

# Welcome!

# Texas Instruments New Product Update

- This webinar will be recorded and available at [www.ti.com/npu](http://www.ti.com/npu)
- Phone lines are muted
- Please post questions in the chat or contact your TI sales contact or field applications engineer

# ADVANCING INTELLIGENCE AT THE EDGE

## New Product Update

Vaibhav Mahimkar  
- Edge AI Product Manager

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# Agenda

- Vision AI Processor Platform
- Scalable Vision portfolio
- Developer Ecosystem
  - Tools
  - Examples
  - Resources
  - Out of Box experience
  - Evaluation Hardware
- Get Started

# AM6xA Vision AI Processors

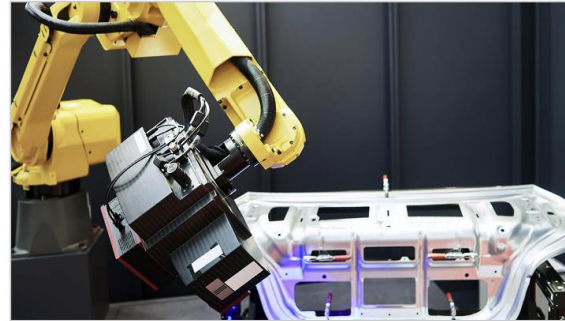
One platform  
single and multicamera systems

- Scalable Vision Portfolio with single software



## Low-power vision

Battery-powered systems such as security cameras and vacuum robots need low-cost vision processors that deliver optimized performance and low-power operation.



## Energy-efficient automation

Machine vision and professional surveillance systems need vision processors with more performance, additional features and power efficiency.



## High-performance autonomy

Autonomous systems have complex designs that often include sensor fusion and functional safety features, demanding high performance at an affordable cost.

- Enabling Low Power to High Performance systems

- Compare and select Vision Processors

# AM6xA: Enabling edge AI vision processing everywhere

AM62A



1 to 2  
cameras



AM68A



Up to 8  
cameras



AM69A



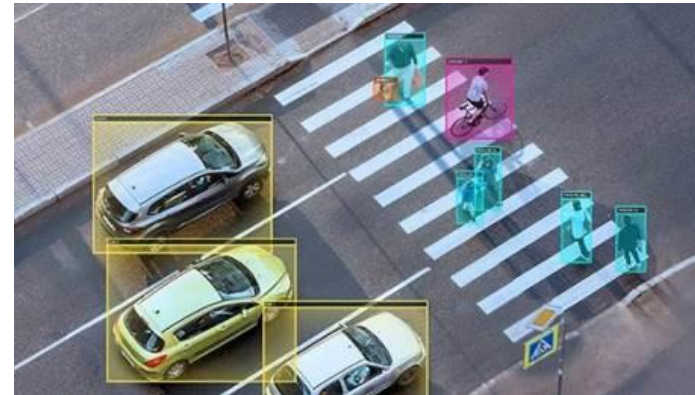
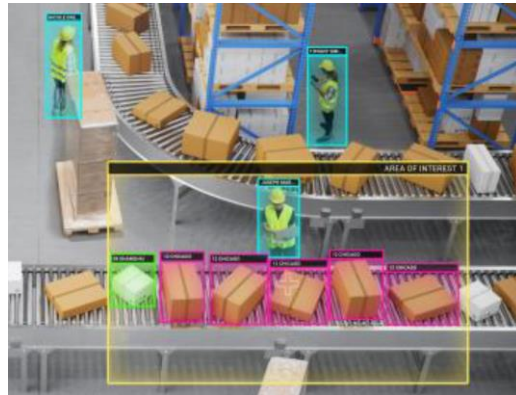
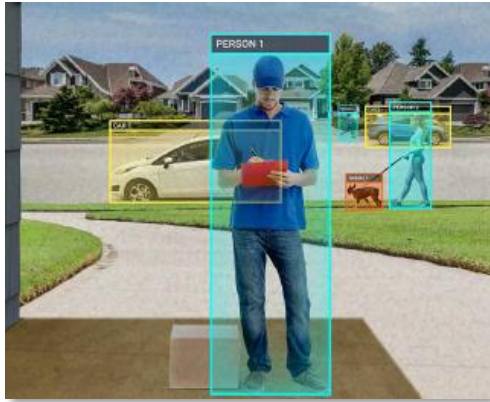
Up to 12  
cameras





























