



## ACUMEN AI

ARTIFICIAL INTELLIGENCE  
INSPECTION SYSTEM





AI  
by ASH

ACUMEN AI

ASH ARTIFICIAL INTELLIGENCE ASSISTANT



# ACUMEN AI

## ARTIFICIAL INTELLIGENCE INSPECTION SYSTEM

Acumen AI utilises next generation, deep learning video analysis and is designed and developed by Ash. Automatically identify, detect, classify, measure and count a wide range of part defects. Implementing the power of Acumen AI will significantly increase production efficiency, eliminate human error and increase production throughput.

Utilise the power of Acumen AI to develop your own machine learning models for your parts, for your needs, by your team.

# BENEFITS

## Instantly transform your manufacturing process with Acumen AI

### Return on Investment

Acumen AI will significantly increase throughput and reduce material waste. It will also reduce inspection costs and overheads. Inspect critical parts in milliseconds. Remove operator error, eliminate risk, avoid product recalls and protect your reputation.

Acumen AI will pay for itself and provide significant Return on Investment (RoI).

### Self-Training

Master your own destiny. Train Acumen AI for what you want, when you want. Train and develop your own complex programs to rapidly identify defects and meet your specific needs.

Acumen AI is intuitive, easy to train, simple to learn.

### Autonomous

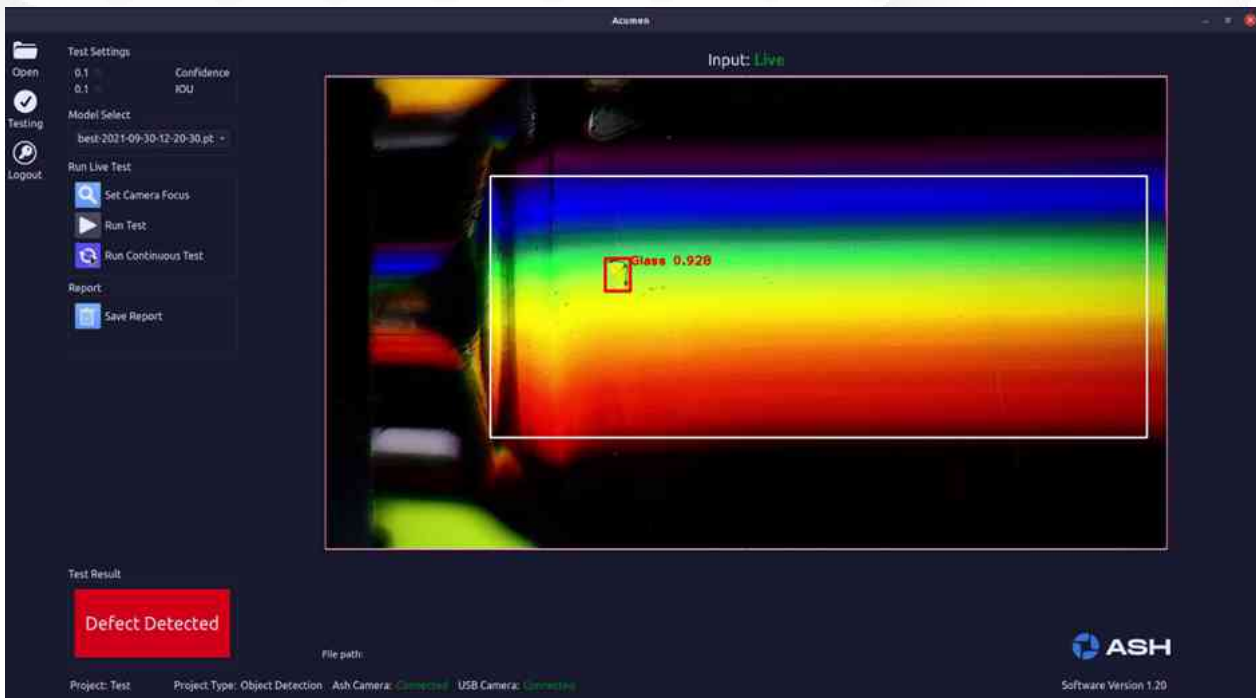
Automate your process. Remove subjectivity and eliminate human error. Increase efficiency.

