



Welcome – Sept. 22

Jeff Bier

Edge AI and Vision Alliance

September 2020



edge ai + vision
ALLIANCE

Hoon Choi – Lattice: Ultra-Low Power

- For certain applications, one can implement DNN inference in <20 mW
- Implementing DNNs on FPGAs does not require hardware design



For reference:
120 mW Solar Panel

Power and Performance Chart

24Mhz clock	Layers	Resolution	MOPS	FPS	Avg. pwr	FPGA	SPI	Max FPS
Character classification	4,4,1	32	3	10.0	1	1	0	100
Static gesture	6,4,1	32	6	10.0	1	1	0	48
Dynamic gesture	7,4,1	32	8	10.0	2	2	0	35
Human presence	8,4	64	10	1.0	1	1	0	N/A
	8,4	64	32	5.0	7	7	0	10
	8,4	64	32	10.0	13	13	0	10

IR-based Attention Tracking



Attention tracking

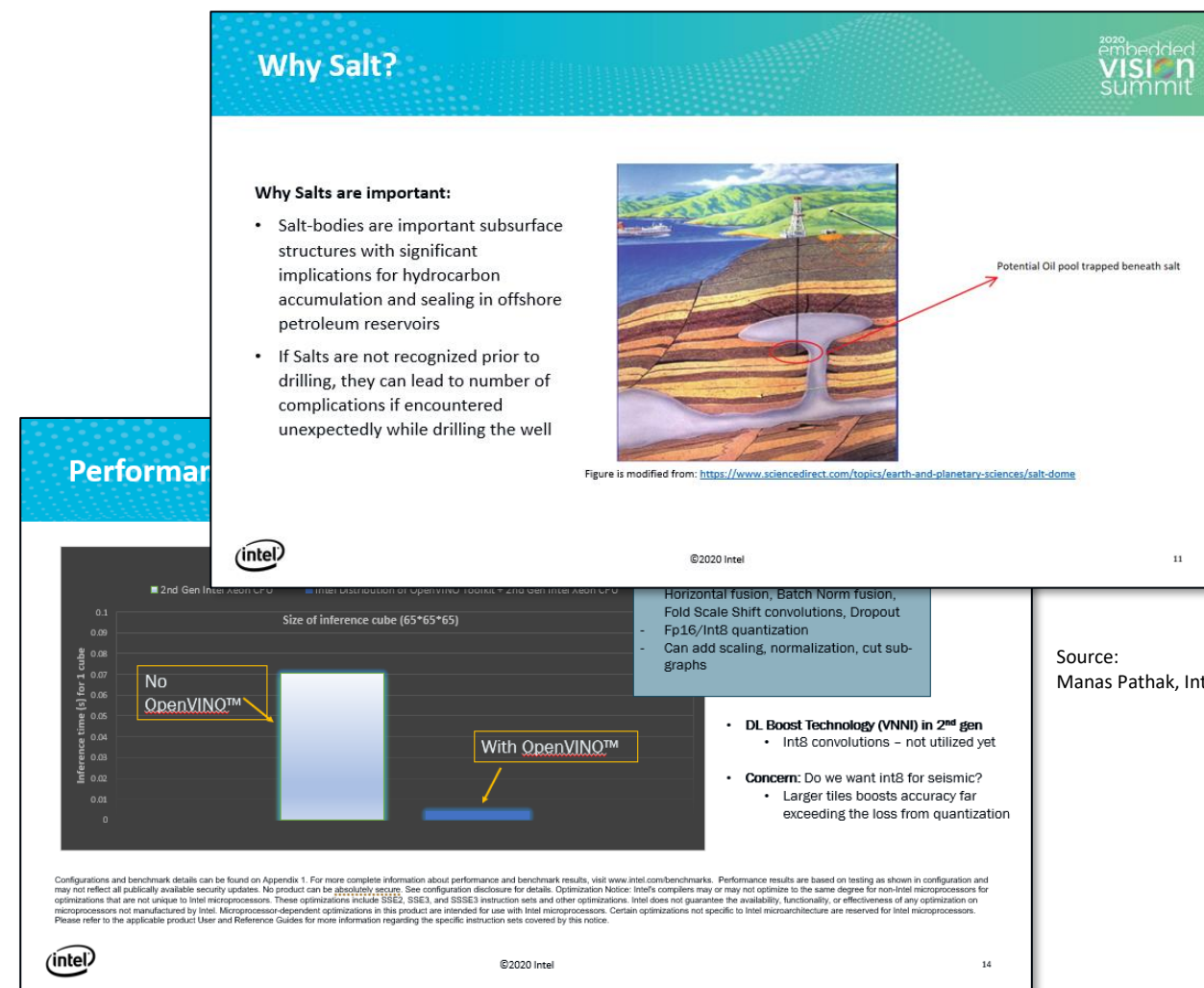


Attention tracking in darkness



Manas Pathak – Intel: Applications + Tools

- Beyond improvements in processors, domain-specific tools can yield order-of-magnitude improvements in performance and efficiency
- Deep learning is being used in an incredibly diverse range of applications, from medical imaging to seismic analysis for oil and gas exploration



