Artificial Intelligent & Edge Computing (AIEC)

STARTER KIT

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VERSION 0.2
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1. Overview

**Edge AI Platform LEC-2290**

- Intel® Core™ i7-8700T/i7-8700 (CFL) & UHD Graphics 630
- 4x PoE ports to Support Multi Video Streams DL Inference Requests and Data Analytics
- 2x RJ45 GbE LAN, 4x USB3.0, 6x COM, 8x DI/DO
- Rich Expansion w/ 1x PCIe x16, 1x Mini-PCle, 1x B Key M.2 for Add-on AI Modules & Accelerators

**Vision & Analytics Suite**

Pre-Installed software stack consists of:
- Intel’s Edge Insights for Industrial
- Intel® Distribution of OpenVINO™ Toolkit
- AIoT machine vision reference implementations
- Ubuntu 18.04 LTS ready

**VALUE Proposition**

- Faster Edge Deployments
- Market Uptake
- Quicker Productization
- E2E AIEC Solutions For Industrial Developers & Ecosystem partners
- Value-Added SW Suite

**WHO NEEDS THIS?**

- ISV AND SI WHO ENGAGE WITH AIOT AND EDGE DEPLOYMENTS

**TARGET APPLICATIONS**

- AI POWERED MACHINE VISION
- HIGH PERFORMANCE EDGE DATA ANALYTICS
- MACHINE AUTOMATION CONTROLLER & INSPECTION SYSTEMS
- BUILDING AUTOMATION
- PHYSICAL SECURITY
- ENVIRONMENT MONITORING
- GREENHOUSE CONTROL
### 2. WHY AI on Lanner IEC?

#### Data Deluge

<table>
<thead>
<tr>
<th>Application</th>
<th>Data Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg. Internet User</td>
<td>1.5GB DATA/DAY</td>
</tr>
<tr>
<td>Smart Hospital</td>
<td>3TB DATA/DAY</td>
</tr>
<tr>
<td>Autonomous Vehicle</td>
<td>4TB DATA/DAY</td>
</tr>
<tr>
<td>Connected Airplane</td>
<td>40TB DATA/DAY</td>
</tr>
<tr>
<td>Smart Factory</td>
<td>1PB DATA/DAY</td>
</tr>
</tbody>
</table>

*Note: Amalgamation of analyst data and Intel analysis. [Source 1] / [Source 2]*

#### Analytics Curve

- **Descriptive Analytics**
  - Diagnostic Analytics
  - Insight: What happened and why?
- **Predictive Analytics**
  - Foresight: What will happen, when, and why?
- **Prescriptive Analytics**
  - Forecast: How should I proceed?
- **Advanced Analytics**
  - Self-Learning: How do I proceed?

**AI is the driving force**

#### Vertical Insights

- **Business**
- **Security**
- **Operational**
3. WHY AIEC Starter Kit for AIoT

AI IS EMPOWERING INDUSTRIAL AUTOMATION

"The global market for AI solutions for manufacturing applications will reach $13B by 2025"*

"The economic impact of factory IoT applications forecast to reach $1.2 Trillion by 2025".**

KEY CHALLENGES FOR INDUSTRY 4.0

- High total cost of ownership
- Scalability, Security & data privacy
- Locked and proprietary, non-flexible
- High total cost of ownership
- Lack of general purpose platform for multiple analytics use cases

AIoT EXAMPLE USE CASES

People
- Worker Safety
- Worker Behavior

Machine
- Predictive Maintenance
- Robotics Pick & Place

Material
- Product Defect detection
- Raw Material Appearance Inspection
- Asset Management

Process
- Factory operation optimization
- Optimization of raw material utilization
- Predictive Analytics

