

Outdu

Superhuman Vision, Split-second Action

Multi sensor Gen & Edge AI

Implementing AI for the Physical World is Challenging

Enterprises need a comprehensive approach to effectively leverage AI while addressing the challenges of operations in real physical world

Problem with Current Solutions

Procuring and integrating diverse hardware, software, and AI models from multiple vendors is complex, hindering rapid scaling and value extraction from AI initiatives.

Deployment Complexity

Solutions must be tailored to diverse and dispersed locations with varying requirements, including lighting conditions, coverage, distance, and deployment types (mobile vs. static, indoor vs. outdoor).

Rich Data Capture

Reliable inferences require advanced data capture systems, such as multi-spectral sensors and sensor fusion.

Actionable Interfaces

Inferences must trigger actions across local devices to assist operators, staff, and enhance automation.

Our Solution

Comprehensive AI Platform for the Physical World

Designed for harsh unconstrained environment

Our deployments tackle challenges such as poor lighting, glares, fog, vibrations, accelerated motion, and unpredictable signal, network, and power outages.

Tight Coupling of Sensors, Compute, Software and AI

All solution components, from hardware to AI, are designed for seamless integration, simplifying deployment and operations. Components like lenses, illuminators, compute units, and AI models can be easily swapped for optimal deployment at each location.

Inference Pipeline and Real Time Response

We have developed a robust architecture for fusing sensor inputs, providing a richer understanding of the physical world. Our inference pipeline ensures effective pre- and post-processing for high-quality, real-time analytics with optimized AI models.

Natural Language Interface for Easy Usage

We transform the physical world (people, faces, vehicles, objects) into digital data, seamlessly integrated with other enterprise sources, accessible through a GenAI-based natural language interface for intuitive data consumption.

Flexible, Adaptable, Headroom to Grow

Our software-driven, modular architecture supports future changes seamlessly. Integration with local actuators and hardware enables action triggering for enhanced assistance and automation.

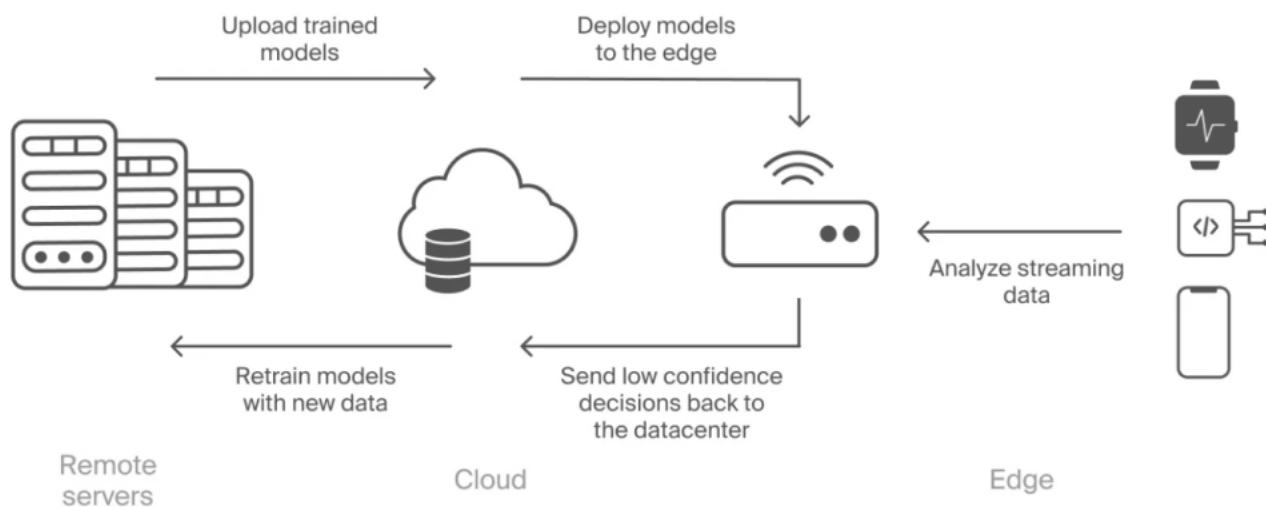
Harnessing the power of **Edge & Gen AI**

Edge & Gen AI

Our solution combines the power of two powerful technologies - EdgeAI generates data from real world and helps ground GenAI to generate more relevant and useful results for users.