Source:
Manas Pathak, Intel

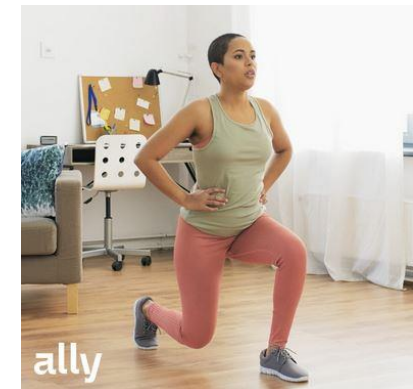
Extremely Diverse Applications



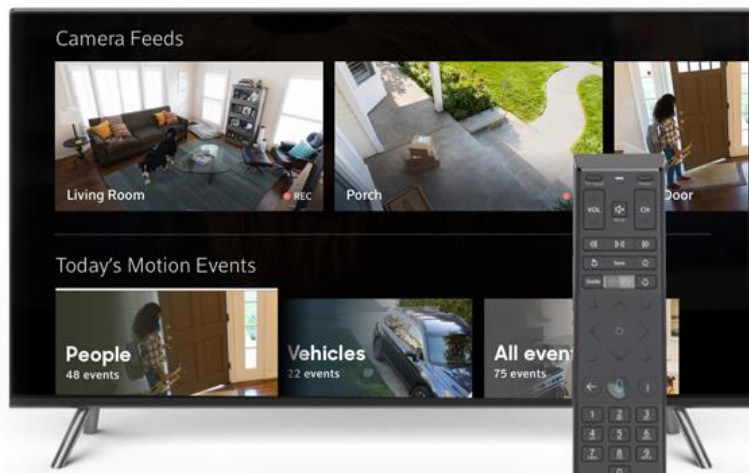
Source: Skydio



Source: zipitwireless.com



Source: iphoness.com



Source: xfinity.com



Source: deere.com

Find the Talks Most Relevant to Your Interests

The screenshot displays the Embedded Vision Summit agenda interface. At the top, there are tabs for 'TUE SEP 22' and 'WED SEP 23'. A search panel is open on the right side, featuring a search bar, a toggle for 'All terms must match', and expandable sections for 'Name', 'Description', 'Track or Format', and 'Keywords'. The 'Keywords' section is expanded, showing a grid of tags such as 'Applications', 'Processors', 'Deep neural networks', 'Tools', 'Algorithms', 'Business', 'Data', 'Efficient implementation', 'Standards', 'Markets', 'Sensors', 'Accuracy', 'Benchmarks', and 'Cameras'. On the left, a talk card is visible under the 'BUSINESS INSIGHTS' category. The talk is titled 'Using Learning a...' and is presented by Vera Serdiukova, LG. The time is 9:30 AM - 10:00 AM PDT. Tags for 'DEEP NEURAL NETWORKS' and 'BUSINESS' are shown at the bottom of the card.

Search

< Click in the **Search** box to open the search panel.