Supported by intuitive, open-source tools and common software



# AM6xA: Enabling edge AI vision processing everywhere



- Making applications smarter everywhere
- AI Models
- Examples

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

- SoC Portfolio built to meet application needs.
- 1-12 Cameras
- Performance
- Power efficient

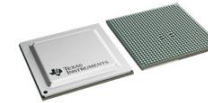
# AM6xA Portfolio overview



AM62Ax



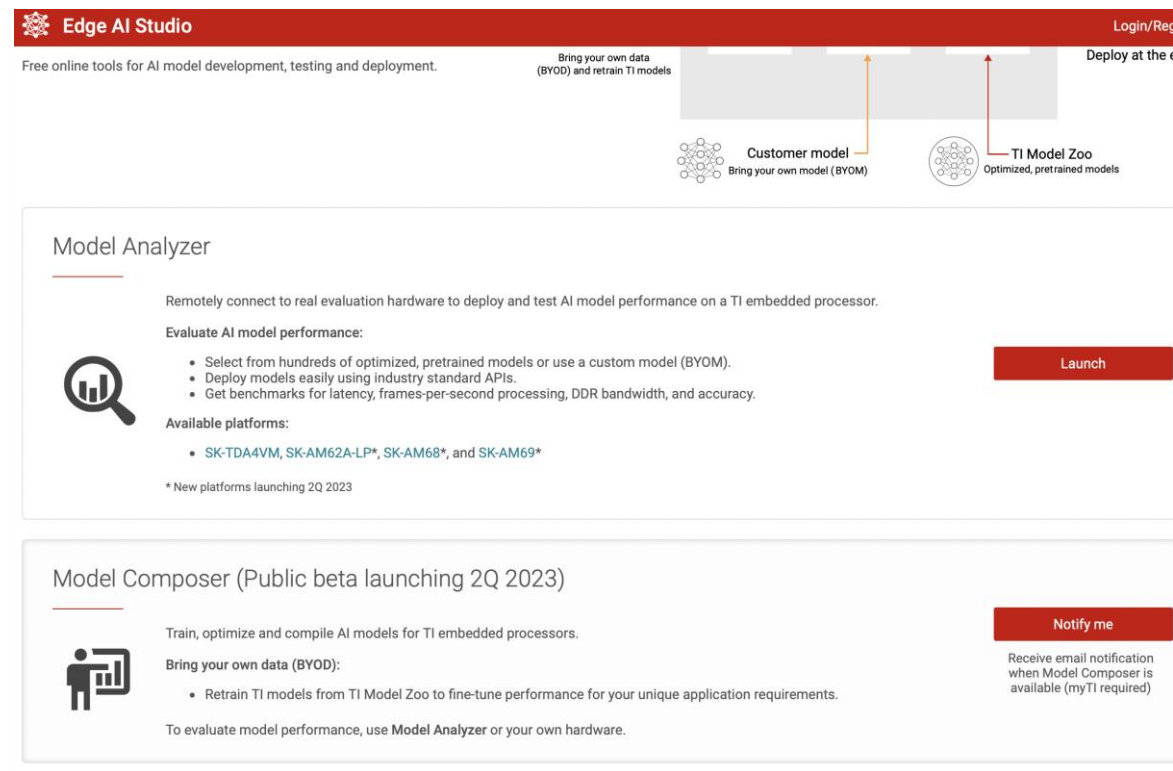
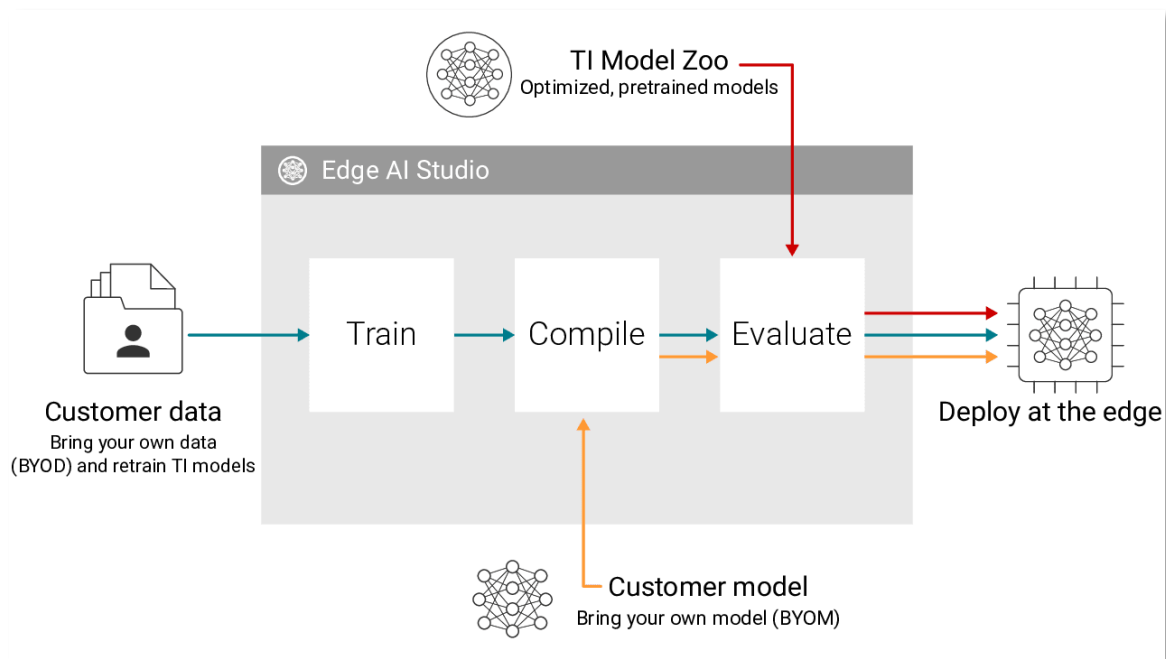
AM68A



