

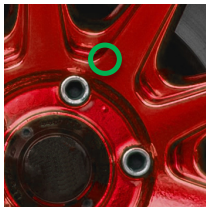


AI Solutions for Manufacturing

Artificial intelligence, especially machine learning offers new ways of improving manufacturing. AI can optimize defect detection, prevent unplanned equipment outages and improve product characteristics.

AI-based solutions reduce cost, shorten timelines, and increase customer satisfaction.

Adopting AI-based solutions does not have to be long, costly and complicated: a proof-of-concept phase quickly establishes value, initial deployment with in-house resources and subsequent automated deployment to additional lines and plants make adoption of the following AI-based solutions feasible for all manufacturers.



Visual Inspection

Detect surface defects, misaligned, broken, missing parts and incorrect product configurations.

Use Case Examples

- Detect scratches on rims or missing drill holes on chassis assembly
- Detect incorrect installation of components

Benefits

- Fewer defective products go undetected & are shipped to customers
- Fewer costly customer returns
- Increased customer satisfaction.



Predictive Maintenance

Predict plant equipment failure or impaired function before it causes problems.

Use Case Examples

- Monitor motors the production line,
- Pumps in a bottling plants,
- Coilers in aluminum milling

Benefits

- Avoids damage to equipment and products-in-process
- Avoids unplanned downtime
- Optimizes maintenance cycles
- Early warning system to prevent catastrophic failure.



Predictive Analytics

Predict product characteristics based on input material and process factors; simulates product improvements during R&D.

Use Cases Examples

- Predict viscosity of gels,
- Load characteristics of batteries
- Predict vibration or noise levels

Benefits

- Prevents manufacture of potentially defective products
- Prevents damage to production equipment

Our Solution

Accella AI has developed the AI Bot, a autonomously learning AI software solution with optional hardware. The AI Bot:

- Captures video, images, sound and other sensor data,
- Provides decision support or makes autonomous decisions based on machine learning algorithms,
- Allows for seamless integration with ERP and MES applications, quality systems, Cloud services, databases and PLCs,
- Operates as a separate unit or as an integral part of a work station or production line
- Works standalone or in cooperation with other AI Bots



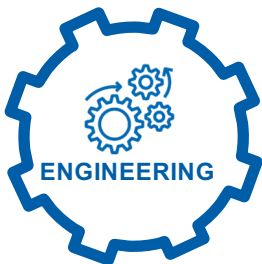
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Our Solutions at a Glance



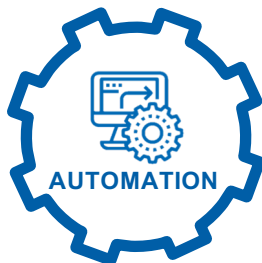
Data Science – Providing the Practitioner's Perspective

- Selection of best machine learning algorithms based on domain expertise in manufacturing
- Models improve over time as algorithms encounter new data, variances and corner cases
- Complemented by classical statistics and machine vision
- Simple, user-friendly GUI, appropriate for manufacturing personnel, e.g. engineers or operators
- Combine algorithms to solve complex operations challenges



Engineering – Complementing AI with Hardware Expertise

- Selection of hardware, e.g. cameras, sensors, tailored to the project
- Custom mounts, brackets and enclosures for AI appliances in the plant
- Robust solutions engineered to German quality standards that withstand even harsh environmental conditions
- Scalable to 1,000s of interactions per minute based on AI Bot configuration
- Combined data science and engineering expertise results in shorted timeline for proof of concept and project deployment



Automation – AI on AI

- Automated security patches and upgrades of algorithms and models
- Master AI Bot monitors AI Bot instances on the lines and updates them as needed
- Automated reconfiguration of a new AI Bot in case of failure of an existing AI Bot
- Roll-out to multiple lines/plants is supported out of the box
- Design workflows to capture, predict, import or export data, images, etc.
- User interface for monitoring options for operators and self-diagnoses of bots



Integration – Connecting AI to OT and IT

- Standard adaptors for ERP (SAP), PLCs (Siemens, GE, Rockwell, etc.), databases (Oracle, MS SQL, PostgreSQL, etc.) and Cloud services (AWS, Google, MS Azure)
- Multiple AI Bots can cooperate to address complex scenarios
- Support for generic web service interfaces, OPC/UA and file transfer protocols (FTP, SMB)

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