TUE SEP 22

WED SEP 23

BUSINESS INSIGHTS

Using Learning a
Deliver Business

Vera Serdiukova
LG

9:30 AM - 10:00 AM PDT

DEEP NEURAL NETWORKS BUSINESS

Keywords

Applications Processors

Deep neural networks Tools

Algorithms Business Data

Efficient implementation Standards

Markets Sensors Accuracy

Benchmarks Cameras

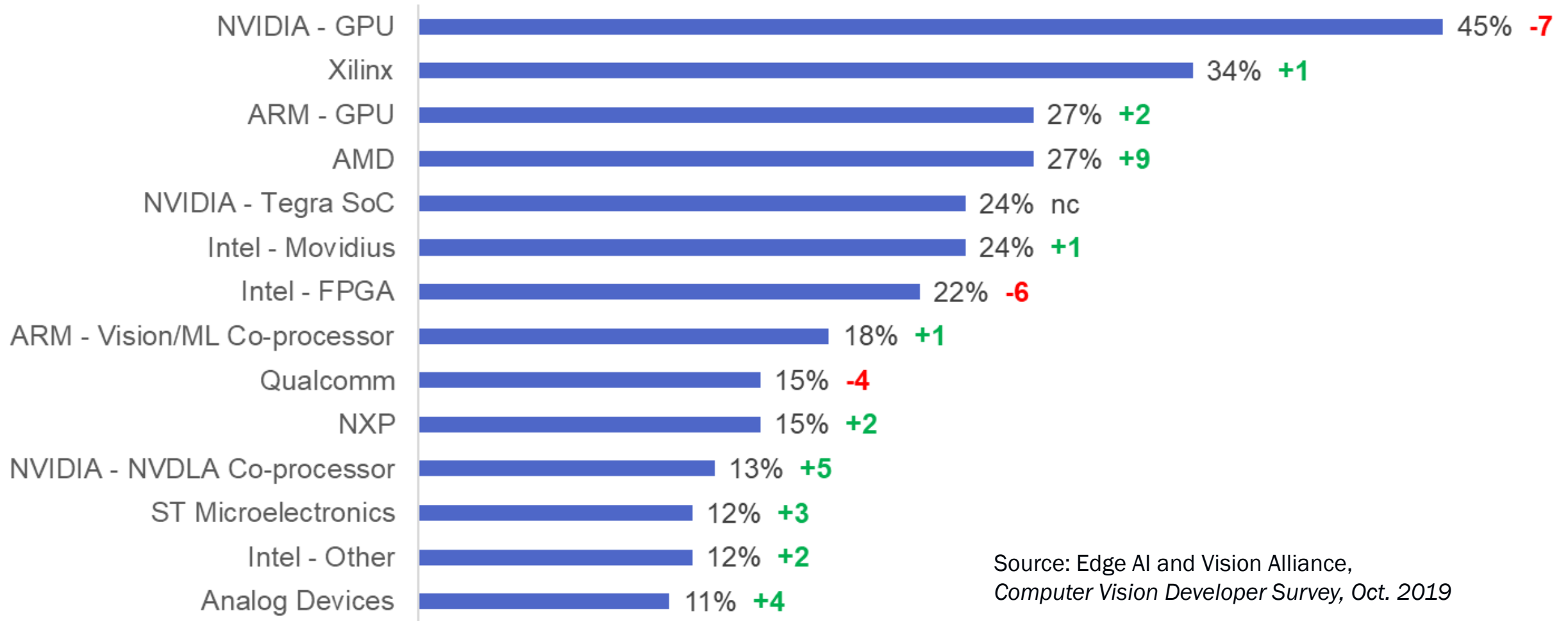
< Select one or more **Keywords** to filter the agenda

A Golden Era of Embedded AI Processors (From the Embedded Vision and Visual AI Industry Map)



Silicon IP Processors

Processors Used for Industrial Vision Applications (Excluding CPUs)



Source: Edge AI and Vision Alliance,
Computer Vision Developer Survey, Oct. 2019

Patterson Keynote – My Takeaways

- Domain-specific architectures (DSAs) are the way forward
- Domain-specific languages are key to exploiting DSAs
- Importance of the software stack
- Raising the hardware/software interface enables processor innovation
- Less is more: It's harder to come up with simple solutions, but they accelerate progress
- **Take the time for a quantitative approach**
 - **Good benchmarks are essential**
- The market is impatient!



David Patterson
Professor, UC Berkeley

Today – Talks on Benchmarks

ENABLING TECHNOLOGIES

Benchmarking vs. Benchmarking: Why Should You Care?



Felix Baum
Qualcomm

🕒 10:30 AM - 11:00 AM PDT

Qualcomm

PROCESSORS

BENCHMARKS

ENABLING TECHNOLOGIES

Getting Efficient DNN Inference Performance: Is It Really About the TOPS?



Gary Brown
Intel

🕒 11:30 AM - 12:00 PM PDT

intel.

KS

TOOLS

TECHNICAL INSIGHTS

MLPerf: An Industry Standard Performance Benchmark Suite for Machine Learning



Carole-Jean Wu
Facebook AI / ASU

🕒 1:00 PM - 1:30 PM PDT

STANDARDS

BENCHMARKS

Find the Talks Most Relevant to Your Interests

The screenshot displays the agenda interface for the 2020 Embedded VISION Summit. At the top, there are tabs for 'TUE SEP 22' and 'WED SEP 23'. A search panel is open on the right side, featuring a search bar, a toggle for 'All terms must match', and expandable sections for 'Name', 'Description', 'Track or Format', and 'Keywords'. The 'Keywords' section is expanded, showing a grid of tags such as 'Applications', 'Processors', 'Deep neural networks', 'Tools', 'Algorithms', 'Business', 'Data', 'Efficient implementation', 'Standards', 'Markets', 'Sensors', 'Accuracy', 'Benchmarks', and 'Cameras'. On the left, a talk card for 'Using Learning a...' by Vera Serdiukova is visible, with tags for 'DEEP NEURAL NETWORKS' and 'BUSINESS INSIGHTS'.

