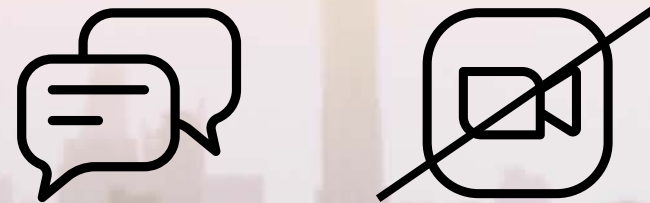# VISIONARY INTELLIGENCE

Unveiling the Future of Machine Vision 2024

Please turn off your video, open your chat, and ask any questions in the chat
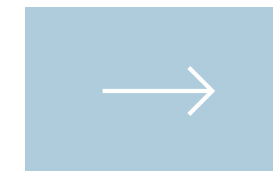
computar®

JONATHAN HACKNEY

Director of Sales for the West Region, US

Experienced Senior Sales Application Engineer with a proven track record in the industrial automation industry. A dedicated sales professional with a Bachelor of Science (B.S.) in Industrial Engineering from Texas Tech University.

→

THE WORLD STANDARD FOR LENSES.

For more than 40 years, Computar has set the pace for lens manufacturers by pioneering new and innovative optics. With a solid foundation based on Japanese engineering and agile production facilities spanning the globe, Computar continues to manufacture the highest-quality optical products.
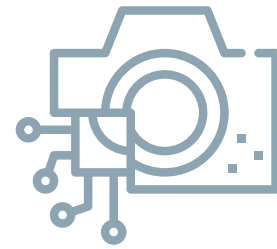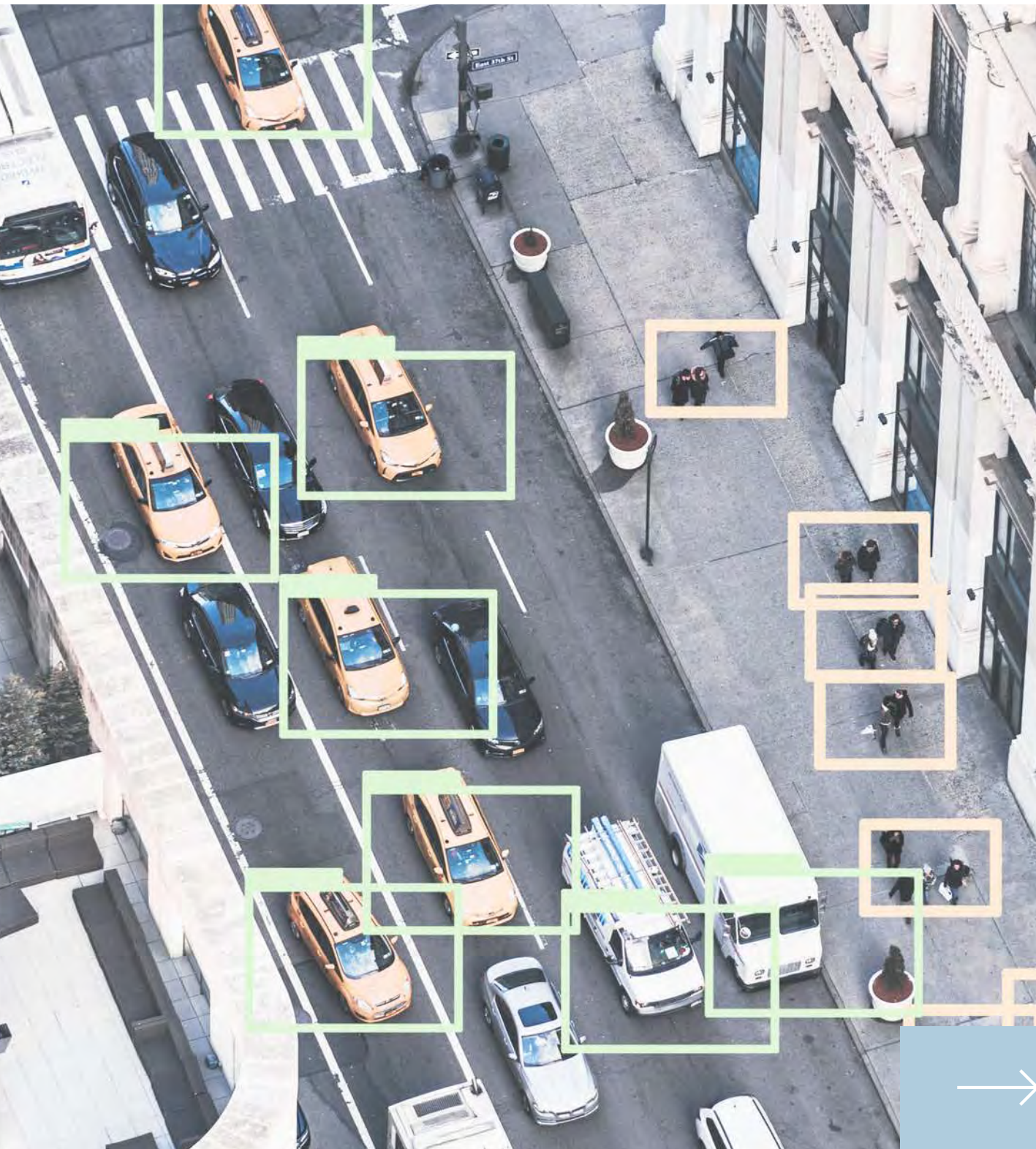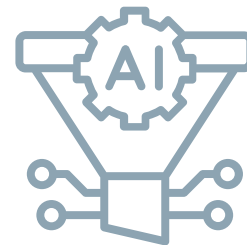
AGENDA

