

Automating the Measurement of Traffic Volume Data with Intelligence Design IDEA counter

The IDEA counter solution, powered by Intel technology, enables organizations to accurately measure the number of people and objects passing through specified locations in real-time - helping foster insights and drive actionable outcomes.



About Intelligence Design

Intelligence Design helps customers solve industry-specific problems by making full use of deep learning-based image recognition and analysis technologies, as well as knowledge related IOT terminals, both inside and outside the company. Their goal is to provide businesses with a solution that can combine existing mechanisms and artificial intelligence to help customers extract data insights automatically and cost-effectively.

Automating Traffic Volume Measurement – Why Does it Matter?

Historically, accurately identifying and measuring the quantity of objects and people passing through specific targeted areas, whether at transportation hubs, street intersections, retail spaces, construction sites, or other sites, has posed a significant challenge. One of the leading reasons is that manual data processing leads to costly, error-prone analysis, underutilized labor, and underdeveloped insights due to the lack of sufficient data to identify traffic volume trends accurately and effectively.

So why do organizations continue to try to improve their traffic volume measuring tactics despite these challenges? A primary reason is that creating safe and secure spaces is a critical priority for organizations and they are continuously aiming to develop even safer and more secure environments. Some of the best ways organizations can do so is by increasing data collection accuracy and backing survey findings with extensive data to validate insights. Thus, better informing businesses of actionable implementation methods to improve processes and on-premises protection over assets, animals, and people.

Today, automated image recognition technology enables organizations to capture all relevant data consistently and accurately, enabling safety and security assurance and data-driven business decisions that can drive increased cost savings. With the identification of traffic volumes and trends, organizations can better understand ways to safeguard individuals from potential threats and mitigate unwanted disruptions, improve operational productivity, and boost customer and employee morale by removing tedious repetitive tasks.

Organizations are increasingly demanding solutions that enable them to capture the benefits from this technology. Market analysis shows that the global people counting system market size is growing rapidly, expecting to reach \$1.7 billion USD by 2027, at a market growth of 10.5% CAGR¹. As organizations seek faster and more reliable data survey insights, Intelligence Design's IDEA counter can help by offering the tools organizations need to monitor their environmental conditions with real-time feedback of how, where, and when objects or people are interacting within their respective environments.

IDEA counter – Helping Businesses Improve Business Decisions and Protect Assets and People On-Premise

IDEA counter is a traffic survey service that utilizes image recognition technology, an AI platform, and edge computing technology to automatically survey traffic flows. The solution aims to help businesses achieve automatic traffic insights accurately and in real-time by utilizing measurement capabilities such as people counting, demographic and behavior analysis, vehicle detection, and vehicle model recognition.

The solution can utilize existing camera infrastructure, eliminating the need to install additional cameras and offering customers a cost-effective and scalable solution.

In addition, for organizations that require new hardware or want insights from additional locations, Intelligence Design can provide their IDEA Counter Edge AI cameras to help organizations obtain camera feed data at the edge at any desired location.

“Since the traffic volume per minute can be measured continuously for 24 hours by direction of travel and by gender, trends such as the large number of commuters on weekdays could be identified.”
– Research facility

Once installed, the solution performs object and people recognition with computer generated technology to annotate data with a high-level of accuracy, utilizing counting knowledge in the most densely populated areas in Japan and uniquely trained models to help ensure there is no loss of accuracy. The acquired data is aggregated to provide automatic real-time analytics from traffic volume data, enabling businesses to visualize trends and garner insights that can help drive better business decisions. The technology has tremendous potential to generate value to a variety of verticals including Government, Transportation, Smart Cities, and Retail. In addition, the solution incorporates an algorithm that does not store personal information, such as facial images, to protect customer privacy and ensure customer data protection.



How IDEA counter Works

Customer implementation begins by installing the IDEA counter Edge AI box, powered by Intel® Processors, and connecting the box to existing cameras. The Edge AI Box may include Intel® Atom® or Core™ Processors, in addition to Intel® Iris® Xe Graphics, to provide customers flexibility for price, power, and performance requirements to meet their specific needs

Once that connection is made, camera feed is acquired, processed, and converted into data through the IDEA counter's pre-trained AI models, optimized by the Intel® Distribution of OpenVINO™ Toolkit.