Search

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▶ Name

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▼ Keywords

Applications Processors

Deep neural networks Tools

Algorithms Business Data

Efficient implementation Standards

Markets Sensors Accuracy

Benchmarks Cameras

BUSINESS INSIGHTS

Using Learning a Deliver Business

Vera Serdiukova
LG

🕒 9:30 AM - 10:00 AM PDT

DEEP NEURAL NETWORKS BUSINESS

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< Select one or more **Keywords** to filter the agenda

Today's Schedule

9:00-10:30 am PT

Opening Remarks, Presentations and Q&As

10:30 am-1:00 pm PT

Product Presentations and Q&A Sessions

1:00-2:00 pm PT

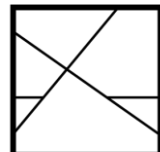
Presentations and Q&As

Don't miss the exhibit booths!

Download exhibitor product info, request a meeting, or click the **Request Info** button to get your questions answered by exhibitors.

Exhibitors

2020
embedded
VISION
summit



RAMONA OPTICS



Finding Exhibitors


The screenshot displays the website for the 2020 Embedded Vision Summit. The top navigation bar includes links for Home, Schedule, People, Sponsors, Exhibitors, Conversations, Summit Rewards, Upgrade, Support, and Account. A search bar is located in the top right corner. Below the navigation bar, a grid of exhibitor cards is shown, organized into three rows (A, B, and C). Each card features the company logo, name, and a list of roles (e.g., Intel Partner, Alliance Member, Exhibitor, Gold Sponsor). A sidebar on the right side of the grid provides search and filter options. The search bar includes a 'GO' button and a toggle for 'All terms must match'. The filter section lists various categories and products, such as Software and Algorithms, ICs and SoCs, Development Tools, Cameras, Silicon IP, Design and Manufacturing Services, Processor Boards & Modules, Image and Video Data, Camera Modules, Sensors, Standards, Market Research, Strategic Consultancy, Mergers and Acquisitions Advisory, Lenses, Open Source, Illumination, and Memory.

Row	Exhibitor	Roles
A	Algolux	INTEL PARTNER, ALLIANCE MEMBER, EXHIBITOR
	AMD	ALLIANCE MEMBER, EXHIBITOR
	Arrow Electronics	GOLD SPONSOR
	Avnet	GOLD SPONSOR
B	BDTI	GOLD SPONSOR, ALLIANCE MEMBER
	Brainchip	ALLIANCE MEMBER, EXHIBITOR
C	Cadence Design Systems	GOLD SPONSOR, ALLIANCE MEMBER
	CEVA	ALLIANCE MEMBER, EXHIBITOR
	Chips&Media, Inc.	ALLIANCE MEMBER, EXHIBITOR
	Codeplay	ALLIANCE MEMBER

< Search by **Keyword**


< Filter by **Tags**

Connecting with Exhibitors



HomeSchedulePeopleSponsorsExhibitorsConversationsSummit RewardsUpgradeSupportAccount

Request Info From Exhibitor earn 50 points. Download Exhibitor Sponsor Files earn 15 points.



Horizon Robotics

Horizon Robotics

WANT TO MEET

REQUEST INFO

ALLIANCE MEMBER

EXHIBITOR

VISION PRODUCT OF THE YEAR AWARD WINNER

Horizon robotics is a leader in edge-AI who offers a high performance, low power and low latency integrated Hardware and Software AI computing platform. Our AI platform is open and enables levels of AI efficiency for autonomous machines not possible with CPU, GPU or FPGA. Check our award winning Journey AI processor and Matrix compute system. Or let's talk about our 360 degree and in-cabin perception algorithms and our AI Toolchain. Horizon booth is open during the 10.30am-1pm timeslot as well as after hours for our Asian and European partners.

Please join us for a chat in our virtual booth! Thank you.

- Click the "Request Info" button at the top of the page to message the booth or request more information.
- Click the profile pictures on the upper right side of this page to schedule a meeting with a company representative.
- Click the "Enter Live Chat" button (when booths are staffed) to speak with representatives by video.

Markets Served

AUTOMOTIVE

ROBOTICS

SEMICONDUCTOR

Products or Services Provided

PROCESSOR BOARDS & MODULES

ICS AND SOCS

SOFTWARE AND ALGORITHMS

Fred Cohen
Director, Product Marketing, Automotive

Jefferson Kim
Korea Business Development

Will L
Director of Product Planning and Marketing

Shen L
Director of Business Development Japan

George Totolos
Business Development Manager


David Wang
System Architect

Xingshi Wang
Field Application Engineer Team Lead

Discussion

NEW CONVERSATION

< Click the **Request Info** button to get your questions answered by exhibitors.

edge ai + vision
ALLIANCE

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Connecting with Exhibitors

The screenshot shows the Xailient exhibitor profile on the 2020 Embedded Vision Summit website. The header includes navigation links: Home, Schedule, People, Sponsors, Exhibitors, Conversations, Summit Rewards, Upgrade, Support, and Account. A notification bar states: "Request Info From Exhibitor earn 50 points. Download Exhibitor Sponsor Files earn 15 points." The Xailient logo is prominently displayed with the tagline "See what matters." Below the logo are buttons for "WANT TO MEET" and "REQUEST INFO". The profile section identifies Xailient as an "ALLIANCE MEMBER" and "EXHIBITOR". It describes their software as lowering costs and improving performance of computer vision with breakthrough AI algorithms optimized for IoT & Cloud. Open Booth Hours in PST are listed for September 15th, 17th, 22nd, and 24th. A standalone AI service is also mentioned. A graphic illustrates "get more pixel data" with an image of glasses. A chart titled "Relative Computation Required" shows a "75x Efficiency Improvement" in mAP. The discussion section features a conversation between Ray E (VP Market Development) and Shivy Yohanandan (CTO) about "Selective Attention?".