INNOVATIONS

in Machine Vision Technology

VISIONAL INTELLIGENCE
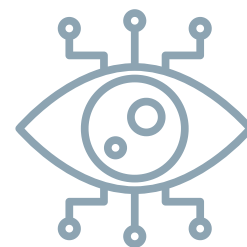

Machine vision and AI are combined in complex applications beyond traditional solutions.

Deep learning methods analyze image data in machine vision systems, improving processes.

AI requires a holistic view of machine vision data, showing strong interdependence between AI, deep learning, and machine vision systems.

Metrology News

DISRUPTING INDUSTRIES

through automation & refinement

Improved Efficiency

Deep learning and AI enhance automation in machine vision, boosting productivity and cutting costs for traditional industries.

Enhanced Quality Control

AI and deep learning in machine vision systems improve defect detection, enhancing quality control and preventing defective products from reaching the market.

Predictive Maintenance

AI-powered machine vision systems predict equipment failures, allowing proactive maintenance and reducing downtime in traditional industries.
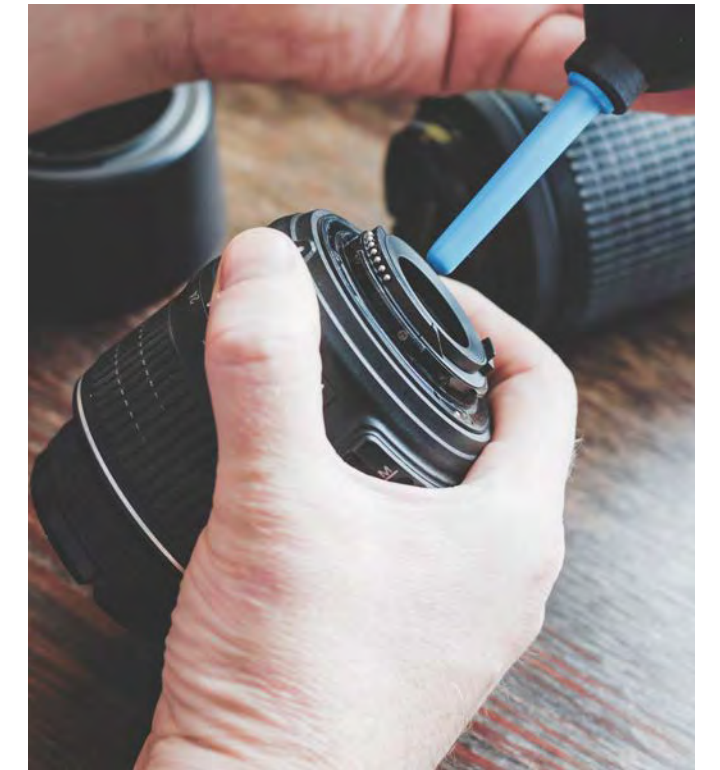
Customization

AI and machine vision integration enables personalized products to meet evolving consumer demands in traditional industries.