Integrate robots and cobots and free up valuable Full Time Employees (FTEs) to work on other projects.

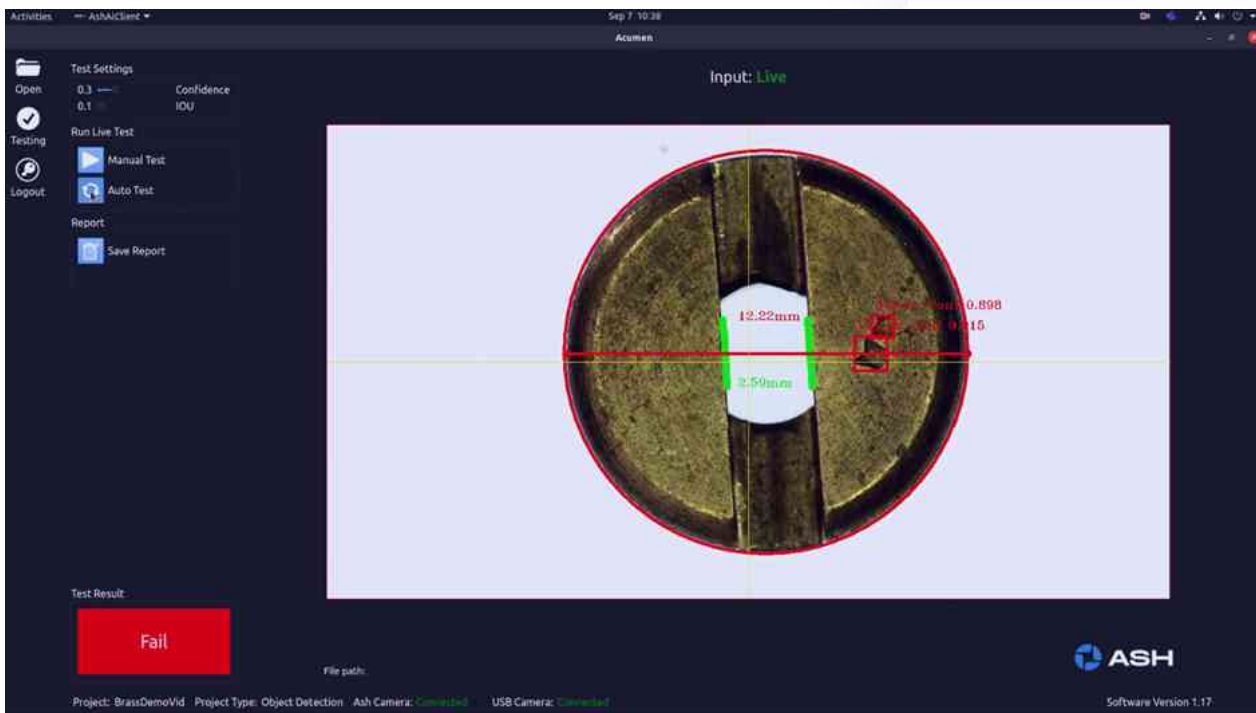
### Data Reporting

Gather data for continuous learning and process improvement. Generate in-depth detailed reports directly from Acumen AI.

Output images, failure statistics and custom data reports to improve algorithms and Statistical Process Control (SPC).



*Glass Defect Detection*



*Precision Engineering Measurement & Defect*



# INDUSTRY APPLICATIONS

Acumen AI automatically identifies, detects and classifies product defects, guides assembly operators, controls robots and cobots, generates data-driven reports, maximises throughput and eliminates human error. Acumen incorporates a versatile zoom camera that allows you to inspect various part sizes over a wide FOV range.