Home Schedule People Sponsors Exhibitors Conversations Summit Rewards Upgrade Support Account

Request Info From Exhibitor earn 50 points. Download Exhibitor Sponsor Files earn 15 points.

xailient xailient
See what matters

WANT TO MEET REQUEST INFO

ALLIANCE MEMBER EXHIBITOR

Xailient software lowers the costs and improves the performance of computer vision with breakthrough AI algorithms optimized for IoT & Cloud.

Open Booth Hours in PST:
Sept 15th 10:30am - 1pm
Sept 15th 6-8pm
Sept 17th 10:30am - 1pm
Sept 17th 7-9pm
Sept 22nd 10:30am - 1pm
Sept 22nd 8-9pm
Sept 24th 10:30am - 1pm
Sept 24th 9-10pm

Standalone detectors, custom and pre-trained, or Selective Attention AI that helps your AI improve accuracy.

Focus on what matters. get more pixel data and increase accuracy.

Try the free Beta at console.xailient.com or see more demo videos at www.xailient.com/technical-details

Relative Computation Required

75x Efficiency Improvement

Discussion

NEW CONVERSATION

Ray E
VP Market Development
15 days ago

Selective Attention?
To the CTO of Xailient @Shivy. What is Selective Attention?

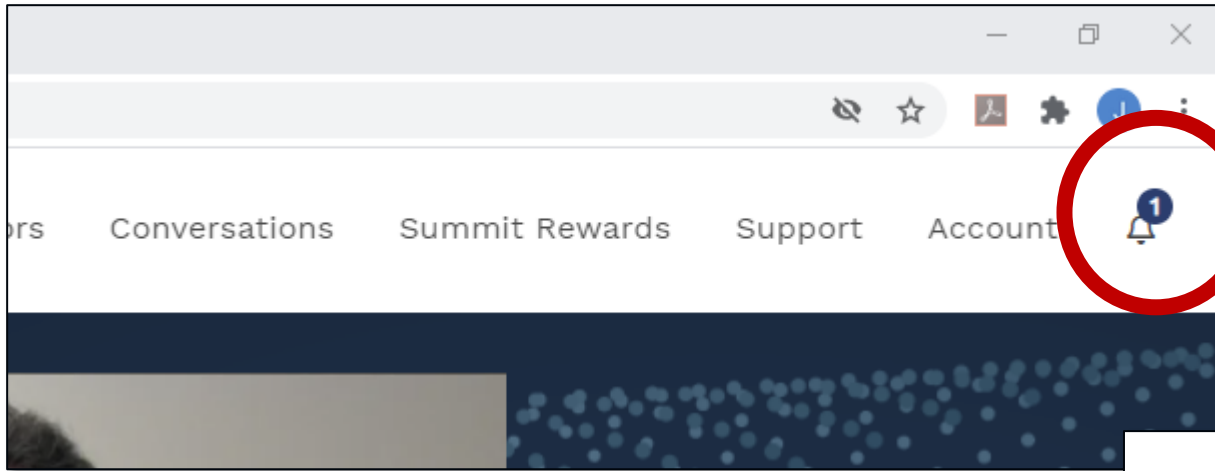
1 replies
2 Likes

Shivy Yohanandan
CTO
13 hours ago

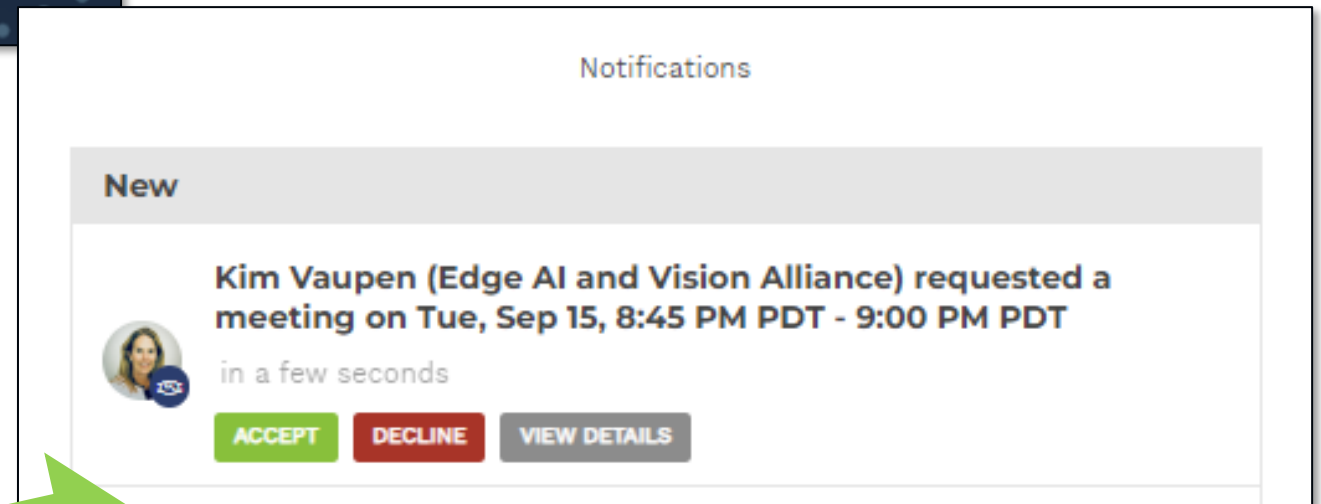
It's the ability to focus YOLOs, MobileNetSSDs, and custom computer vision models on only the regions of interest in an image so you're not processing background pixels. The regions of interest are determined by your ground truth labels. This means your YOLOs and SSDs end up with much more pixel information from the original resolution image, as opposed to shrinking the entire image (background included) down to 300x300 or 416x416. This is what nature has done with biological vision.

< Click on a profile picture to send a message or request a meeting.

