

ARAYA



Z BY HP HIGH PERFORMANCE WORKSTATIONS  
BRING PRECISE AI-BASED VISUAL  
INSPECTION TO PRODUCTION LINES



On factory production lines, visual inspection can be a nerve-wracking task. Today, inspection methods that used to be performed visually are now being automated by artificial intelligence (AI). However, high costs and

regulation challenges make companies cautious about using the technology. Enter Araya Co. Ltd., which eases the process of deploying visual inspection through artificial intelligence.



## Top runner in AI development

Established in 2013, Araya has been developing artificial-intelligence solutions since the onset of the technology. The company promotes the use of AI in a wide range of sectors, including product development with image AI, edge AI, autonomous AI, and general-purpose AI, which enables technological development that transcends the barriers of industrial applications.

"Our products emphasize technology-oriented aspects, unlike common AI. InspectAI does not use general inspection AI algorithms but has its own knowledge. This allows customers to introduce higher-precision AI without a hassle," says Satoshi Demoto, Business Strategy Manager at Araya.

In industries with production lines, visual inspection before delivery has always been a necessary step. In the past, many relied on human visuals or adopted rule-based solutions, even if they were automated. With Araya's AI, highly accurate visual inspection can be performed without human intervention.

"Most visual inspection software detects abnormalities by learning image data of abnormal products. InspectAI is characterized by being able to learn with only normal product data and a small amount of abnormal data. High-precision detection is possible with a small amount of data compared to AI," adds Kotaro Kaneda, Senior Staff, Sales and Marketing Department at Araya.

### High quality and low- cost solution

With general AI, sample data of abnormal products is often required in units of 100. However, since there are few abnormal products in a Japanese production line, obtaining samples is a challenge, and businesses have stopped deploying AI for that reason. Araya's Inspect AI, which does not require a significant amount of anomalous data, has become a savior.

For example, detecting foreign matter in food, such as a piece of plastic that looks like dried fish and shellfish, or hair contamination, is easy.



"If the inspection target is the same, it can be inspected in the same way even if the container or contents change. Since it is AI that detects abnormalities, there is no difference in detection accuracy even if the container or some other variable changes," says Hirofumi Fujita, Deep Learning Team Senior AI Engineer at Araya.

### High-precision visual inspection of InspectAI

The merit of providing such high-precision AI in a package is immeasurable.

"AI that realizes visual inspection generally develops scratches, but Araya offers this as a package. Instructions for equipment such as cameras and lighting for inspection are included. And we recommend Z by HP workstations as the most important computer platform," Kaneda says. "InspectAI is a total product that offers everything from hardware to operational customization, not to mention software."

The cost-effectiveness of implementing InspectAI can be advantageous for many businesses.

"If there are cases where you want to have stricter inspections than usual, you can reset the parameters yourself. Even if you have to run multiple products, you can easily change the defined model," Fujita says.

Many companies have been waiting for a solution exactly like InspectAI.

### Z by HP workstations enable stable operation

The HP Z4 G4 desktop workstation is the recommended platform for InspectAI. "It is viewed as the best workstation for the field, especially with the cost advantage for the specifications required by InspectAI, like expandability to add slots for connecting cameras, and the reliability required for inspection systems that operate 24 hours a day," says Yosuke Kaneko, Deep Learning Team Senior AI Engineer at Araya.



- Equipped with Intel® Xeon® Platinum 8200 processor family
- Up to 48 cores and 96 threads of dual processor configurations
- NVIDIA® high-performance graphics
- NVIDIA® Quadro RTX 8000
- 8 memory slots and 6 built-in SATA ports for outstanding expandability
- HP Z Turbo drives

The HP Z4 can be equipped with cutting-edge hardware such as the Intel® Xeon® processor and the NVIDIA Quadro RTX series.

"We will propose the basic recommended specifications, but we will also provide guidance on customization that takes into account the features of the customer's inspection target," Kaneko explains.

The larger the size of the inspection object, the more image data is captured, and the greater the processing load.

"The reason why we recommend the HP Z4 is that its specifications can be customized. Since

power is required not only for AI but also for image processing, both the CPU and GPU must be balanced. The Z workstations' specifications can be flexibly changed, so we can make proposals to our customers with complete peace of mind," Kaneko says.

In addition, availability plays a key role since continuous operation is a prerequisite for visual inspection. Workstations like the HP Z4 were also chosen for their high availability, made possible by excellent air flow management for cooling the chassis.



"Availability is the most important requirement of InspectAI. Since it will continue to be subject to a certain load during operation, high availability is a necessity for that," Kaneko says.

A wired camera can be connected to the Z4, or to an external device using a protocol such as TCP.

HP meets high expectations for its hardware as well as support capabilities. "In the unlikely event of a hardware failure, we have 365 days of on-site support. Many customers are unable

to abort the system, so this support is a big attraction," Kaneko says. "In addition, Z by HP workstations will be supplied with parts for a long period of time." Stable procurement is ideal for reliable, long-term operation by users.

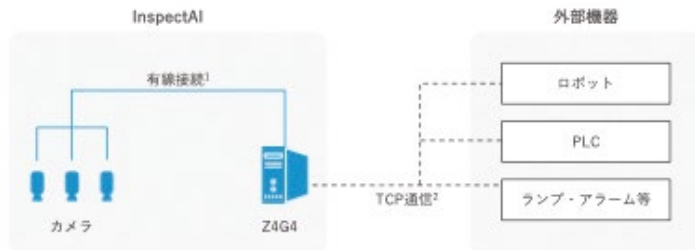
### Solving industrial issues

InspectAI is a packaged product that draws from Araya's established expertise and strengths.

### 3. InspectAIのシステム構成



InspectAIはカメラ演算PCを有線接続するシンプルな構成です。InspectAI外部の機器ともTCPなどのプロトコルを使用した連携が可能です。



1) 演算PCをサーバーラックに置く場合など、演算PCをカメラから離れた場所に設置する場合は、カメラと演算PCはネットワーク接続になります  
 2) TCP通信以外にも標準的なプロトコル（HTTP、UDP等）であれば対応可能です



## プラスチック片の検知



検知難易度が高いプラスチック片を検知しています。

- 様々な形があり得る
- 半透明で背景が透けて見える

検査画像



検査結果



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"We have a lot of experience in introducing AI for visual inspection. By collecting the knowledge gained from that, InspectAI was born," Demoto shares.

Araya's AI for visual inspection, which has many users in the food and automotive industries, has already been put into practical use and has been highly evaluated, demonstrating InspectAI's high degree of perfection.

"The labor shortage is becoming more serious in the industrial world as well," Demoto says. "As I learned from the COVID-19 disaster, there are considerable concerns that it may

be difficult to rely on foreign workers. In future industrial applications, visual inspection will be left to AI, and human resources will be required to concentrate on higher value work. InspectAI can handle the quality requirements in many industries with any size company. Anyone who has been unable to take steps in the past to automate visual inspections should feel free to contact us," adds Demoto.

LET US HELP YOU CREATE SOME AMAZING BUSINESS SOLUTIONS TODAY

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