AM69A

Description	Targeting battery-powered systems such as security cameras, vacuum robots and lawn mowers	Optimized for multi-inference real-time systems found in retail and factory automation	Built for high-performance sensor fusion systems such as autonomous mobile robots
Performance	2 TOPS	8 TOPS	32 TOPS
Power	As low as 1 W	As low as 6 W	As low as 15 W
Cameras	Up to 2 RGB-IR cameras	Up to 8 RGB cameras	Up to 12 RGB cameras
Maximum resolution	5 MP	12 MP	12 MP
4K frame rate	30 fps	60 fps	60 fps (two simultaneous streams)

# Edge AI Ecosystem and Tools



## Get started for free

- **TI Model Zoo:** Extensive AI models for most common problems
- **Start benchmarking – no Hardware needed**
- **Bring your own data:** Train and customize models for your needs

## Evaluation to Deployment



# TI Rex : Software Examples



## Edge AI demos

Browse our demos and those created by our ecosystem partners to see a sample of things you can build with our edge AI technology.

- Smart cameras
- Video analytics
- Autonomous machines
- Autonomous mobile robots

[Learn more](#)

[www.ti.com/edgeaiprojects](http://www.ti.com/edgeaiprojects)

Edge AI Demos (01.01.00.00)

[Overview](#)

TEXAS INSTRUMENTS



## EdgeAI Gallery Demo

Out of Box application provided on all AM6xA devices which allows users to test the prepackaged models, with sample images, videos and optionally with a connected camera. The applications highlights the scalability of the TI EdgeAI portfolio and allows users to add their custom models, images, and videos to extend the functionality to evaluate performance

