Intel Edge Solutions Challenge
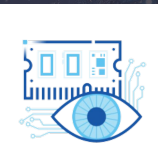
Use Case Info Guide

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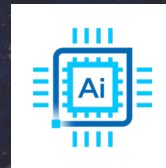
Categories & Use Cases

This Challenge focuses on the manufacturing sector, and in particular, the technologies that are driving applications for Control Optimization & Autonomy as one category of two use cases, and Product Inspection as another.

Product Inspection

Control Optimization & Autonomy

Optical Character Recognition

AI Enhanced Defect Detection

Robotic Arm Controller

Autonomous Guided Vehicle Controller

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Product Inspection | Optical Character Recognition

Application of industrial imaging sensors. Your solution, enabled by Intel hardware and software solutions, performs character inspection, i.e., checks, recognizes, and/or determines characters printed on parts or products in the factory line with a result of allowing manufacturers better track of goods and improve yield rate.

Minimum Required Intel Hardware:
- 11th Generation Intel® Pentium, Celeron or Atom Processors, Intel® Core i3 N for smart camera or entry level vision

Recommended Intel Hardware:
- 12th, or 13th Generation Intel® Core™ Processor Family; Intel® Xeon® Processor Family
- Intel® Iris® Xe and Iris® Plus Graphics
- Intel® Arc™
- Intel® Data Center GPU Flex Series
- Intel® Ethernet and 6E Wifi

Recommended Intel Software:
- Intel® Distribution of OpenVINO™ Toolkit
- Intel® oneAPI Toolkits

Recommended Security Features:
- Measured boot, software chain of trust using TPM 2.0
- Total Memory Encryption Enabled
- Secure works using TEP – secure containers and orchestration

Bonus Intel Content:
- Edge Insights for Industrial
- A combination of Intel CPU + FPGAs and/or Intel® RealSense™ cameras
- Intel® Geti™ platform

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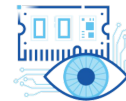
Product Inspection | AI Enhanced Defect Detection
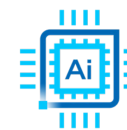
Feature AI-empowered solutions for defect detection and identification of missing objects, scratches, and other defects on products on the manufacturing line and in real-time. Your solution must be enabled by Intel Hardware and Software ingredients and significantly improve product yield rate while decreasing human costs. This solution can be applied to various segments such as 3C, semiconductors, automobiles, packaging, etc.

Minimum Required Intel Hardware:
- 11th Generation Intel® Core™ Processor Family or newer

Recommended Intel Hardware:
- 11th, 12th, or 13th Generation Intel® Core™ Processor Family;
- Intel® Xeon® Processor Family
- Intel® Iris® Xe and Iris® Plus Graphics
- Intel® Arc™
- Intel® Data Center GPU Flex Series
- Intel® Ethernet and 6E Wifi

Recommended Intel Software:
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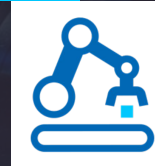
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Bonus Intel Content:
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- Intel® Geti™ platform

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Control Optimization & Autonomy | Robotic Arm Controller

Intel architecture-based stationary Robot controller with good real-time performance for motion control and additional capabilities for other workloads such as customized programs and robotics vision.

Minimum Required Intel Hardware:
- 11th Generation Intel® Core™, Intel® Pentium, Celeron or Atom Family Processors or newer

Recommended Intel Hardware:
- Intel® Core i3 N for low-mid end application (e.g. control only).
- Intel 11th Generation U Series processor or 12th Generation P or H Series Processors for mid-high end application (e.g. control + vision)
- Intel Xeon SP Gen 3 or higher or Intel Xeon D (Private 5G Technology)

Recommended Security Features:
- Measured boot, software chain of trust using TPM 2.0
- Total Memory Encryption Enabled
- Secure works using TEP – secure containers and orchestration

Recommended Intel Software:
- Intel® Time Coordinated Computing Tools (Intel® TCC Tools) / Time-Sensitive Networking (TSN) on Intel® FPGAs
- Intel® Edge Controls for Industrial
- ACRN* (type 1 hypervisor)
- Intel® Distribution of OpenVINO™ Toolkit
- Point Cloud Library (PCL) Optimized for the Intel® oneAPI
- Intel® FlexRAN™

Bonus Intel Content:
- A combination of Intel CPU + FPGAs and/or Intel® RealSense™ cameras
- Intel® Geti™platform
- Intel Ethernet Network Adapter X710 NIC or Intel® ACC100 eASIC or Intel® QAT

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Control Optimization & Autonomy | AGV Controller

Intel® architecture based Mobile Robot controller featuring reliability, stability, and easy customization extension. The compute module should be capable of SLAM + Navigation + 3D/AI.

Minimum Required Intel Hardware:
- 11th Generation Intel® Core™ Processor Family or newer

Recommended Intel Hardware:
- Intel® Pentium, Celeron or Atom Processors, Intel® Core i3 N for low-mid end
- Intel 11th Generation U Series processor or 12th Generation P Series processor. for mid-high end
- Intel Xeon SP Gen 3 or higher or Intel Xeon D (Private 5G Technology)

Recommended Security Features:
- Measured boot, software chain of trust using TPM 2.0
- Total Memory Encryption Enabled
- Secure works using TEP – secure containers and orchestration

Recommended Intel Software:
- Intel® Time Coordinated Computing Tools (Intel® TCC Tools) / Time-Sensitive Networking (TSN) on Intel® FPGAs
- Intel® Edge Controls for Industrial
- Intel® Edge Insights for Autonomous Mobile Robots
- Intel® Distribution of OpenVINO™ Toolkit
- Point Cloud Library (PCL) Optimized for the Intel® oneAPI
- Intel® Arc™
- Intel® oneAPI Toolkits

Bonus Intel Content:
- A combination of Intel CPU + FPGAs and/or Intel® RealSense™ cameras
- Intel® Geti™platform
- Intel Ethernet Network Adapter X710 NIC or Intel® ACC100 eASIC or Intel® QAT

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