Check for Meeting Invitations and Messages



Number on bell icon
means new invitations,
messages or notifications



Week Two Schedule-at-a-Glance

Tuesday
September 22

9:00-10:30 am PT

**Daily Remarks, Presentations
and Q&As**

10:30 am-1:00 pm PT

**Product Presentations
and Q&A Sessions**

1:00-2:00 pm PT

Presentations and Q&As

Wednesday
September 23

9:00 am-1:30 pm PT

WORKSHOP
Edge AI for Industrial

PRESENTED BY
INTEL

Thursday
September 24

9:00-10:30 am PT

**Closing Remarks, Presentations
and Q&As**

10:30 am-1:00 pm PT

**Product Presentations
and Q&A Sessions**

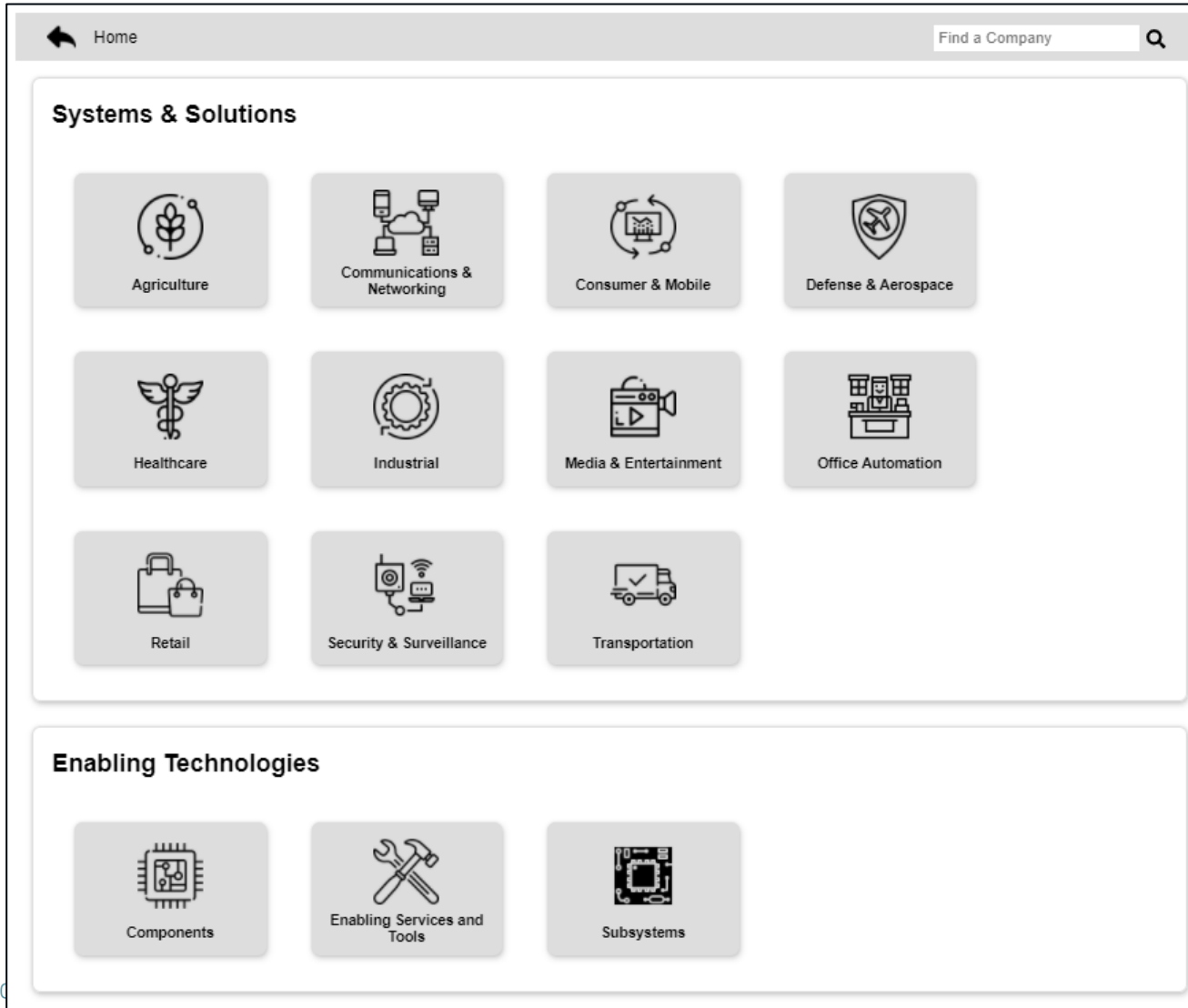
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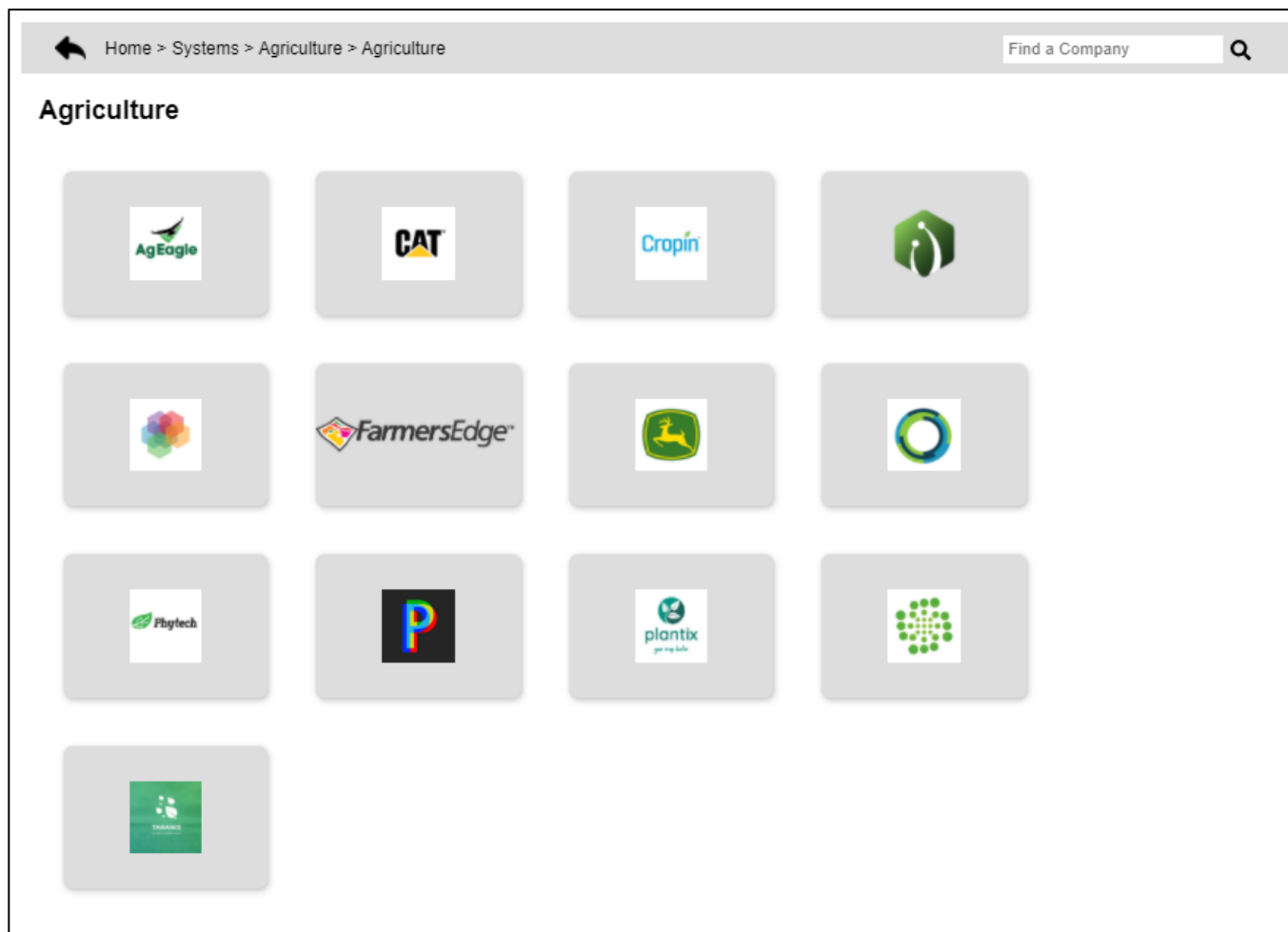
Exploring the Ecosystem – the Industry Map