[AM62A guide](#) | [AM68A guide](#) | [AM69A guide](#)

TEXAS INSTRUMENTS

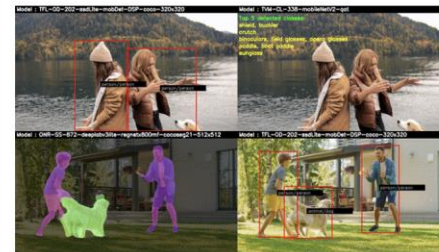


## Single input, multi-inference

This demo explains the data flow for pixel-based image classification, object detection and semantic segmentation in a frame from a single input source. The outputs are overlaid on the input image individually and displayed using a mosaic layout. The single combined output image can be displayed on a screen or saved to H.264 compressed video or a JPG image series.

[Source code](#) | [User guide](#)

TEXAS INSTRUMENTS



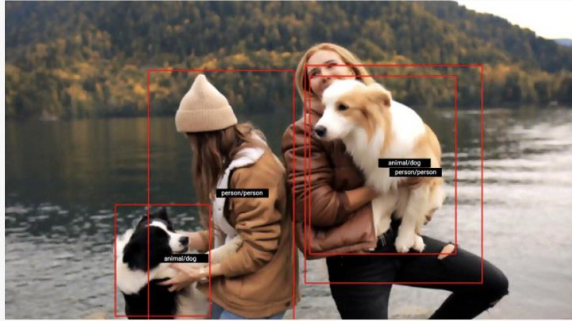
## Multiple input, multi-inference

This demo explains the data flow for two input sources passed through two inference operations—image classification, object detection and semantic segmentation. The outputs are overlaid on the input image individually and displayed using a mosaic layout. The single output image can be displayed on a screen or saved to H.264 compressed video or a JPG image series.

[Source code](#) | [User guide](#)

Examples from TI and 3P

# TI Rex : Developer Resources



## Edge AI Academy

Edge AI Academy is a great way to learn how to develop a smart application. Follow along using free cloud tools and progress at your own pace.

The fundamentals of edge AI development include:

- Hands-on coding projects
- Special topics for advanced users

[Learn more](#)

[www.ti.com/edgeaiacademy](http://www.ti.com/edgeaiacademy)

[/ Arm®-based processors / Training / Edge AI Academy \(01.00.00.00\)](#)

Edge AI Academy (01.00.00.00)

## Academy: How to use this training?

This training series is designed to let developers get started with Embedded Edge AI applications, even with zero experience. After the first 6 sections, you will be fundamentals of embedded Edge AI and will have developed code to create an end-to-end AI applications, generating images like above. After that, we will cover spec real-world customization use cases.

Please do not forget to take the quizzes at the end of every module to make sure you are understanding the core concepts and tools needed to develop Edge applications.

Happy learning and have fun along the way!

## Fundamentals

Learning

Part 1: Introduction to AI

Learn about AI applications, AI functions

Get started >

Learning

Part 2: Understanding an AI System

Learn about Deep learning system architecture

Get started >

Learning

Part 3: SW Architecture

Learn the details of SW programming envi

Get started >

## Documentation and Fundamentals

# Out of Box : Simple setup and interface



10-30min out of the box experience Plug and Play For Listed Camera + Board **Same Demo Script x Config**



