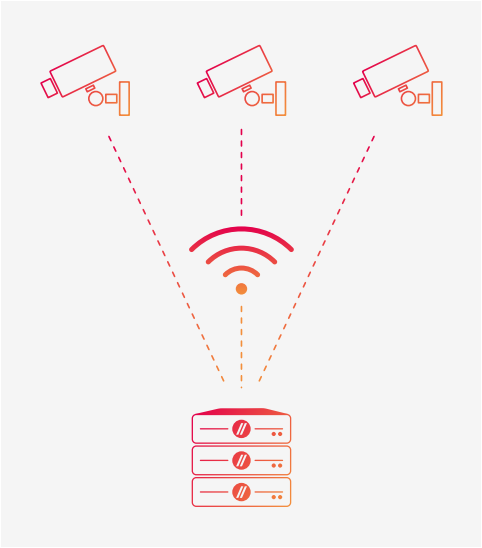
Computer Vision Capabilities with Scale Computing Platform

HIGHER PERFORMANCE COMPUTING AT THE EDGE

Computer vision is a field of artificial intelligence that trains computers to interpret and understand the visual world. Using digital images from cameras and videos and deep learning models, machines can accurately identify and classify objects — and then react to what they "see."

The edge is quickly becoming the most popular infrastructure deployment architecture for artificial intelligence-based computer vision solutions.

The development of edge-based CV platforms enables real-time, actionable data insights, the use of constrained devices, and the management of many distributed systems at once.



OPPORTUNITY

Computer Vision market capabilities have grown exponentially, with most AI solutions incorporating CV in some form. CV has introduced challenging infrastructure and processing demands since it can be deployed virtually anywhere.

Organizations across many industries can significantly benefit from integrating computer vision-based solutions and artificial intelligence (AI). These technologies often accompany digital transformation and innovation, but implementation can be daunting.

Computer vision environments necessitate real-time, actionable insights to create value for an organization. This low latency requirement of CV makes edge computing the obvious deployment model. CV at the edge simplifies data use and enables easier data analysis. Previously, CV uses merely included monitoring platforms and data repositories, but there is increasing use of CV as an alerting platform and for generating analytics and data insights.

> "Computer vision providers should pay attention to the benefits of edge architectures. By 2025, Gartner expects CV implementations leveraging edge architectures to increase to 60%, up from 20% in 2022. Based on current trends and projections, CV will grow as a popular application for edge deployments."

Danielle Casey, Gartner

Emerging Technologies: Computer Vision Is Advancing to Be Smarter, More Actionable and on the Edge

THE CASE FOR RUNNING CV AT THE EDGE, CLOSE TO THE CAPTURE POINT

Data Explosion. Computer vision generates massive amounts of data, which has value only when it can be properly collected and analyzed. But bandwidth isn't free, and transferring all that data to the cloud for processing is both impractical and cost-prohibitive. Edge computing allows all this rich data to be collected and processed locally.

Resiliency. Reliable connectivity is key when applications are running from a centralized location. Whether it's a complete outage, occasional drop or simply high error rates, any interruption is bound to affect the availability and performance of applications relying on that connection. Running applications locally means they can continue to operate as expected, even without a connection to the cloud or data center.

