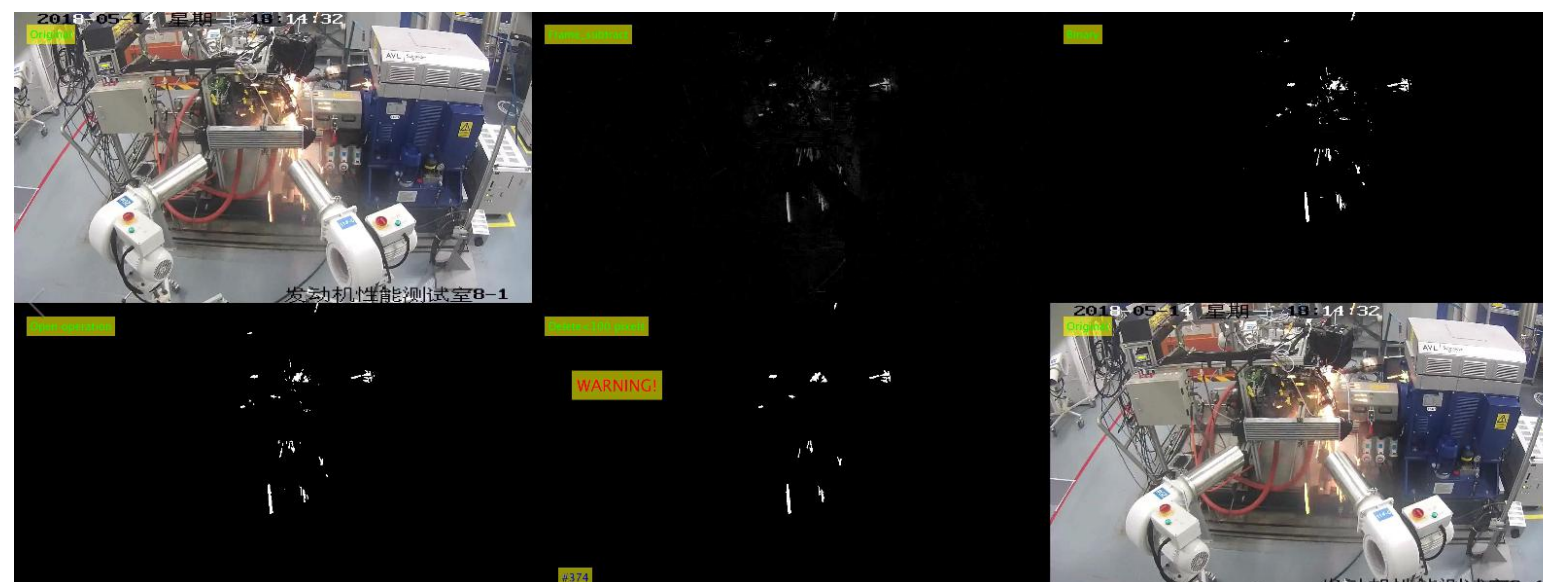
3. Easy to use

# 06 应用前景

Video smoke and fire monitoring can be applied to: forest fire monitoring, kitchen fume monitoring, bench test monitoring, outdoor smoke detection, warehouse smoke monitoring, etc.

01. Distinguish between smoke and water mist: Smoke and water mist are very similar in color and form, so it is difficult to distinguish the two based on color information. Further analysis found that the smoke is rising dynamic, and the water mist is diffuse static, so the water mist does not generate light flow between the two frames, and the smoke and water mist can be effectively detected and distinguished according to the intensity of the light flow.