# Out of Box : GUI

☐ Image Classification

☐ Object Detection

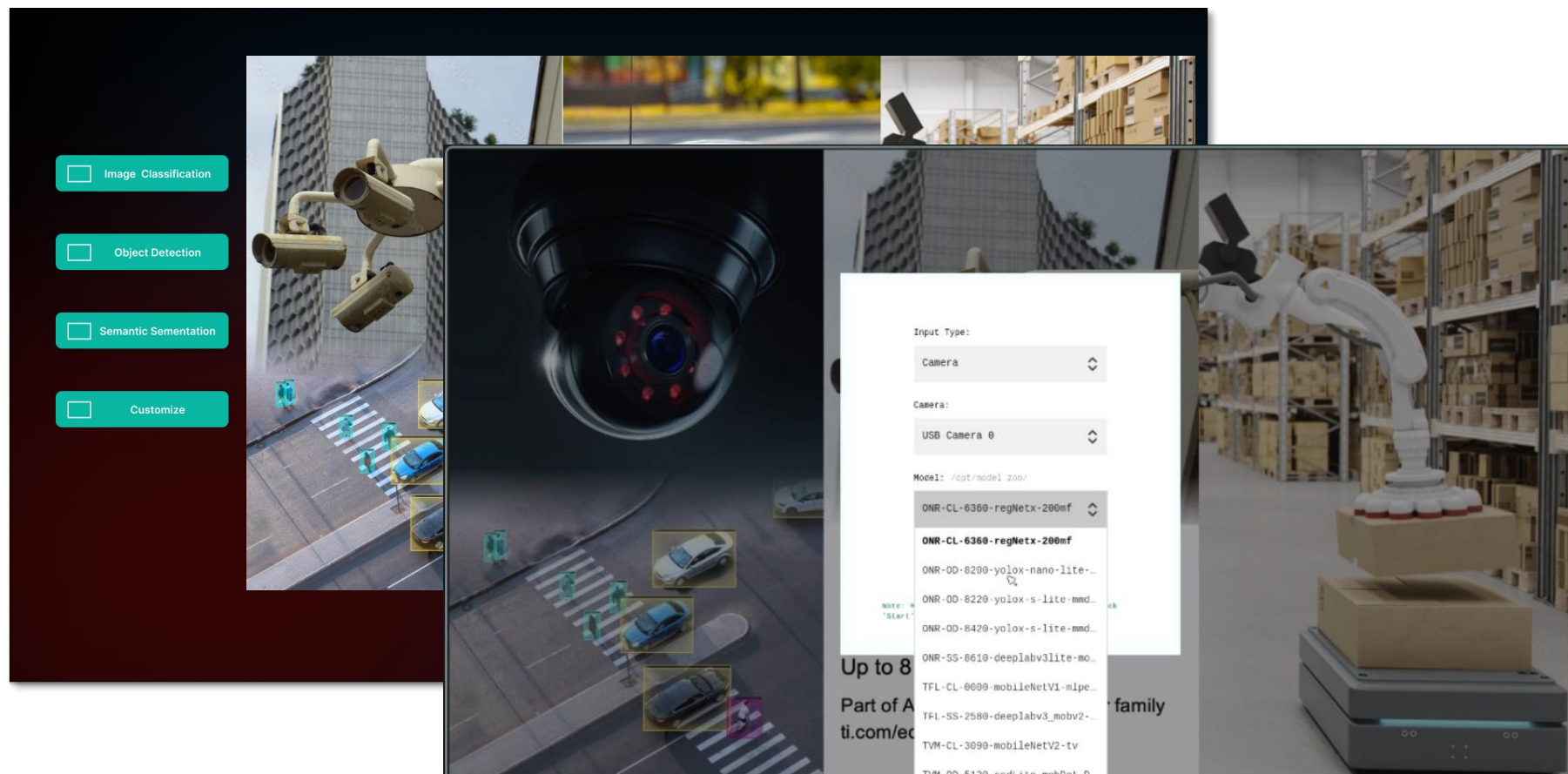
☐ Semantic Sementation

☐ Customize



**AM69A**  
Up to 32 TOPS  
Part of AM6xA vision processor family  
[ti.com/edgeai](https://ti.com/edgeai)

# Out of Box : GUI





# Out of Box : GUI

☐ Image Classification

☐ Object Detection

☐ Semantic Sementation

☐ Customize



Input Type:

Camera

Camera:

USB Camera

Model:

ONR-CL-6360

ONR-CL-6360

ONR-OD-8200

ONR-OD-8220

ONR-OD-8420

ONR-SS-8610

TFL-CL-6000

TFL-SS-2580

TVM-CL-3690

TVM-OD-5120

Note: 'Start'