ADVANCEMENTS
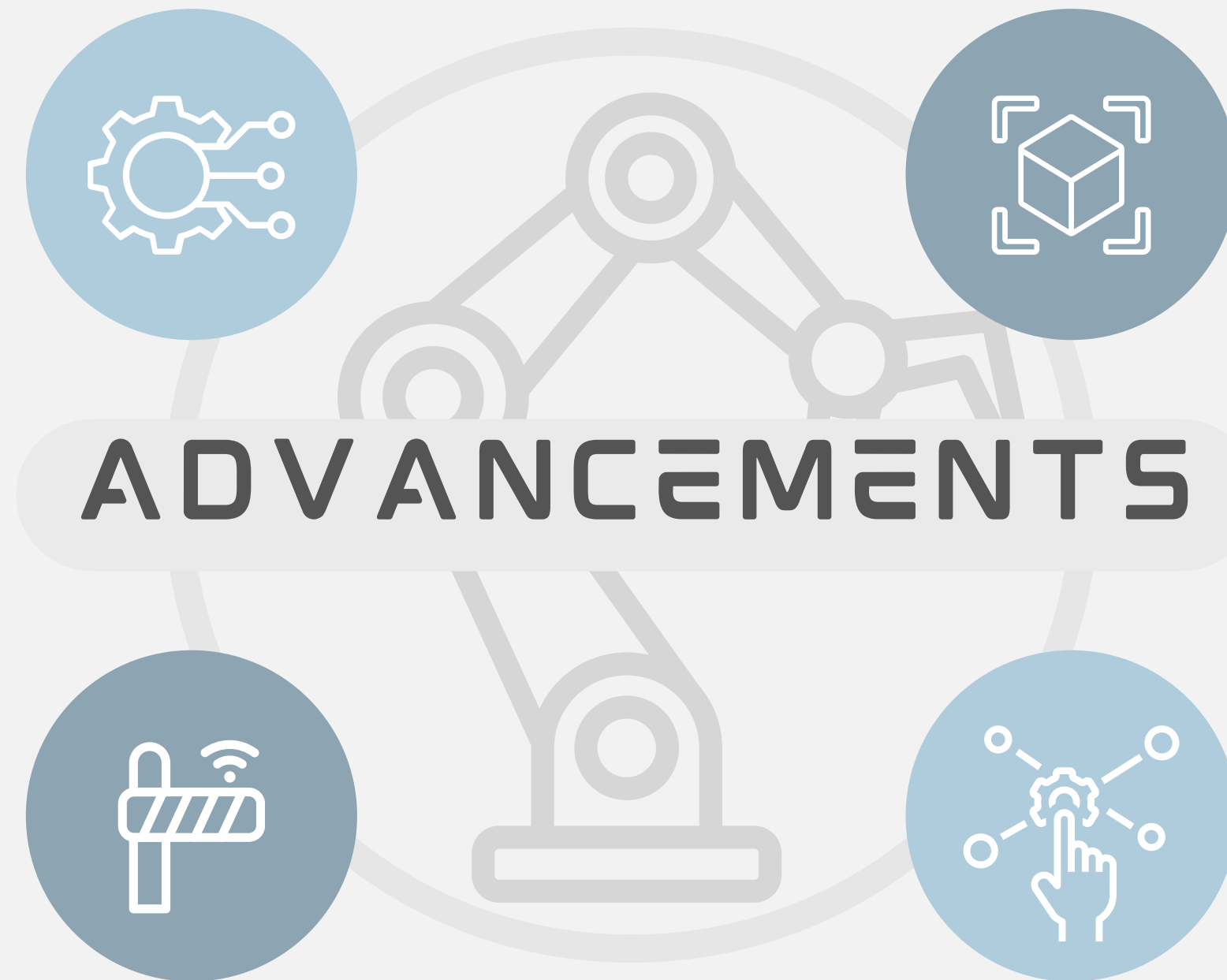
in Robotics and Autonomous Systems

Integration

Machine vision technology is integrating AI and deep learning to enhance the capabilities of robotics and autonomous systems.

Object Recognition & Localization

Machine vision technology recognizes objects, identifies patterns, and accurately locates targets, essential for pick-and-place operations, navigation, and obstacle avoidance.

Perception & Sensing

Machine vision allows robots and autonomous systems to interpret visual data, making real-time decisions and navigating complex environments.