The processed data is then sent to Intelligence Design's IDEA platform at the cloud for automatic visualization of traffic volume data on a dashboard. This provides end users with easily understandable data analytics that can help them make better decisions based on traffic and behavioral trends and insights to improve safety and security within their environments and optimize operations.

The IDEA platform can also perform other functions such as data multiplication, data file download, and system integration, making it simple for customers to utilize existing analysis tools and retrieve historical data with an easy-to-process CSV format.

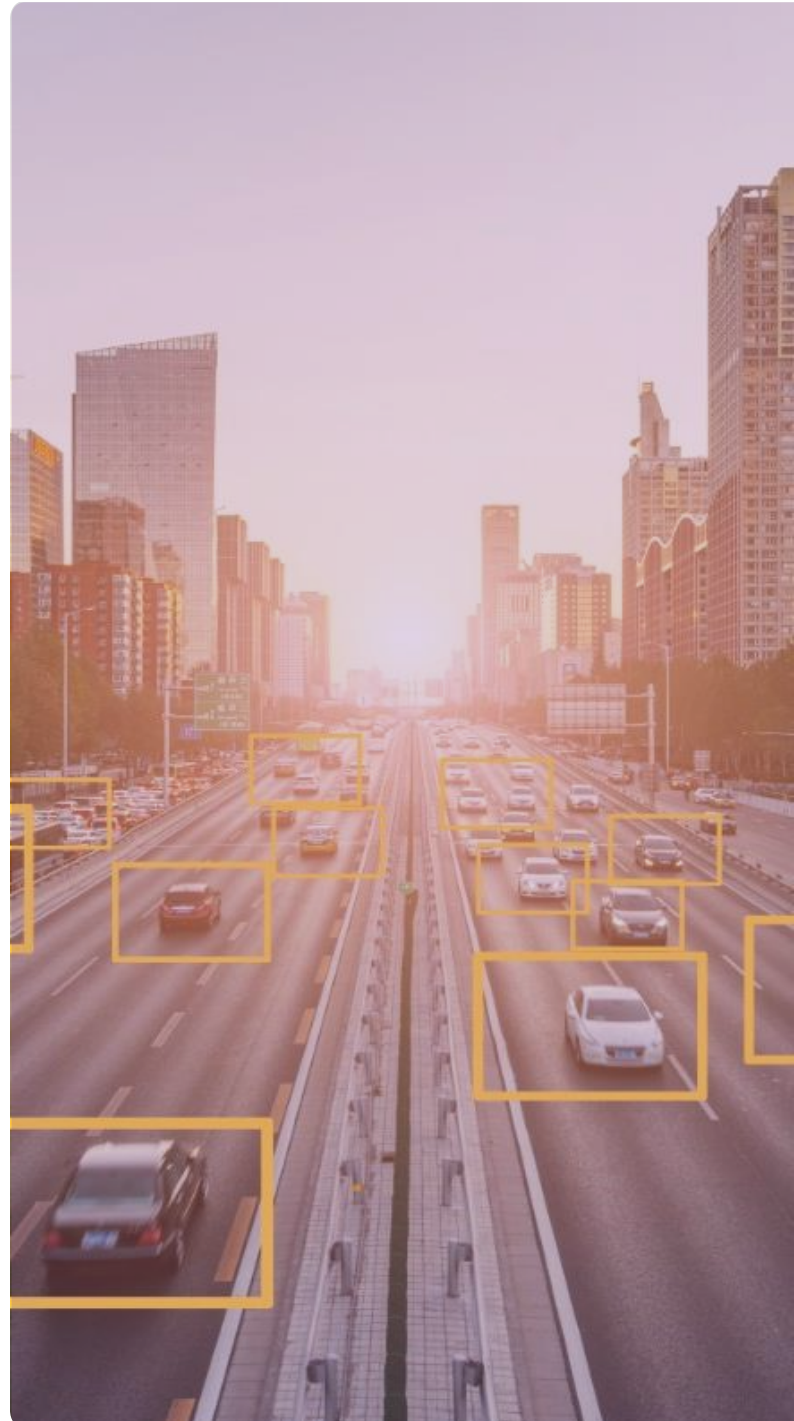
Intel Solution Components

Intel® Distribution of OpenVINO™ Toolkit: The Open Visual Inference and Neural Network Optimization Toolkit enables developers to build and optimize AI-based computer vision models on Intel® hardware and makes it simple to adopt and maintain code. Developers can take advantage of existing Intel® processor architecture to quickly build, optimize, and scale deep learning and visual inference applications.