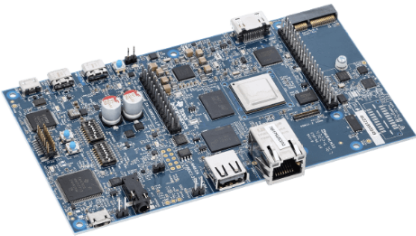
Up to 8

Part of A

ti.com/ec

# AM6xA evaluation boards

## Hardware boards



EVALUATION BOARD

### AM62A starter kit for low-power Sitara™ processors

The SK-AM62A-LP starter kit (SK) evaluation module (EVM) is built around our AM62A AI vision processor, which includes an image signal processor (ISP) supporting up to 5 MP at 60 fps, a 2 teraoperations per second (TOPS) AI accelerator, a quad-core 64-bit Arm® Cortex®-A53 microprocessor, a (...)



EVALUATION BOARD

### AM68x starter kit for Sitara™ processors

The SK-AM68 Starter Kit/Evaluation Module (EVM) is based on the AM68x vision SoC which includes an image signal processor (ISP) supporting up to 480MP/s, an 8 tera-operations-per-second (TOPS) AI accelerator, two 64-bit Arm® Cortex®-A72 CPUs, and support for H.264/H.265 video encode/decode. (...)



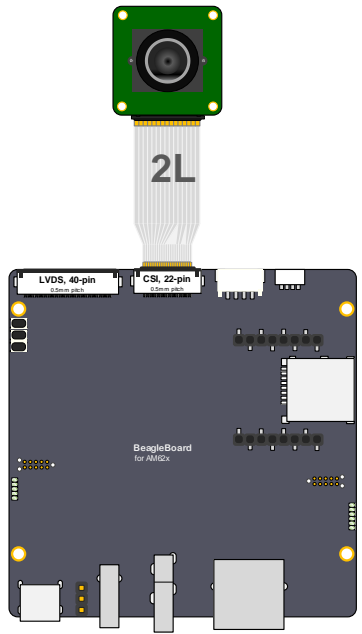
EVALUATION BOARD

### Starter kit for Sitara™ processors

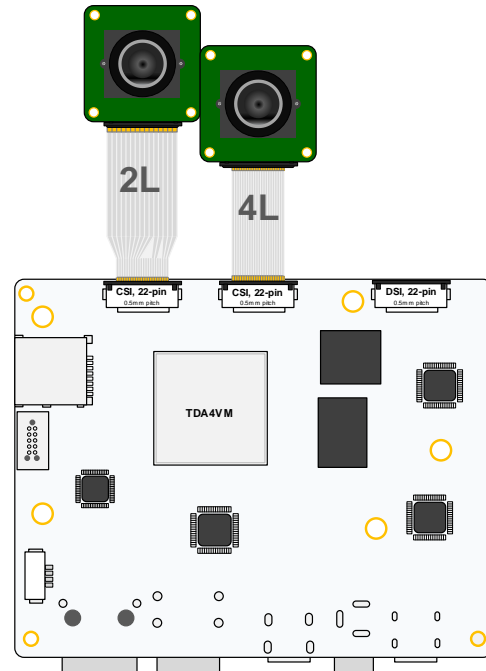
The SK-AM69 Starter Kit/Evaluation Module (EVM) is based on the AM69x AI vision processor which includes an image signal processor (ISP) supporting up to 1440MP/s, 32 tera-operations-per-second (TOPS) AI accelerator, eight 64-bit Arm®-Cortex® A72 microprocessor, and H.264/H.265 video (...)