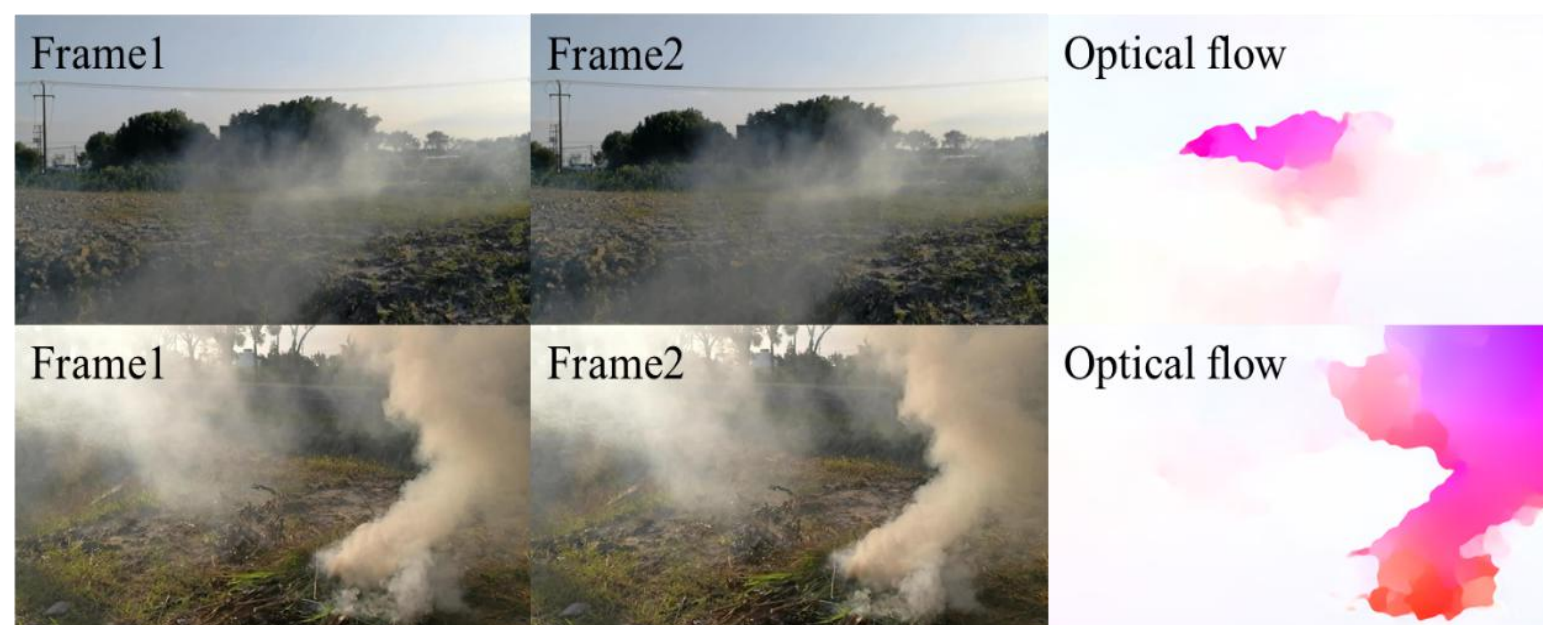
02. For the influence of birds and birds: The optical region is used to extract the motion area, and the color characteristics of the birds and the expansion rate of the movement speed of the optical flow region are combined to distinguish between smoke and birds, to eliminate interference and reduce the false alarm rate.



## PROSPECT

### 1. Indoor smoke monitoring

The picture shows the monitoring process of the smoke and fire of the automobile engine welding gantry. The red frame area is the detected fireworks, and an alarm is issued at this time.



### 2. Outdoor smoke monitoring

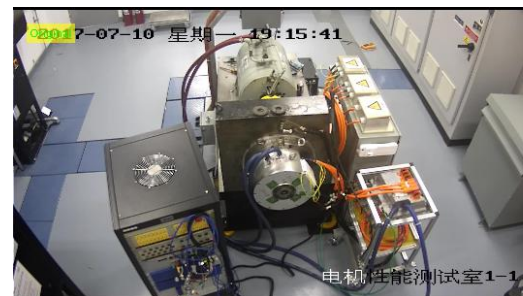
The concentration of smoke can be assessed based on the intensity information of the outdoor smoke stream. We have established a data set for smoke detection, and the deep learning method can also solve the smoke detection problem in various scenarios.



