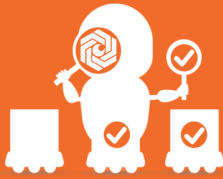


INDUSTRIAL AUTOMATION

Solutions



Quality Control



Pick and Place



Palette Inspection

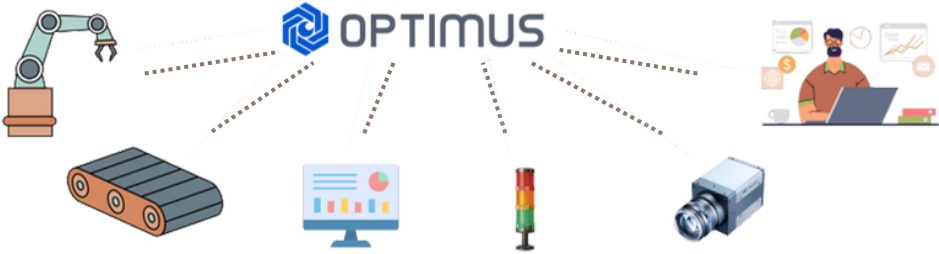


Human Assisted Vision



About Us

Byte Motion, founded in 2017 by software, machine, and robotics experts, brings you the ultimate tool for improving manufacturing processes, automating operations, and gaining greater insights. Our intelligent solution, Optimus, combines machine learning, vision, and artificial intelligence to elevate industrial automation to the next level.



Optimus comes with a cutting-edge vision system that combines the power of AI and traditional vision. With support for a wide range of cameras, including area scan cameras, 3D structured light cameras, Time-of-Flight cameras, Laser profilers, Line cameras, Hyperspectral cameras, webcams and surveillance cameras, Optimus is the perfect tool for controlling conveyors, lights, sensors and robots.

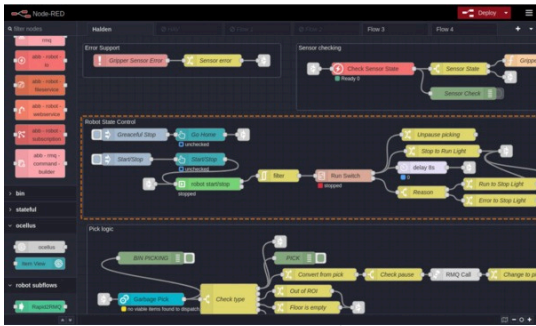
Optimus comes with a programming tool that allows users to wire together hardware devices, APIs, robots, and services in new and innovative ways. It has an intelligent vision system that leverages advanced technologies to "see" and interpret visual data, enabling to interact with the world in a more sophisticated manner, coordinate the manufacturing process, and provide real-time insight.

With its plugin framework for custom modules and cloud-based AI platform for training and tuning Neural Network models, Optimus is a highly adaptable and customizable solution that can be tailored to meet the specific needs.

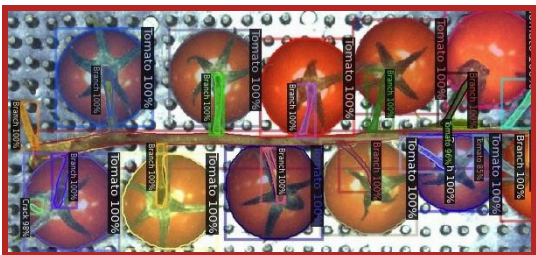
Optimus also comes with a powerful dashboard for monitoring and visualization, providing users with real-time insights into their manufacturing processes. It can be easily integrated with existing ERP systems, Power BI, or databases, making it the ideal choice for anyone looking to optimize their operations.

HIGHLIGHTS

- Easy to Use GUI Interface
- Many Image Processing Modules
- Camera agnostic 2D/3D, Laser profilers, Surveillance, Line Cameras etc.
- API Available
- Framework for custom Modules
- Visual Programming
- Artificial Intelligence
- Tracker Support
- Intrinsic and Camera Calibration
- Physics Engine
- Pose Estimation of any Object
- Supports many Industrial Protocols
- Robotics Support
- Dashboard for Analytics



Flow Programming



Artificial Intelligence



Dashboard

WHY OPTIMUS?