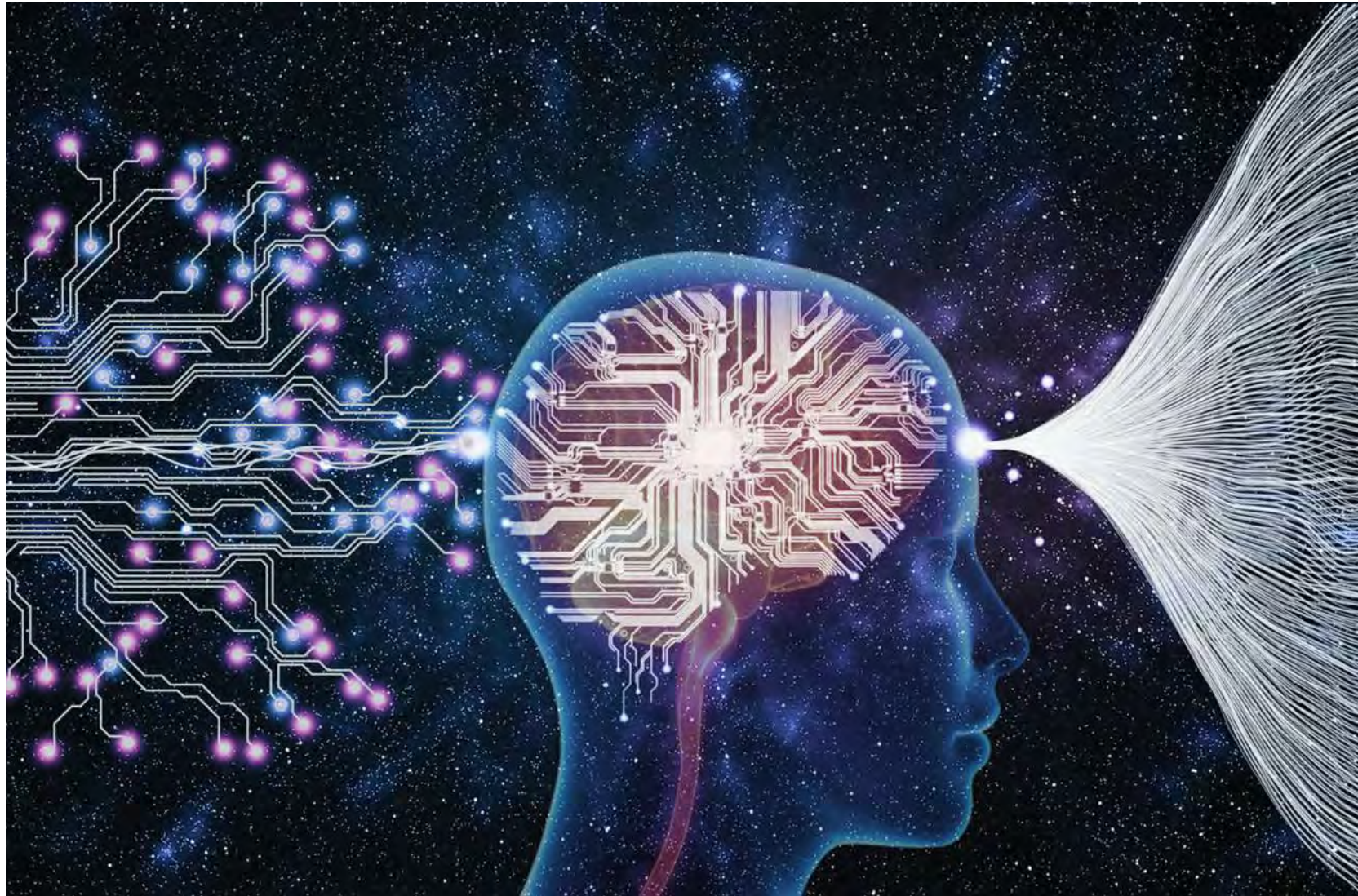## Adaptive Control & Feedback

By integrating machine vision, autonomous systems can adjust behavior based on visual feedback, enabling them to adapt to changing conditions and perform tasks with greater precision and reliability.

ADVANCEMENTS

CHALLENGES

in advancing the autonomy of systems using machine vision

CHALLENGES

- **Robustness and Reliability:** Ensuring machine vision systems operate reliably in diverse environments, including low-light conditions and unpredictable scenarios.

- **Data Processing and Computation:** Managing computational demands for processing large volumes of visual data in real time with low latency and high accuracy.

- **Interoperability and Integration:** Integrating machine vision with other sensor modalities and control systems to create seamless autonomy, requiring standardization and compatibility across different platforms and technologies.