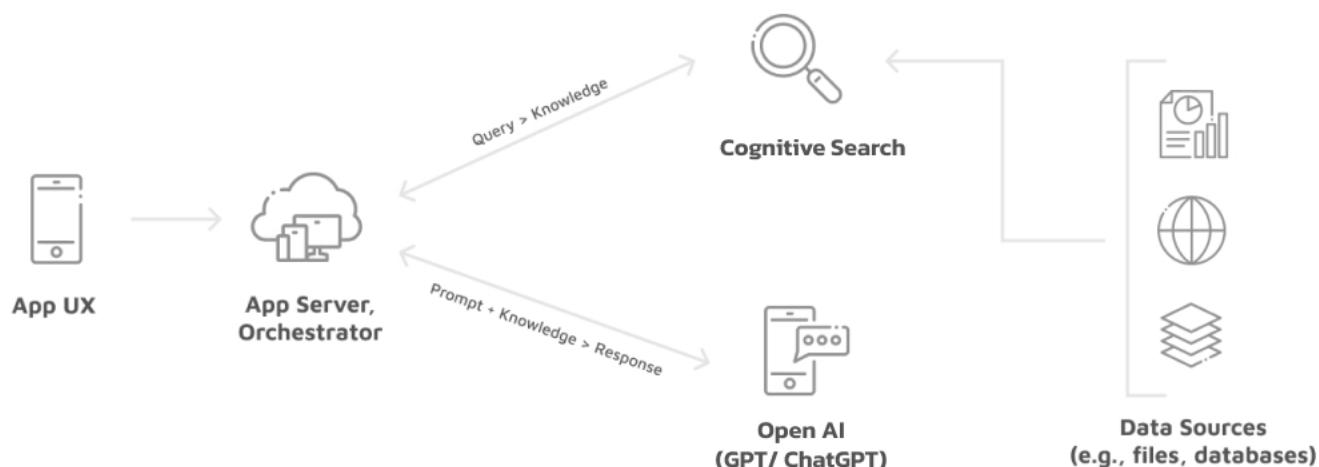
EdgeAI

To understand the physical world, analyze it in real time, generate digitized data and drive actions



GenAI

To provide a more natural and intuitive user interface, to extract knowledge from diverse datasets - structured and unstructured and correlate them



Solution Architecture

Edge Device

On Prem / Cloud Server

Sensors

- Video sensors: 2MP to 8MP resolution
- Multiple field-of-view lenses for short to long-range viewing
- Rolling/global shutter for image stability
- IMU for image stabilization
- MM Radar: 300ft situational awareness
- Thermal sensor for multi-km detection
- GPS + IMU for location tracking
- Sensor fusion output for synchronized analysis

Illumination

- Ultra long range IR LED
- Visible LED, as needed

Compute

- Quad core processor CPU+GPU
- 8GB RAM
- 256GB Storage
- External PCIE Neural Accelerator

Edge AI

- Edge Optimized AI algorithms
- Inference Pipeline
- to manage pre and post processing operations

Comms

- GSM
- Wifi
- Ethernet
- LORA

Resilience

- MCU Power Distribution Unit
- Battery backup
- IP67/68 casing
- Dedicated cooling and ventilation systems
- Redundant sensor and compute supported

Others

- Audio MIC
- High db speakers
- Flashing LED lights
- NO/ NC interface to external actuators

Enterprise Software

- SW Orchestrator
- Device Management
- License Management
- Identity & Access Management
- Digital Asset Management
- Network and Comms Management
- Update and Patch Management
- Reference data Management
- Training Data Lifecycle management - data capture, enhancement,
- synthetic data, annotation & labelling
- Dev Ops Manager
- Alerts and Live Consoles
- Mobile based apps

Gen AI

- On premise LLM
- RAG
- Vector database
- Code generation Agent
- Natural language based user interface



Sensors

Illumination, WIFI, GPS, IMU Battery Backup



AI Devices

Local Processing, Orchestration SW & Interfaces



AI Models

Optimised for edge Inference Pipeline Device Management SW

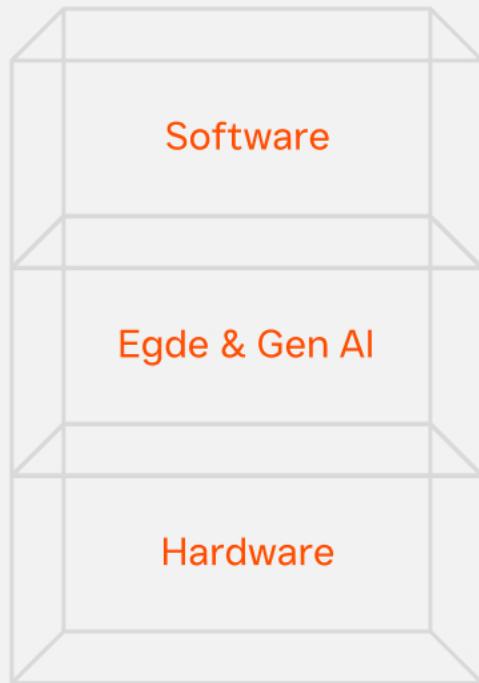


Insight Platforms

Cloud based Integration APIs, Device Management, Natural Language based Query for Insights