Your industrial solution partner: We deliver a complete package



Experienced team of skilled developers and engineers with diverse expertise



Attractive SLA's for high availability and support



Industry 4.0 capabilities: Easy integration to industrial networks



Wide experience under the Trolltunga umbrella



WIDE PRODUCT PORTFOLIO

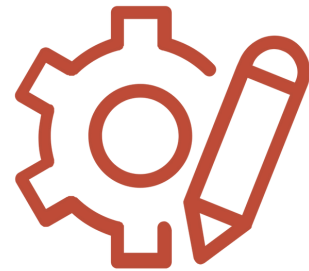
We offer an extensive product lineup that covers a broad spectrum of industrial automation needs. With our diverse range of products, we are confident that we can meet your specific requirements. Our team of experts can guide you in selecting the appropriate components and products from us or our trusted partners.



SYSTEMS AND SOLUTIONS

We specialize in complete system solutions, at all levels of complexity.

We provide everything you need: Industry-leading skills and products, mechanical and electrical design facilities - and the full range of supporting services.



CUSTOMIZED PRODUCTS

We are the ideal partner for meeting specific product requirements.

Our team of experts offers tailored solutions, from product selection to custom development of services.

SLA's for high availability and support

We are committed to providing our customers with the highest level of service and support. We offer SLAs for online and offline solutions with:

- Monitoring
- Backup
- Surveillance
- Security

We can ensure that your operations are always running smoothly and efficiently. Whether you're looking to improve your manufacturing processes, automate your operations, or gain greater insight into your operations.



ADD-ONS

Data Connectivity



The Data Connectivity add-on for Optimus enables to connect to external data sources such as databases, CRM, ERP, Grafana, Power BI and more. You can seamlessly transfer production insights to these external sources, enabling you to gain deeper insights into your operations.

The benefits of using the Data Connectivity add-on include:

Custom reporting: You can use the data to create custom reports, dashboards, and visualizations. This allows you to analyze your data in a way that is meaningful and relevant to your specific needs.

Real-time updates: Receive real-time updates about your production metrics. This enables you to quickly identify any issues and respond to them proactively.

We offer a Grafana dashboard design and build service tailored to meet the specific needs of our clients. Our team works closely with clients to understand their business requirements and KPIs to create interactive and intuitive visualizations.



Power BI



Grafana

Backup Service

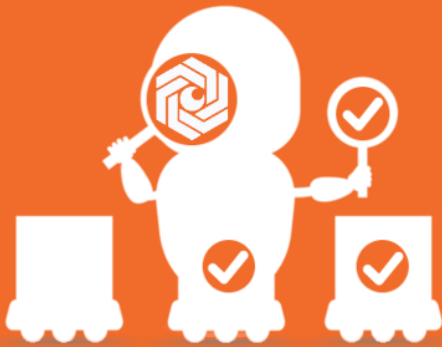


Our backup service provides regular and reliable backups of your data, including production data. We ensure that all critical data is backed up at regular intervals to prevent data loss in case of any unexpected events such as system crashes, hardware failure, or natural disasters.

By using our backup service, you can have peace of mind knowing that your important data is secure and protected. We use industry-standard encryption and security protocols to ensure that your data remains confidential and protected against unauthorized access.



QUALITY CONTROL



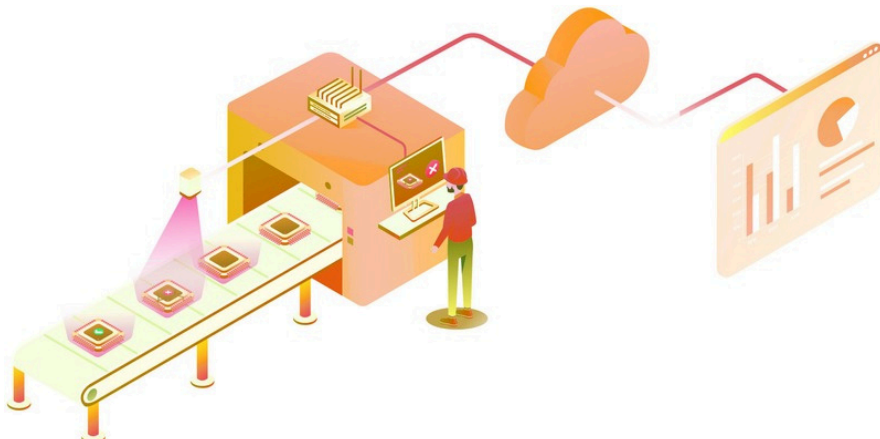
Optimus is a comprehensive solution for supporting quality control in a factory by leveraging sophisticated camera and sensor technology to monitor the production process and detect defects.