- **Ethical and Legal Considerations:** Addressing privacy, security, accountability, job displacement, and regulatory frameworks when deploying autonomous systems, safeguarding human rights and societal well-being, and promoting collaboration among stakeholders.

→

Sector-specific

IMPACTS

of machine vision

MANUFACTURING

QUALITY INSPECTION &
DEFECT DETECTION

PROCESS MONITORING
& CONTROL

TRACEABILITY &
COMPLIANCE

AUTOMATION & ROBOTICS
INTEGRATION

DATA ANALYTICS &
PREDICTIVE MAINTENANCE

→

Automate

HEALTHCARE

MEDICAL IMAGING & DIAGNOSTICS

IMAGE ANALYSIS & PATTERN RECOGNITION

SURGICAL GUIDANCE & ROBOTICS

EARLY DETECTION & SCREENING

PERSONALIZED MEDICINE & TREATMENT PLANNING
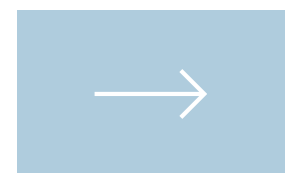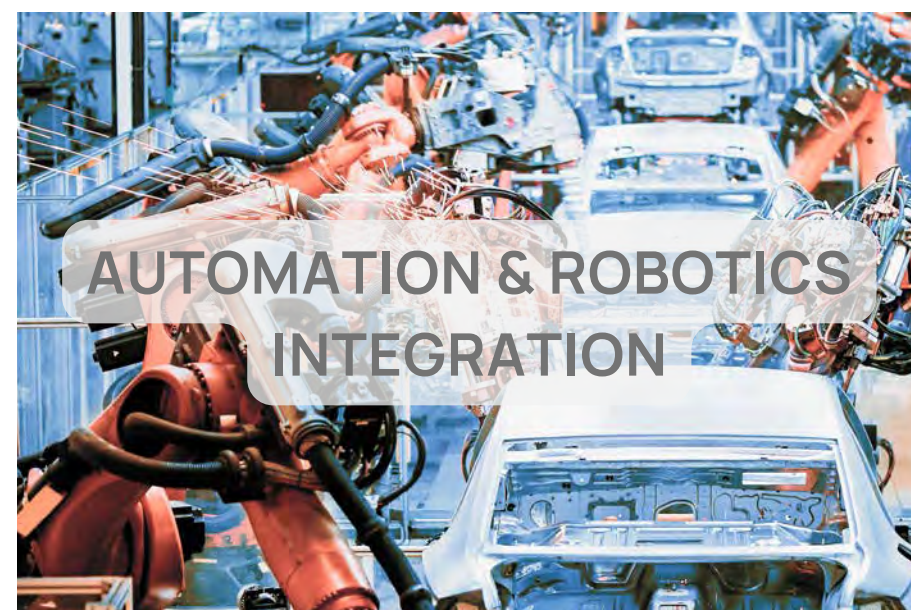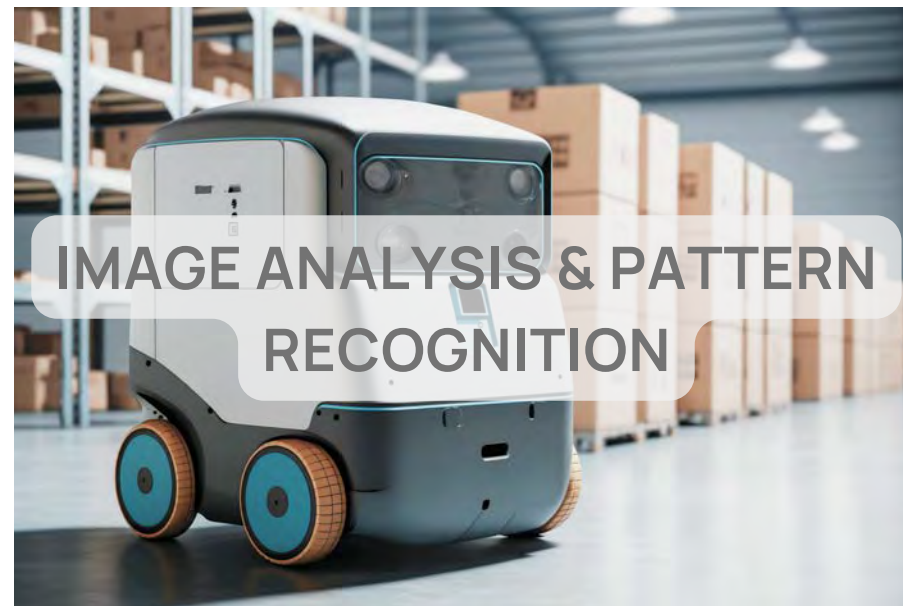
TRANSPORTATION