# Camera connectivity

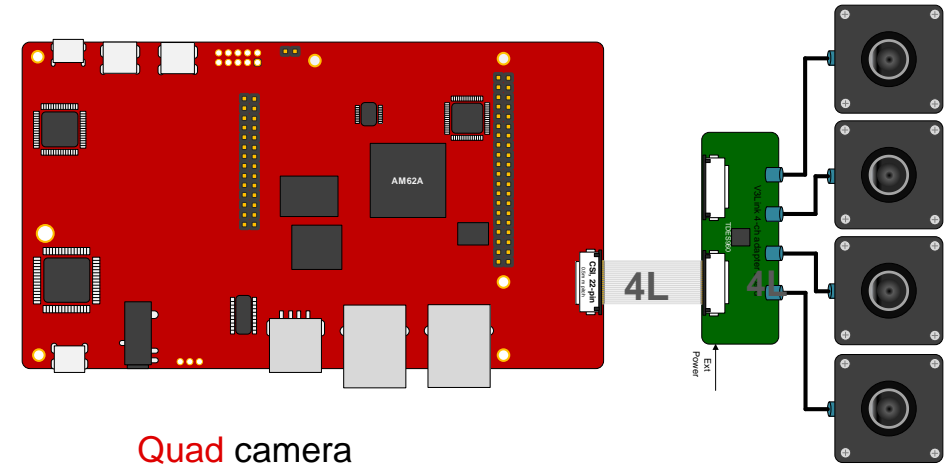
- 4x, 8x Camera Plug-and-play
- Low-cost
- Compatible with TI Starter Kit & Community boards.
- 12x 3P SoM



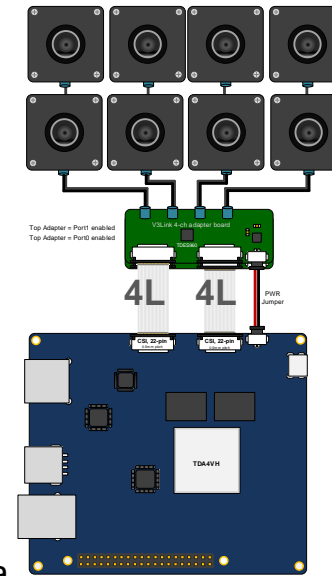
Single camera



Dual camera



Quad camera



Octal camera



12x camera

**ArduCam**  
**TechNexion**

# Getting started

You can start evaluating this device leveraging the following:

Content type	Content title	Link to content or more details
Software development kits	AM62A Sitara processors AM68A processors AM69A processors	<a href="https://www.ti.com/tool/PROCESSOR-SDK-AM62A">https://www.ti.com/tool/PROCESSOR-SDK-AM62A</a> <a href="https://www.ti.com/tool/PROCESSOR-SDK-AM68A">https://www.ti.com/tool/PROCESSOR-SDK-AM68A</a> <a href="https://www.ti.com/tool/PROCESSOR-SDK-AM69A">https://www.ti.com/tool/PROCESSOR-SDK-AM69A</a>
Resources	Edge AI overview Edge AI Studio tools TI Edge AI demos Edge AI Academy Resources	<a href="https://www.ti.com/technologies/edge-ai.html">https://www.ti.com/technologies/edge-ai.html</a> <a href="https://dev.ti.com/edgeaistudio/">https://dev.ti.com/edgeaistudio/</a> <a href="#">TI Edge AI demos</a> <a href="#">Edge AI Academy</a> <a href="#">Edge AI model zoo</a>
Product Folder	AM62A AM68A AM69A	<a href="https://www.ti.com/product/AM62A7">https://www.ti.com/product/AM62A7</a> <a href="https://www.ti.com/product/AM68A">https://www.ti.com/product/AM68A</a> <a href="https://www.ti.com/product/AM69A">https://www.ti.com/product/AM69A</a>
Evaluation Module	AM62A start kit for low-power Sitara processors AM68x starter kit for Sitara processors Start kit for Sitara processors	<a href="https://www.ti.com/tool/SK-AM62A-LP">https://www.ti.com/tool/SK-AM62A-LP</a> <a href="https://www.ti.com/tool/SK-AM68">https://www.ti.com/tool/SK-AM68</a> <a href="https://www.ti.com/tool/SK-AM69">https://www.ti.com/tool/SK-AM69</a>

**Visit [www.ti.com/npu](http://www.ti.com/npu)**

For more information on the New Product Update  
series, calendar and archived recordings





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