## 07

## 现场案例

### SITE CASES

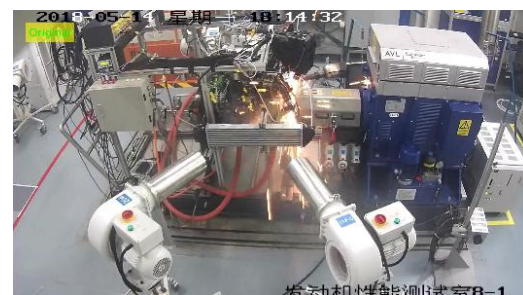
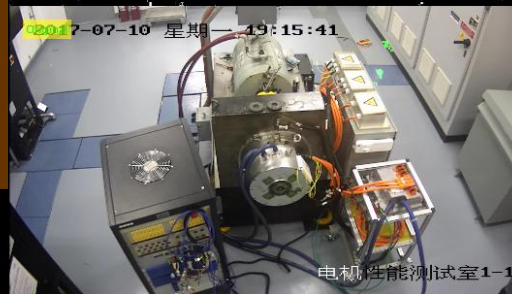


### The gantry fires and smokes

The illustration shows the monitoring process for the smoke from the gantry. The red frame area is the detected smoke. At this point, the alarm is issued! Technical difficulties: the impact of changes in lighting, human motion interference



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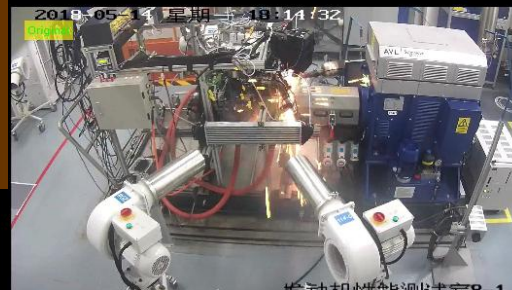
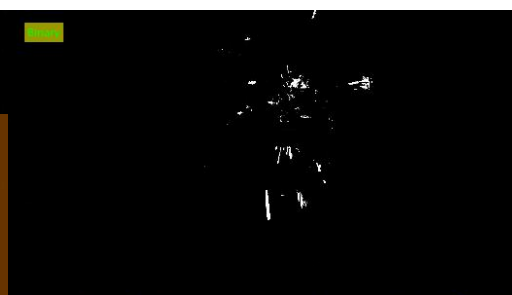


### Bench spark monitoring

The illustration shows the stage spark monitoring process. When the table is sparked, the image changes obviously and the accuracy is extremely high. When a spark occurs, our algorithm can cut off the experimental process and early warning in the background, which can effectively protect the gantry equipment from the huge losses caused by fire or even explosion.

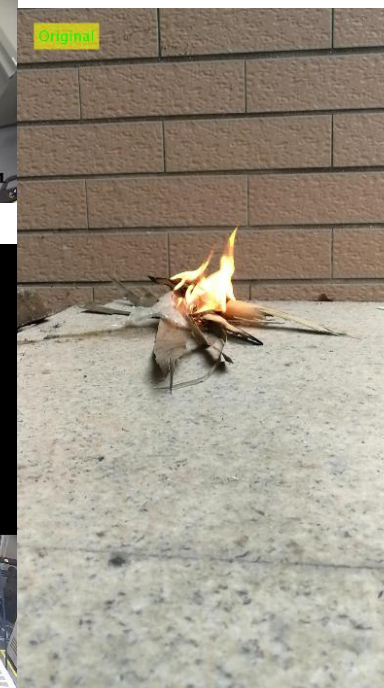


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### Smoke from leaves

The video source is better, the image noise is easy to filter out, and the smoke monitoring is very accurate.



### Fire monitoring

The video source is better, the image noise is easy to filter out, and the fire monitoring is also very accurate.