## Cell Counting

Automatic cell counting using a deep learning algorithm, accelerating the traditional haemocytometer method.

## Mite Inspection

Identify, track and count live, moving objects for biological applications. Automatic reporting directly from Acumen AI.

## Inspecting Vials

Detect multiple defects simultaneously in real-time. Eliminating human error, saving time and cost.

## PCB Inspection

Enable the power of the Acumen AI to automatically identify, detect and classify anomalies such as missing components, foreign objects, debris, solder bridges or shorts.

## Needle Inspection

Instantaneously detect missing components for medical device manufacturing. Ensure production quality and protect patient safety.



# TURNKEY AI SOLUTIONS

Tell us the problem and we'll deliver a turnkey AI solution.

If you need an Inspection Solution partner, then ASH can deliver a fully automated and integrated AI solution tailored to your needs. Our team will spend the time understanding your unique requirements and develop a complete inspection solution. Developing the hardware, software and machine learning algorithms to meet your exact requirements. If required, we can also interface with robots, cobots, communications and automated equipment.

We can both deliver and support - continuously improving the AI algorithms, and continually improve your process.

## OUR TURNKEY APPROACH

- 1 We discuss your specific requirements in detail.
- 2 Send us sample parts or images for a free analysis and proof of concept.
- 3 Solution is scoped, presented, refined and approved.
- 4 System is configured, delivered, installed, tested and commissioned.
- 5 We train your team.
- 6 Continuous support available to improve AI algorithms.

## Cell counting at speed with AI for British Sugar

### Challenge

#### Manually counting yeast cells

To ensure quality and food safety requirements are met British Sugar continually complete a lab test where they count live and dead yeast cells. To date this process has been done manually. A laborious process, that, by its nature is prone to human error. The operator, using a microscope, manually counting the white and blue cells on screen, manually inputting the data into spreadsheets, and applying some calculations. For some time British Sugar had been looking for a way to improve this process.

### Solution

#### A fast, reliable, fully-automated solution.

Paul Wrathmall from British Sugar presented Jamie Greatrix our Technical Sales Manager in the UK with their cell counting challenge. Jamie collaborated with our R&D department to explore possible solutions. British Sugar provided test samples and we set about built a working model in-house to solve the problem. We used our Acumen AI system, a customised App, and a custom mechanical jig to ensure lighting consistency. With a camera to automatically count white and blue cells. The system automatically applied the required algorithms, automatically saved the data, and automatically created a PDF report.

We presented the solution to British Sugar, they were surprised and delighted with the speed, accuracy and completeness of the system and implemented it immediately.

### Result

#### 11 times faster. 90% reduction in human error.

Our solution, so far, has reduced average task time from 17 minutes to 90 seconds. As the AI bot gets smarter task time will further reduce. With the task largely automated the possibility for human error was greatly reduced. The solution also streamlined the cell counting documentation and reporting process for British Sugar.

“Another application that shows the massive improvements in efficiency and accuracy that our technology can deliver. And a good example of how our core technology can be quickly adapted to very specific needs.” Jamie Greatrix, Technical Sales Manager UK, Ash.





Acumen

Input: Static  
Project: British\_sugar\_cell\_count

W: 32 B: 1

ASH

Software Version 1.21-Beta-F

Test Settings  
Confidence: 0.1  
IOU: 0.1

New  
Open  
Camera  
Settings  
Live  
Labeling  
Dataset  
Testing  
Export  
Logout

Load Test Image  
Browse Test Image  
Test Next Image  
Test Previous Image

Custom Script Editor  
Edit Script

Model

Run Live Test  
Set Camera Focus  
Run Test  
Run Continuous Test

Report  
Save Report

Test Result

Batch ID:  
Item Number:  
Reject Slot:

File path: /home/ash/Projects/1.21-Beta-F/British\_sugar\_cell\_count/RawData/ObjectDetection/cell\_count\_raw.jpg

Project Type: Object Detection Ash Camera: **connected** USB Camera: **connected**







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