Optimus uses specialized modules to extract relevant features from the captured data, which helps identify defects accurately and with high precision. These features may include color, shape, size, texture, or any other relevant aspect that distinguishes good from defective products.

Once defects have been detected, Optimus can take corrective action to address them. This may involve using a robot to sort, pack, or send items for manual handling, depending on the specific needs of the production process.

The benefits of using Optimus for quality control are:

- Real-time monitoring of the production process, which means that defects can be detected and corrected immediately, reducing the likelihood of costly rework or product recalls.
- High precision and accuracy help to minimize false positives, ensuring that only genuine defects are identified and acted upon.
- Automation through Optimus can help to reduce labor costs and increase overall efficiency, leading to higher throughput and greater profitability for the factory.



PICK & PLACE





Optimus is an excellent solution for pick and place applications in a factory. By using advanced camera and sensor technology, it can accurately and efficiently identify and handle objects, making it an ideal tool for automating tasks that would otherwise be time-consuming or difficult to perform manually.

Here are some of the key benefits of using Optimus for pick and place:

- **Assembly**
Used for automated assembly operations, where components or parts are picked from one location and placed onto another, creating a final product.
- **Packaging**
Commonly used in the packaging industry to pick up products, such as bottles or boxes, and place them into packaging, such as cartons or crates.
- **Sorting**
Used for sorting tasks, where items are picked up and placed into specific locations based on their shape, size, or other properties.
- **Inspection**
Items are picked up and examined for defects or quality control.
- **Material Handling**
Used for tasks where items need to be moved from one location to another, e.g. loading and unloading pallets or bins.

PALLET INSPECTION



Optimus provides an effective and efficient way to inspect pallets, ensuring that only high-quality and compliant products are being shipped. Its visual inspection capabilities, count verification, quality inspection, and compliance inspection make it a versatile and valuable tool for any factory or warehouse that handles palletized products.

Optimus is an ideal tool for pallet inspection, as it offers a range of benefits, including:

- **Visual Inspection**

Optimus can accurately identify any damage or defects on individual products or packaging, such as cracks, dents, or deformations. This helps to ensure that only high-quality products are being shipped and reduces the risk of damage during transportation.

- **Count Verification**

The system can quickly and accurately count the number of products on the pallet and compare it to the expected quantity, ensuring that all items are accounted for and reducing the risk of missing items.

- **Quality Inspection**

Optimus can identify any quality issues, such as contamination, foreign objects, or incorrect labeling, ensuring that only safe and high-quality products are being shipped.

- **Compliance Inspection**

The system can check that the products and packaging meet relevant regulations and standards, such as barcode/QR readability or correct labeling, reducing the risk of non-compliance and associated penalties.

HUMAN ASSISTED VISION (HAV)



HAV is an excellent tool for enhancing the accuracy and efficiency in a factory setting. It allows humans to provide input and expertise to improve the system's accuracy, solve complex problems, and handle complex visual data. Additionally, HAV can be used for a wide range of applications, from waste sorting to quality control.

Human Assisted Vision (HAV) is a technology that combines the power of computer vision with the insights and expertise of human operators. HAV systems allow humans to work alongside advanced vision algorithms, providing input and guidance to improve the accuracy and efficiency of the system. Here are some key benefits of using HAV in your factory:

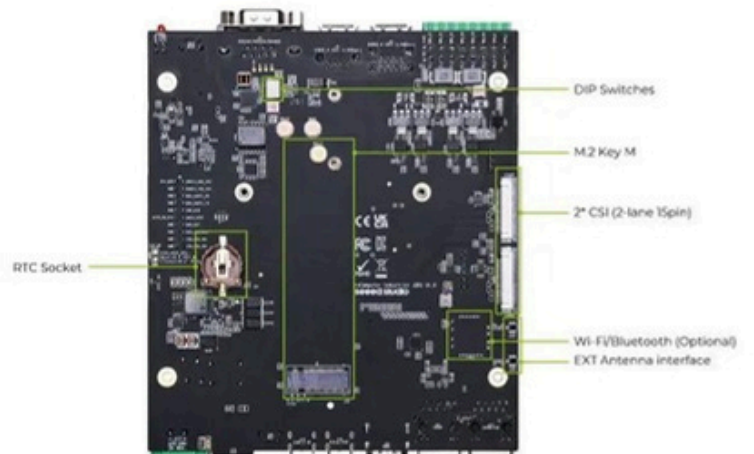
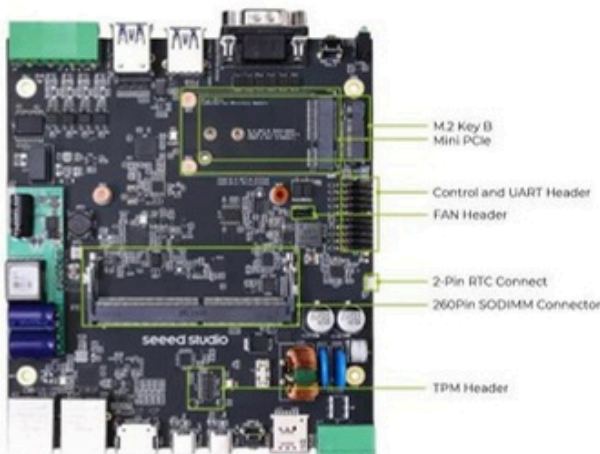
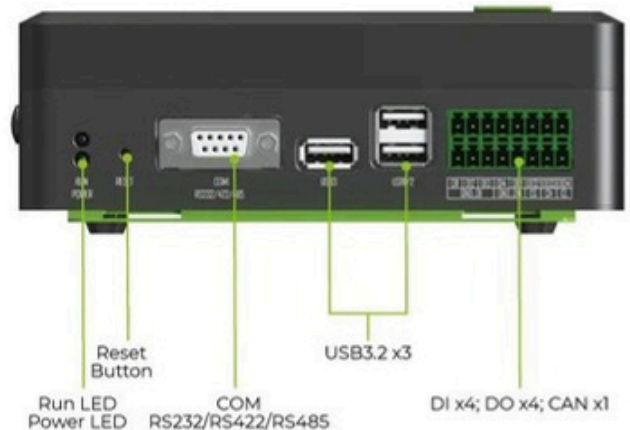
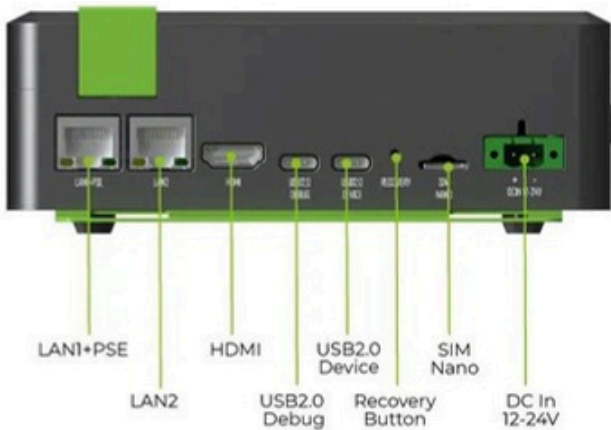
- **Enhanced accuracy:**
HAV systems allow humans to provide input to the vision system, increasing its accuracy and reducing the risk of false positives or false negatives. This results in more reliable and consistent results, which can improve the overall quality of your production process.
- **Improved problem-solving:**
Humans have a wealth of world knowledge and problem-solving skills that AI may not possess. HAV systems allow humans to use their expertise to solve complex problems and make accurate decisions, leading to better outcomes.
- **Better handling of complex visual data:**
In some cases, computers may struggle to accurately interpret visual data, particularly when dealing with complex or ambiguous images. HAV systems allow humans to provide context and guidance, improving the accuracy and reliability of the system.
- **Waste sorting:**
One example of the use of HAV in a factory setting is for waste sorting. HAV systems can be used to identify and sort general waste that cannot be recycled, reducing the amount of waste that goes to landfill and improving overall sustainability.