<https://www.edge-ai-vision.com/resources/industry-map/>

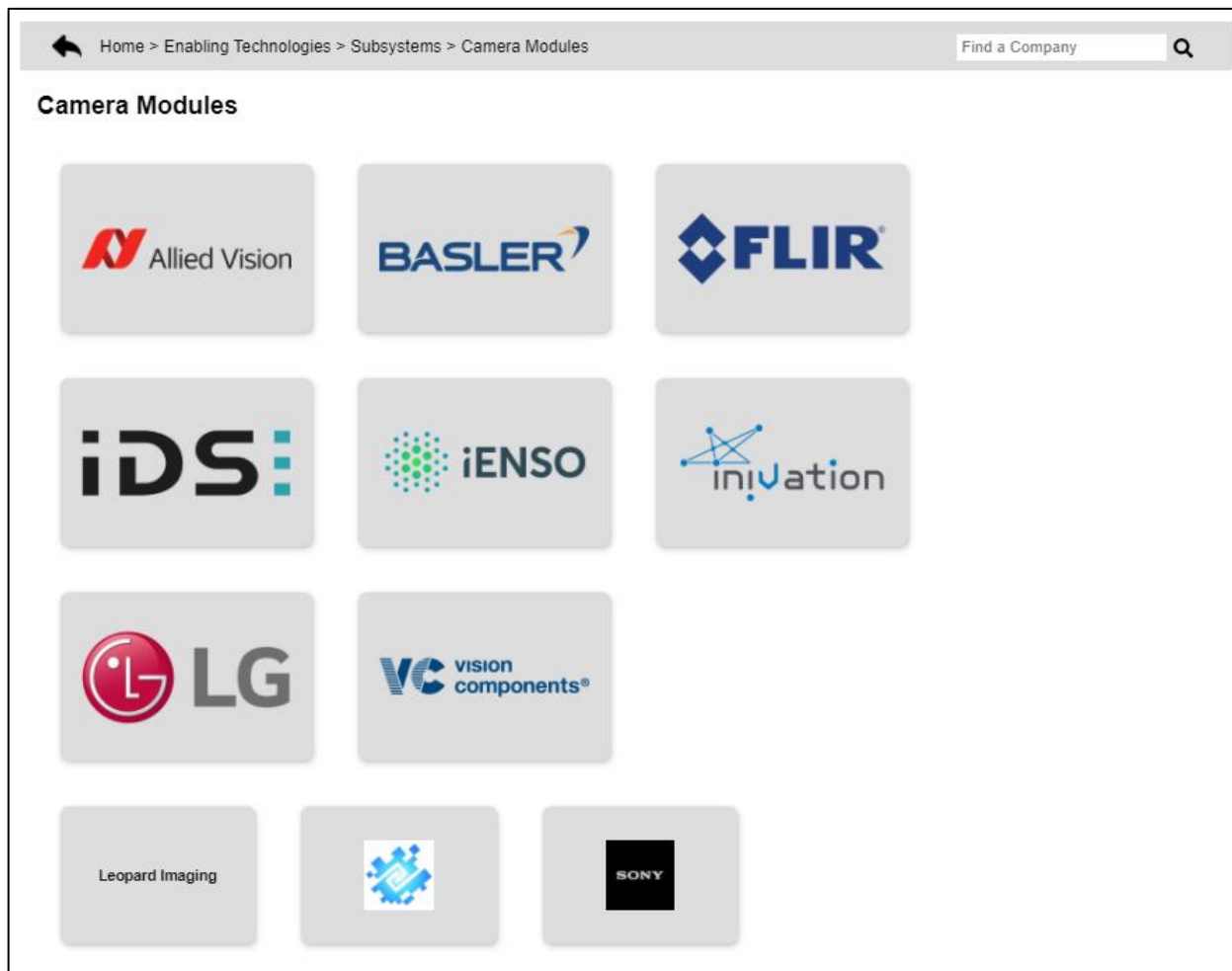


Embedded Vision and Visual AI Industry Map



<https://www.edge-ai-vision.com/resources/industry-map/>

Embedded Vision and Visual AI Industry Map



<https://www.edge-ai-vision.com/resources/industrymap/>

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PREMIER



GOLD



SILVER



SPECIAL EVENT