Intel® Atom® Processors: Powerful CPUs designed to provide high processing throughput for mobile and IoT devices as high-density, low-energy data center applications.

Intel® Core™ Processors: Intel's highest-performance CPUs for laptops and desktops, delivering advanced responsiveness, connectivity, and graphics performance.

Intel® Iris® Xe Graphics: First dedicated GPU Add-in Card for desktop PCs based on Xe architecture with HD video capabilities for work, home, and remote learning.



Key End Customer Benefits

Develop a Safer and More Secure Environment

With the ability to automatically monitor trafficked areas 24/7, end users improve the accuracy and reliability of their survey results to ensure assets and people are protected within their environments. With various object detection applications available, such as fall detections, trespass detection, and graffiti detection, customers can quickly decide on affirmative counteractions to mitigate on-site damage to assets or regulatory violations that threaten safety.

Reduce Costs through Automation of Operations

IDEA counter helps businesses reduce costs by eliminating the need to manually provision survey data. With automated monitoring and measurement processes, valuable data can be extracted in real-time and aggregated over a long period of time to understand trends, which has been historically too costly and labor intensive. Additionally, IDEA counter reduces communication and inference costs by processing data at the edge. AI image analysis also can be performed without installing new cameras, offering a cost-effective and diversified use of assets. A single camera can be used for both security monitoring purposes and traffic volume investigation.

Optimize Operational Processes

The automation of traffic surveying also informs businesses of traffic flow trends through visually informative data insights. Some trends might include travel routes, inflows and outflows of customers, and more. These traffic flow trends can help businesses understand what new measures are necessary to implement to attract more customers, increase sales, and streamline operations.

Key Capabilities



Measurement of Dwell Time



Activity Route Identification



Object and People Counting



Gender and Age Estimation



Vehicle Traffic Volume Measurement



Intrusion Detection



Entry/Exit Count



Direction of Travel Identification



Restricted Area Entry Detection



Falling Object Detection



Trespass Detection



Illegal Dumping Detection



Graffiti Detection



Traffic Congestion Detection

Example Industry Applications



Government

Detect vehicle traffic volume and vehicle classification at government-owned entities and in smart cities. The acquired data can be used to help notify governmental officials of vehicles entering high-security restricted areas, garages, or municipality lots to implement new measures to enhance on-site security and citizen safety.

Transportation

- Detect the number of passengers boarding stations and disembarking to help understand boarding and disembarking routes. The acquired data can be used to review operation schedules and optimize operation route planning.
- Detect objects, birds, or animals that have fallen on to railway platforms so that they can be reported to the conductor or station staff and inform the necessary implementation of safety protocols or physical barriers on-site.



Construction

Detect the number of visitors, and by attribute (gender and age) entering the construction facility to help understand entry/exit routes. The acquired data can be used to help construction officials securely optimize facility management.

Solution Summary

With IDEA counter, organizations can significantly reduce costs and increase accuracy in traffic measurement utilizing AI image analysis. Ultimately, this data can help inform users on ways to better strengthen on-premises safety measures and optimize processes to promote future business growth and enhance customer experiences.

Learn More

- [Intelligence Design Website](#)
- [IDEA counter Product Page](#)
- [Intel® Core™ Processor Family Product Page](#)
- [Intel® Distribution of OpenVINO™ Toolkit Product Page](#)
- [Intel® Iris® Xe Graphics Product Page](#)
- [Intel® Atom® Processors Product Page](#)



1. <https://www.kbvresearch.com/people-counting-system-market/>, 2021–2027, *kbv Research*, October 2021

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