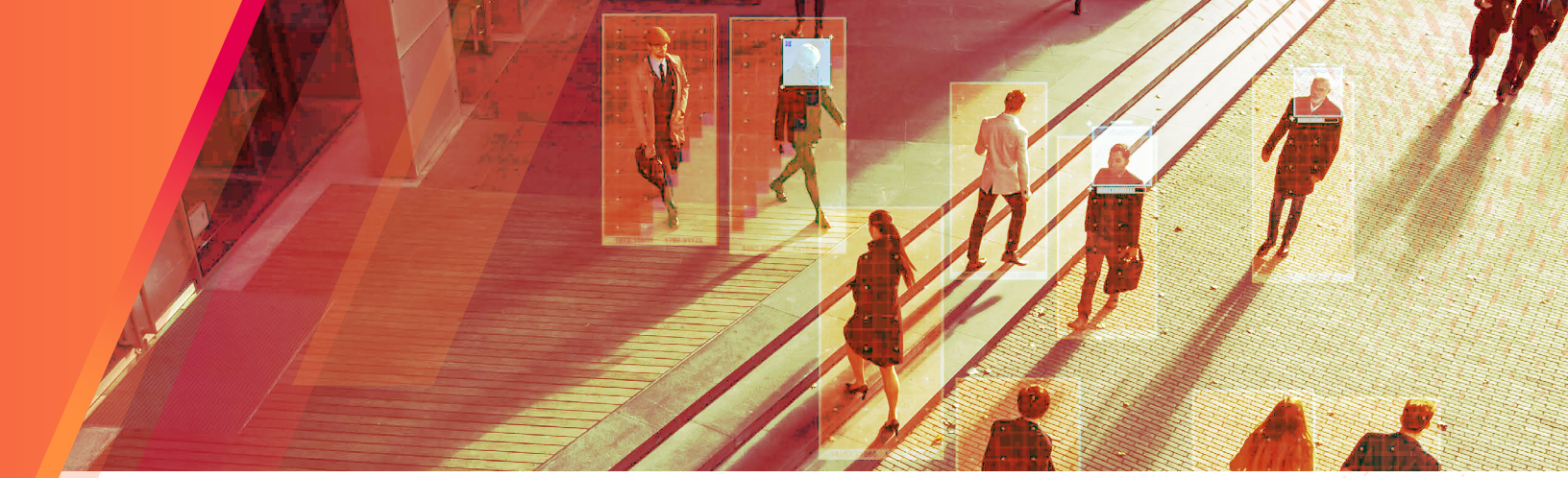
Latency. Information takes time to travel across a network. The longer it takes, the more it impacts end-to-end processing times. However, the more an application experience benefits from a real-time response, the more important it is to remove distance as a factor. Edge computing brings applications closer to where they are used, reducing lag time and improving efficiency.

Regulatory Compliance. Complying with data security and privacy regulations for images is a serious business. The risk of interception and potential for regulatory non-compliance increases every time data is moved. By definition, the cloud is a fuzzy place, making it difficult to know exactly where data is and where it has been. The more data can be collected and processed on-site, the simpler maintaining compliance becomes.

INDUSTRY APPLICATIONS

CV and graphics process unit (GPU) requirements in your edge environment will vary depending on a multitude of variables and on the industry you operate in.

Healthcare	Manufacturing	Retail	Hospitality	Financial Services
• Research • Patient care • Enhanced diagnostics • Supply chain • Safety and security	• Factory automation • Loss detection • Inventory management • Predictive maintenance • Robotic systems • Safety and security	• Facial recognition • Augmented reality • Smart assistants • Smart inventory • Loss detection • Analyzing customer traffic • Dynamic experience • Improved product placement	• Facial recognition • Augmented reality • Loyalty • Enhanced customer experience • Smart assistants • Analyzing customer traffic • Accurate customer insights	• Risk mitigation • Fraud detection • Facial recognition • Safety and security • Enhanced customer experience



SCALE COMPUTING PLATFORM

CV is new and likely a greenfield deployment for some organizations. When faced with this, infrastructure teams will commonly look to the CV vendor for recommendations on which hardware to select, which leads them down the path of a point solution. Instead, consolidate applications and infrastructure on a single, unified platform. Scale Computing Platform, the fully integrated compute, storage, virtualization, and disaster recovery environment simultaneously runs legacy and modern applications on the same infrastructure. There's no need to manage the complexity of separate hardware and software components to support individual point solutions.

Enterprise infrastructure has become volatile for data-intensive industries, whether you are delivering critical patient outcomes, customized and real-time customer experiences, or advancing supply chains for zero-touch delivery and logistics. SC//Platform technologies offer IT teams the ability to deliver high-performance infrastructure and streamlined application experiences for employees and customers across industries. For workloads where CPU alone is not enough, SC//Platform supports several models throughout the product family (including the HE100 Series!) with both integrated and discrete GPU options. These resources can be provided directly to a single workload with pass-through or shared across multiple workloads with virtual GPU depending on the needs of the environment.

Implementing a strong CV solution is a critical combination of hardware and software. For more information, contact your Scale Computing partner or account manager.

Corporate Headquarters
525 S. Meridian Street - 3E
Indianapolis, IN 46225
P. +1 317-856-9959
scalecomputing.com

EMEA B.V.
Europalaan 28-D
5232BC Den Bosch
The Netherlands
+1 877-722-5359

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