Practical embedded Edge AI with TI

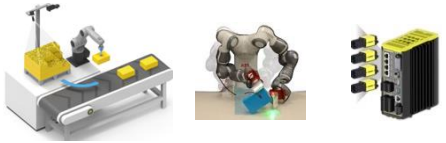
Aug 19th 2021

TI Information – Selective Disclosure

Webinar | Agenda

- Overview of TI processor and tools for practical Edge AI vision system
  - What you can build with TI processor for Edge AI
  - Overview of SK-TDA4VM – a new $199 starter kit for edge AI applications, offering 8 TOPS deep learning performance
- How to get started today evaluating and developing an intelligent application with TI
  - Demonstration on TI Edge AI Cloud service
  - Walk through of edge AI resources on ti.com
- Call to actions

Vision Edge AI | revolutionizing applications from factories to home

Applications	Low	Mid	High
Smart factory & warehouse				
Smart City, construction & Agriculture				
Smart home, medical, & defense				

Key Care-abouts

Single to Multiple cameras

Low power preferred for either battery operation or for thermally constrained environments

Integrated functional Safety for lower cost, complexity and compact form factor

Practical embedded Intelligence with TI Edge AI

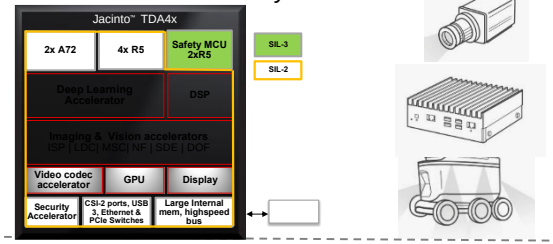
Processor for practical edge AI

TDA4VM

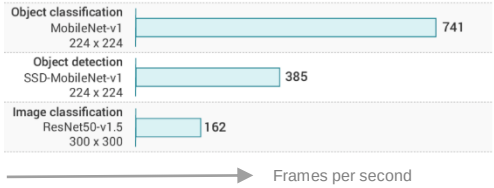
8 TOPS AI

Available now

High performance vision AI system, at low-power & lower system cost



MLPerf inference benchmarks



www.ti.com/edgeai

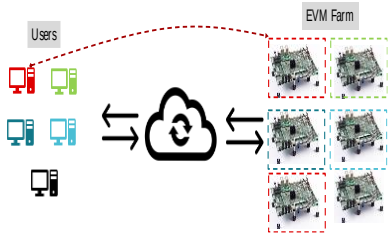
Free evaluation tool

TI Edge AI Cloud

Free-online service

Available now

In minutes evaluation with Jupyer Notebooks



Training videos

TI Model Zoo (100+ models)

tvm/ Neo-AI-DLR

TensorFlowLite RunTime

ONNX RUNTIME

https://dev.ti.com/edgeai

Low-cost starter kit

SK-TDA4VM

$199

Available in Sept 2021

Fast development cycle

SDK

Industry standardd APIs

gstreamer ROS docker ONNX RUNTIME TensorFlowLite tvm OpenCV

Edge AI Academy

Edge AI & Robotics eco-system

aws PHYTEC RidgeRun Allied Vision ignitarium D3 Engineering kudan

Coming in Sept '21

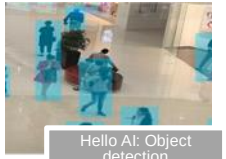
Texas Instruments

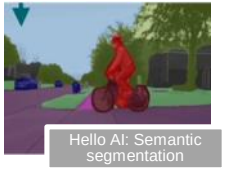
What you can build with TDA4VM Processor

Make factories, cities and home - smart and safe

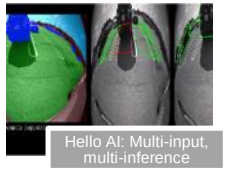
Smart cameras and AI Boxes

Hello AI: Classification


Hello AI: Object detection


Hello AI: Semantic segmentation

Hello AI: Single-input, multi-inference


Hello AI: Multi-input, multi-inference

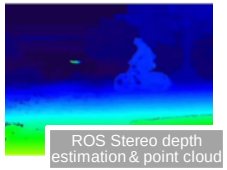
AWS: People counter IoT

D3: Intelligent data acquisition box

Ignitarium: People protection

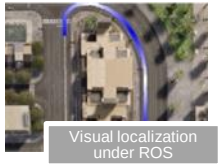
RidgeRun: Multi-channel AI server for smart cities