OPTIMUS SERVER



SPECIFICATIONS

Model:	reComputer Industrial J4012 - Orin NX 16GB, 100 TOPS
CPU:	8-core Arm® Cortex®-A78AE v8.2 64-bit CPU
Memory:	16GB 128-bit LPDDR5
Hard drive:	M.2 NVMe 2280 SSD 128G
GPU:	1024-core NVIDIA Ampere architecture, 32 Tensor Cores
Board features:	3x USB3.2 Gen1, 1x USB2.0 Type C (Device mode), 1x USB2.0 Type C For Debug 4x DI, 4x DO, 3x GND_DI, 2x GND_DO, 1x GND_ISO, 1x CAN 1x DB9 (RS232/RS422/RS485) 1x HDMI 2.0 Type A 1x Nano SIM card slot 2x CSI (2-lane 15pin)
Dimensions:	159mm x 155mm x 57mm
Weight:	1.57 Kg
Operating Temperature:	-20 ~ 60°C with 0.7m/s airflow
Operating Relative Humidity:	95% @ 40 °C (non-condensing)

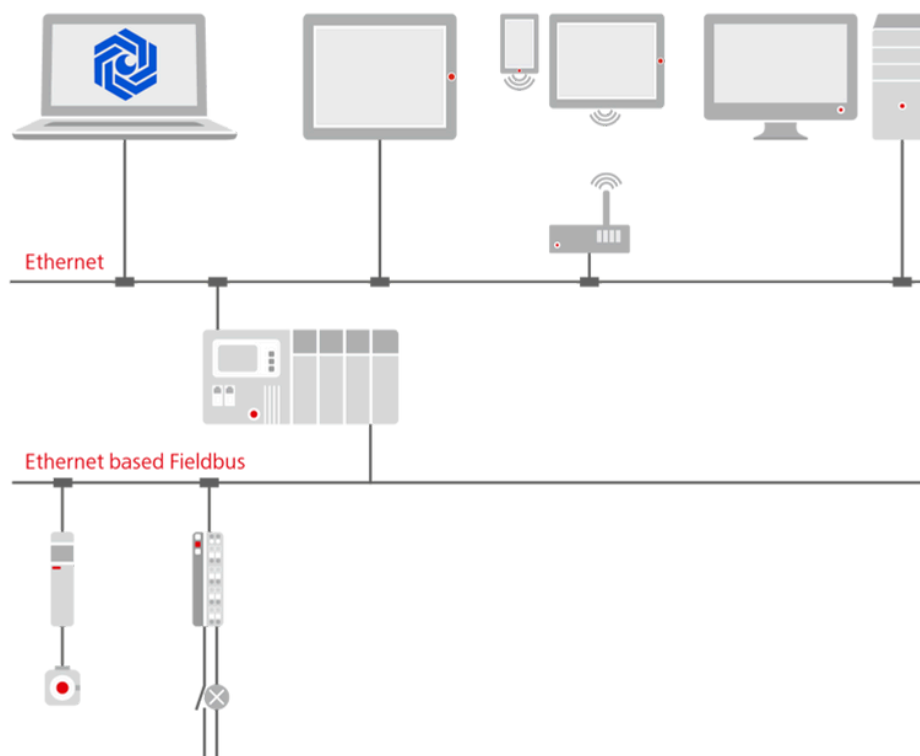


INDUSTRIAL NETWORK INTEGRATION

- CANopen Manager / Device
- EtherCAT Master
- EtherNet/IP Scanner / Adapter
- Modbus TCP Master / Slave
- Modbus Serial Master / Slave
- PROFIBUS Master
- PROFINET Controller / Device
- MQTT

Easily connect different systems, motors, sensors and devices for data exchange and communication, allowing for more efficient process control and data analysis.