Environment
- Temperature optimization
- Humidity optimization

* Source: Tractica, Global Marketing Research Firm
4. Edge AI Platform LEC-2290

- Intel® Core™ i7-8700T/i7-8700 & UHD Graphics 630
- 4x PoE to Support Multi Video Streams DL Inference Requests
- Rich Expansion w/ 1x PCIe x16, 1x Mini-PCIe, 1x B Key M.2 for Add-on AI Modules & Accelerators ranging from VPU(MYRIAD, HDDL), dGPU & FPGA
- 2x DDR4 2133/2400 SO-DIMM, Max. 32GB
- 2x RJ45 GbE LAN, 4x USB3.0, 6x COM Ports, 8x DI & 8x DO
- 2x Removable HDD/SSD External Slot w/ RAID, 1x mSATAd

System

**CPU**
Support Intel® Core™ i7-8700T/i7-8700 FCLGA1152, Coffee Lake S, 3.2GHz

**Memory**
DDR4 2133/2400 SO-DIMM, Max. 32 GB

**Graphics**
2x HDMI, 1x DP, Intel® UHD Graphics 630

**Audio**
Mic-in, 1x Line-out

**Power**
9~30 VDC, ATX

**Operating**
-20°C~55°C (35W CPU)

**Temp**
-20°C~45°C (65W CPU)

**Dimension**
275 x 115 x 225 mm

**Driver**
Windows 10 IoT, Ubuntu 16 and Above, Fedora 25 and Above, CentOS 7 and Above (Linux Kernal 3.2)

**Certificate**
CE/FCC, Class A

I/O Interface

**Ethernet**
2x GbE RJ45, 4x PoE RJ45 @IEEE 802.3at (Total PoE Budget of 60W) Intel i210IT

**Storage**
SAT A III Intel i210IT, 2x Removable HDD/SSD External Slot w/ RAID

**I/O**
6x D-Sub RS232/422/485, 8x DI/DO
4x USB 3.0, Button for Power-on, Reset, Remote Power Switch

**Expansion**
1x Mini-PCIe(PCIe + USB2.0) w/ Nano-SIM
1x PCIe + 16
1x M.2 1x B Key M.2 (PCIe + USB3.0) w/ Nano-SIM
5. Vision & Analytics Suite

1. Edge Insights for Industrial

Edge Insights for Industrial is an open and modular product validated solution that aggregates and processes time series, image/video data at the edge to provide useful insights via edge data analytics.

- Modular message/data bus for machine & video workloads
- Containerized ingredients for image processing, storage, and analytics
- Support for industrial optimized inference and training at the Edge
- Connectors for easy usage of Intel® Media Software Development Kit (Intel® Media SDK), OpenVINO™ toolkit, and Intel® Math Kernel Library (Intel® MKL)

2. Intel® Distribution of OpenVINO™ Toolkit

Deploy high-performance, deep learning inference

3. Industrial Automation Reference Implementations

Prebuilt implementations to deploy faster E2E vision based AIoT solutions

- Predictive Maintenance
  - Object Flow Detector
- Human Detection
  - Restricted Zone Notifier
  - Safety Gear Detector
- Facial Recognition & Detection
  - Machine Operator Monitor
## 6. AIEC Starter Kit Option

<table>
<thead>
<tr>
<th>BASIC - AIEC STARTER KIT</th>
<th>ADVANCED - AIEC STARTER KIT W/ ADD-ON AI MODULES</th>
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</thead>
<tbody>
<tr>
<td>![Basic Kit Image]</td>
<td>![Advanced Kit Image]</td>
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<tr>
<td>LEC-2290 w/ Intel® Core™ i7-8700T/8700, 16GB memory, 128 GB storage</td>
<td>LEC-2290 w/ Intel® Core™ i7-8700T/8700, 32GB memory, 256GB storage, 1 x Network Camera, 1 x mPCIe Movidius VPU * 1 card</td>
</tr>
<tr>
<td>Price: $xxxxxx</td>
<td>Price: $xxxxxx</td>
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<td>Q3, 2020</td>
<td>Q4, 2020</td>
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**REACH OUT TO LANNER REPRESENTATIVE TO LEARN MORE**

- Kit Availability Details
- Possible Kit Customization Options
- Quotation
- Lanner IEC Feature Solutions for Edge Intelligence

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