Robotics

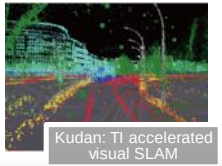

ROS Stereo depth estimation & point cloud

semantic segmentation under ROS

3D obstacle detection under ROS


Visual localization under ROS

Ignitarium: Autonomous indoor navigation under ROS


Kudan: TI accelerated visual SLAM

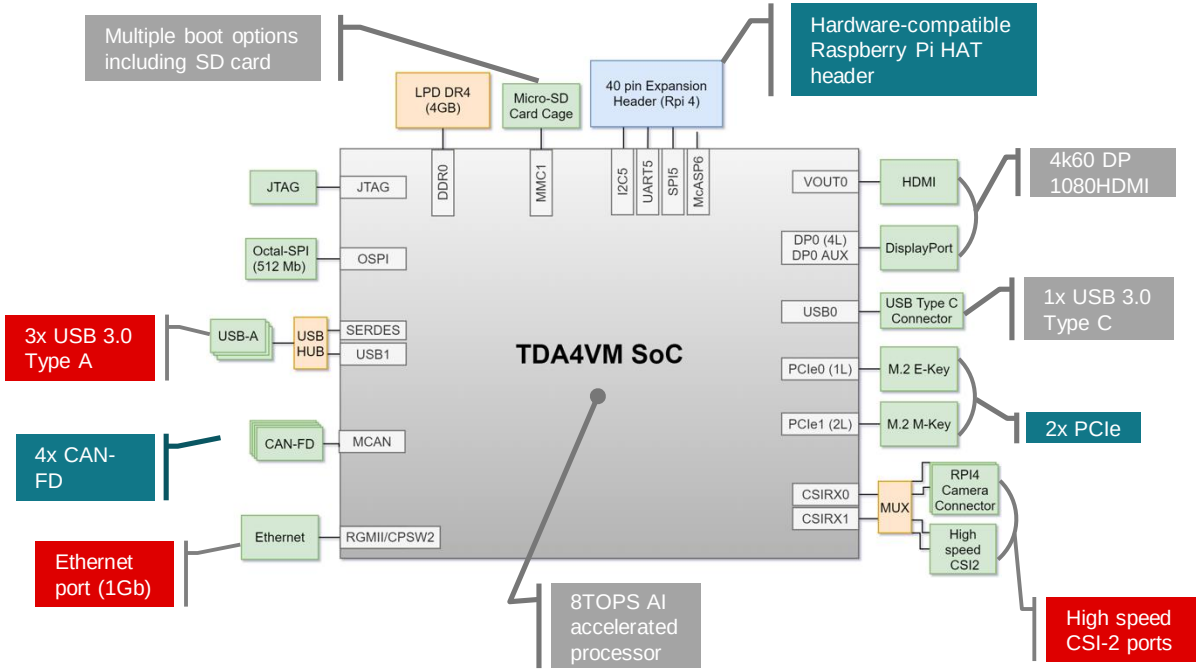
Benefits

- Fast development cycle with
  - industry standard APIs
  - Community eco-system
  - Third-party eco-system

Review the demos (home to factories) on the ti.com : Edge AI Demos

Prototype and develop using $199 starter kit

Edge AI Starter Kit | Jacinto™ TDA4VM processor

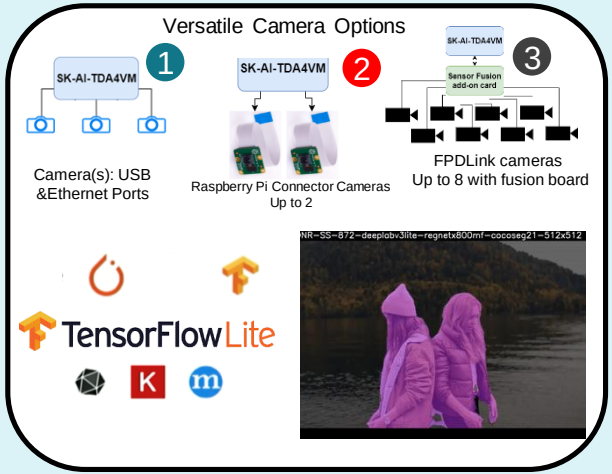


Part number: SK-AI-TDA4VM | **Price:** $199 | **Order:** Available Sep '21

Fast out-of-box Edge AI demo:

1. Insert programmed SD card*
2. Plug-in all peripherals
3. Run demo in under an hour!

** Follow instructions in Edge AI Devkit to program SD card*

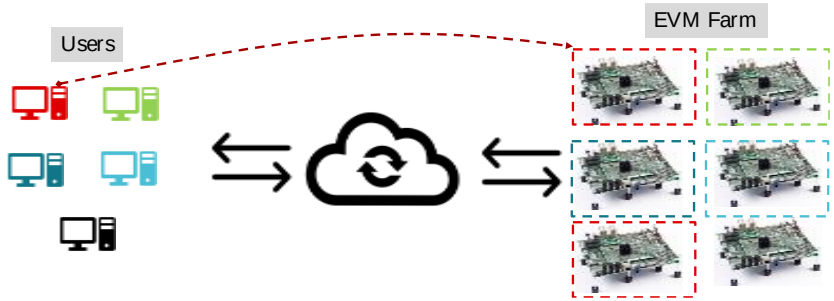


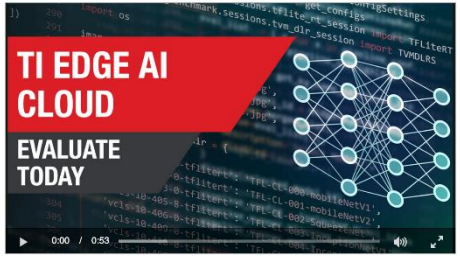
Camera options 2 and 3 do not work simultaneously

How to get started today

TI Edge AI Cloud for faster evaluation | Now available!

Free on-line service, enable deep learning evaluation in minutes





TensorFlow Lite · ONNX RUNTIME · tvm

- < 1 min to explore & compere performance : Model Selection tool
- < 5 min to experience SW & evaluate HW : TI Model Zoo examples
- < 30 min to evaluate custom models : Custom model examples
- 1 hr+ to benchmark performance : TI Model Zoo examples

No EVM buy

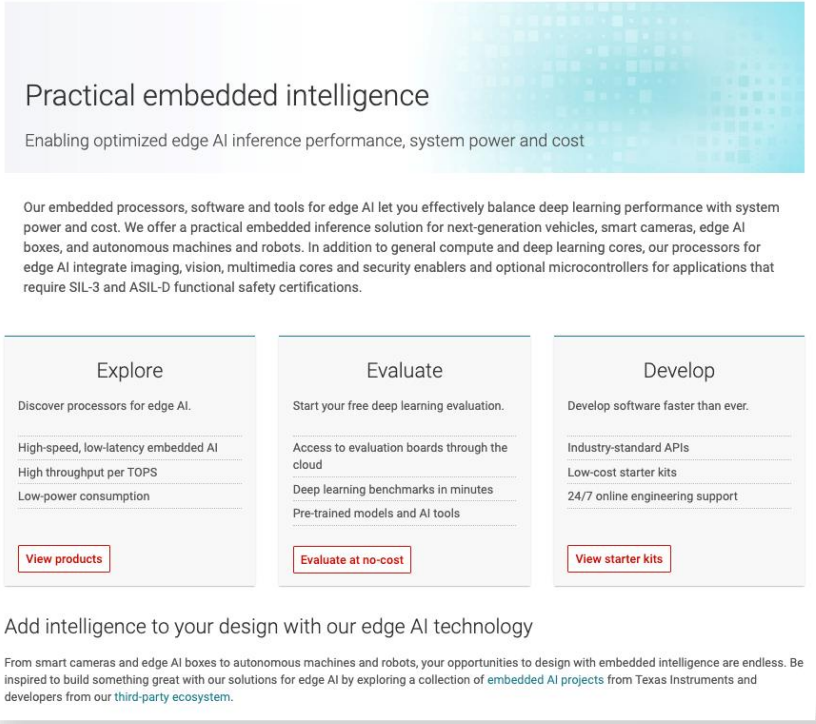
Evaluate TI SoC DL capabilities in remote EVM farm using web browser, Jupyter Notebook

In-minutes evaluation

Collect latency, FPS, accuracy, DDR BW and Power benchmarks in minutes

Service walk-through

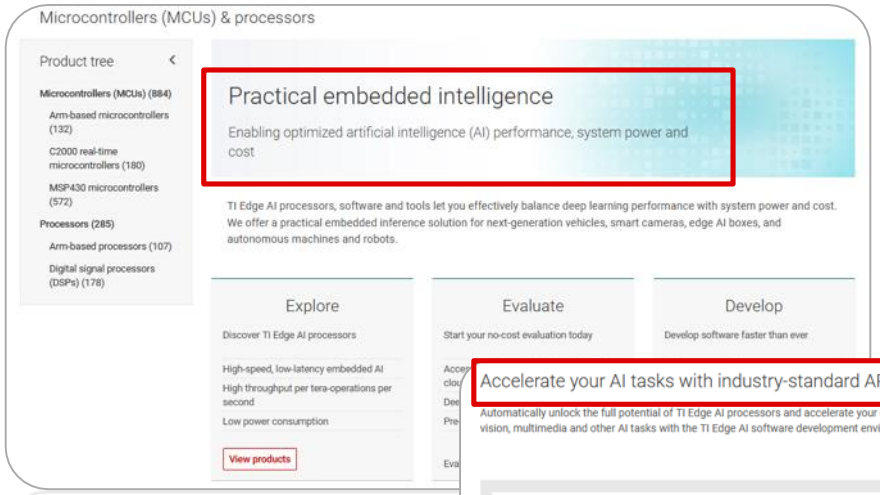
ti.com/edgeai | Now available!