- Perception and Object Recognition
- Environment Mapping and Localization
- Obstacle Detection and Collision Avoidance
- Adaptive Cruise Control and Lane Keeping
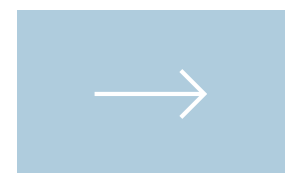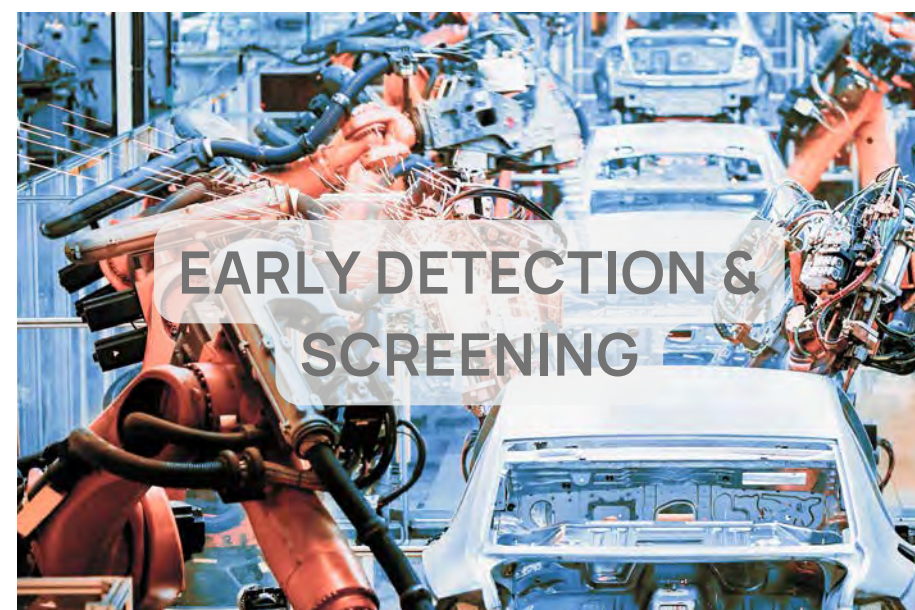- Enhanced Safety and Redundancy

*stock video for illustration only

CASE STUDY

For a recent application, our client, a Canada-based customer recently utilized an aerial drone equipped with our cutting-edge MPT series lenses to capture high-resolution images of raging forest fires in the area.

THE ROAD AHEAD

MACHINE VISION: THEN TO NOW

2030

The global machine vision systems market is expected to grow to **$16.82 billion** by 2030.

2023

Global market valued at **$9.86 billion**

2010s

The term "Machine Vision" began rising in popularity

2006

MV had a **$3.1 billion** global market

1980s

Smart cameras invented

1930s

Electronic sorting machines invented

Wiki I Essential Technology I Fortune Business Insights I Markets and Markets

PREDICTIONS

for the future landscape of machine vision technology

✓ Significant growth

✓ Expanded sensing capabilities

✓ Market expansion

LENS TECHNOLOGY

The MPT Series: Crucial for Visionary Intelligence

Ultra-Low Distortion

↳ enhanced accuracy

Compact Design

↳ seamless integration

High-Resolution Imaging

↳ 45MP for precise visual data

Large Format Sensor Compatibility

↳ for modern high-res sensors

computar.com/mpt

MPT SERIES BENEFITS

Enhanced Accuracy
- High-resolution imaging ensures precise visual inspection and reliable decision-making based on captured data.
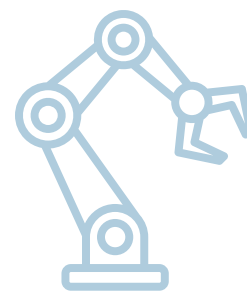
Detailed Visual Analysis
- Advanced optics enable meticulous examination and detection of fine defects or anomalies in objects, components, and surfaces.

Quality Control and Assurance
- Accurate inspection in industrial settings ensures compliance with stringent quality standards for manufactured products, components, and materials.

Versatility
- Suited for robotics, automation, medical imaging, semiconductor inspection, and more, where precision and clarity are essential.

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Questions?
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THANK YOU

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