Optimus supports a wide range of PLCs from various manufacturers, which makes it a versatile programming tool that can be used across different brands of hardware. It can connect to a wide variety of industrial communication protocols



NEW DEVELOPMENT PROCESS



Step 1

EXPLORATION



Step 4

DEVELOPMENT



Step 2

PRE-STUDY



Step 5

DELIVERY



Step 3

PROJECT KICK-OFF



Step 6

SUPPORT & MAINTENANCE

The Byte Motion-team is dedicated to research and develop new industrial technologies

The New Development Process is a comprehensive approach to research the possibility of new technology for an automated solutions based on customer request. The development process have six (6) steps:

1. EXPLORATION

During the exploration step, our team meets with the customer to understand their needs and requirements. We evaluate the feasibility of the project and identify potential challenges. We collect requirements, prepare a technical plan, and drafts a deployment approach. We also define the scope and objectives of the project and determine the time and resources needed to complete it. If there is any possibility of creating an automated solution by using new technology, our team will provide customer with a cost proposal to do the pre-study.

2. PRE-STUDY

If there are any uncertainties or risks that need to be addressed before proceeding with the project, Byte Motion development team conduct a pre-study step. This could include prototyping, testing, and/or conducting feasibility studies to ensure that the project can be completed within the desired timeframe and budget. For example, this could involve collecting a dataset of images from production to make an early version of a new automated solution. When the pre-study has been done where the Byte Motion team have investigated and concluded that it is possible to create a new automated solution based on the requirements, the customer will receive a project plan called PROJECT KICK-OFF including a cost, and timeline proposal from Byte Motion to execute step 3. Project Kick-Off, and step 4. Development.

3. PROJECT KICK-OFF

In this step, our team define the project schedule, milestones, and deliverables. We also assign roles and responsibilities to team members, and to set up a communication plan to ensure that all stakeholders are informed and involved throughout the project. This step requires that the customer provides our team with a technical contact person to discuss the project with Byte Motions technical contact person.

4. DEVELOPMENT

The development step is when the Byte Motion team actually create the customized solution for the customer. Our team designs and develops necessary software, and hardware components needed for the system. When the team have confirmed that the new developed automated solution is working as requested from the customer, a cost proposal for the delivery, including different resources from Byte Motion will be proposed to the customer. If both Parties agrees for a delivery of the developed solution, a project manager, and a solution architect from Byte Motion will be assigned.

5. DELIVERY

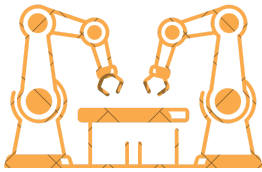
The delivery step is when we deliver and install the developed solution on customer site. Our team install all necessary software, hardware, including configuration of the system on the customer site. We also perform rigorous testing and quality assurance to ensure that the system meets customer requirements.

6. SUPPORT & MAINTENANCE

After the automated solution is deployed, Byte Motion provide support to ensure that the system remains operational and responsive for the customers. This includes providing services such as backup, video surveillance, security and hardware replacements. We monitor the system's performance and provide maintenance, updates, and upgrades as needed to ensure that the system is operating optimally. We support different levels of SLAs for both online and offline setups. Overall, the New Development Process is designed to provide our customers with a comprehensive, customized solution that meets their unique requirements and delivers measurable results.

WHY CHOOSE US

We deliver the complete package - all services included



INDUSTRIAL AUTOMATION

We deliver a complete package of industrial automation solutions, including consultation, design, development, implementation, testing, and maintenance.



EXPERIENCED TEAM

Experienced and skilled developers, engineers, and technicians who have worked on numerous industrial automation projects across various industries, ensuring that clients receive the best-in-class solutions and expertise.



SLA

Attractive Service Level Agreements (SLAs) that ensure prompt response times, proactive maintenance, and reliable support, giving clients the confidence that their automation systems are always up and running, and any issues are quickly resolved.



INDUSTRY 4.0

Our solutions are designed to seamlessly integrate with Industry 4.0 technologies, enabling our customers to leverage the benefits of connected, automated, and data-driven industrial processes.



WIDE NETWORK

Access to the collective experience and knowledge of sister companies under the Trolltunga Robotics umbrella. An extensive range of expertise and resources to utilize.



INNOVATION

We continuously strives to innovate and incorporate the latest technological advancements to provide clients with cutting-edge automation solutions.

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