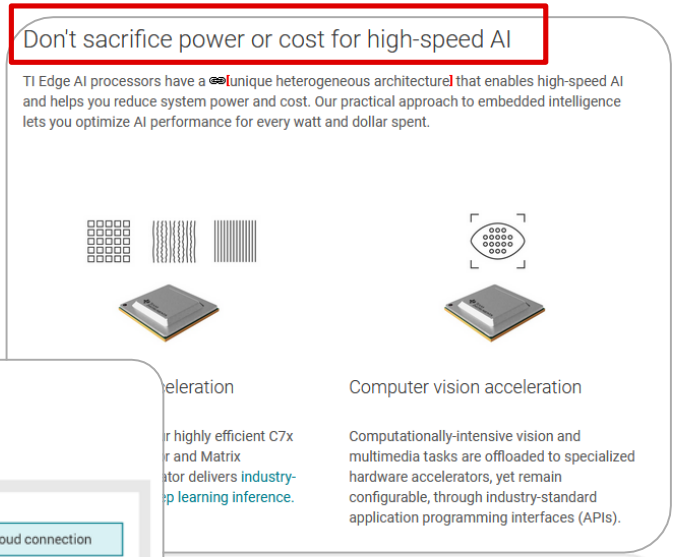


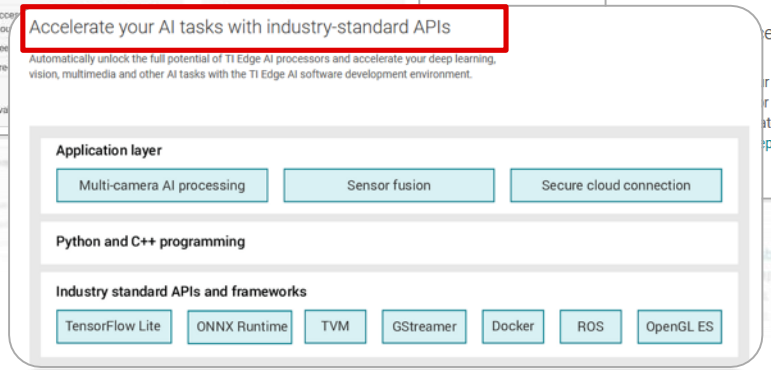
One central page with all the information

Web page walk-through

ti.com/edgeai | Now available



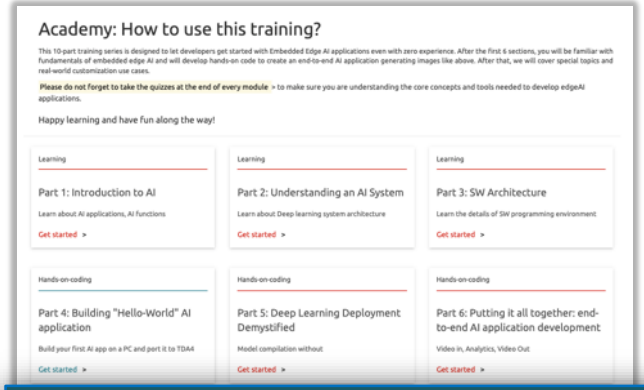


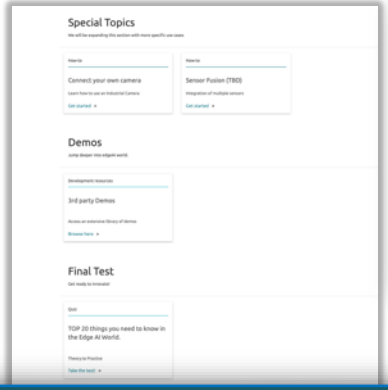


Academy | Train developers to get into AI, Faster and Easier

Objective

- ❑ A self-paced classroom-like training for new AI developers





Content

- ❑ Parts 1-3: AI fundamentals, AI system and SW
  - Emphasize how the TDA4 platform is making it efficient and easier
- ❑ Parts 4-6: code examples
  - Model use, deployment and end-to-end camera to analytics examples
- ❑ Parts 7-10: Real-world use cases
  - Specific EE examples, demos, final test

Web page walk-through

Call to action

- ❑ Reimagine “what’s possible” for your application with embedded edge AI
  - Review www.**ti.com/edgeai** for more information

- ❑ Develop on the cloud tool
  - https://dev.ti.com/edgeai/
  - Performance benchmarking
  - Evaluate different deep learning models

- ❑ Develop with low-cost starter kit
  - Check https://www.ti.com/product/TDA4VM on Sept 8, 2021

- ❑ Contact TI for support (e2e.ti.com)

Questions and Discussion

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