Our Approach

Lego block approach for Hardware & Software defined



Our approach allow us to develop a wide range of products to meet any need

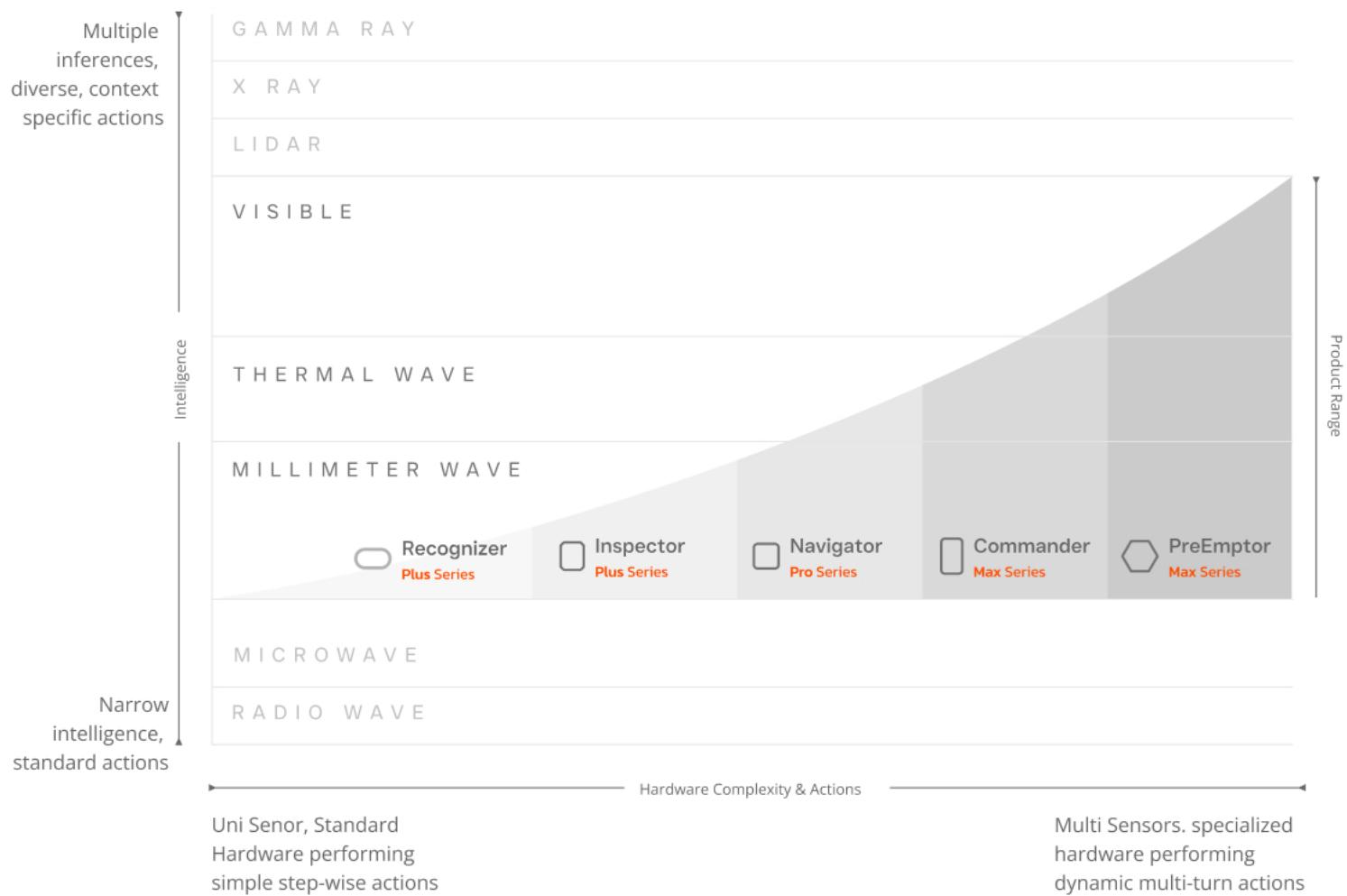
- 1.** Optimized Software running on standard hardware offering limited actions
- 2.** Crafted Hardware with fusion software delivering Intelligent Actions
- 3.** Co-crafted Hardware running fusion software and performing generative actions

Use cases across a wide-ranging customer segments

Supported by three core products and multiple AI+SW defined solutions

Our Product Range

Our Integrated approach brings us with three core products



PLUS Series

Offering Standard Intelligence processing static/ slow-moving objects in controlled environments.



CUSTOMERS

Industrial Inspection of NDT Artifacts, X Rays & Ultrasound

Customer Engagement & Research

PRO Series

Broader intelligence - processing low volume, high value objects in controlled environments



CUSTOMERS

Packaging, Storage, Inventory Monitoring

Retail Store Operations Optimization

Advance Driver Assistance System

MAX Series

Max intelligence processing high volume, high value objects in real world environments

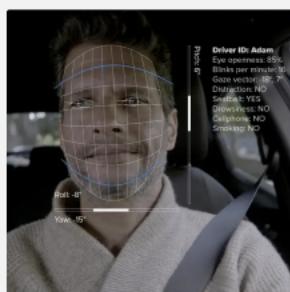


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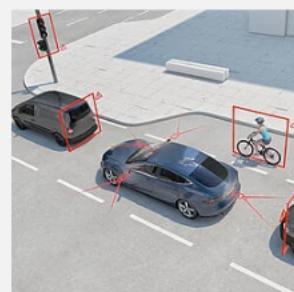
Intelligent traffic management System

Advance Threat Prevention System

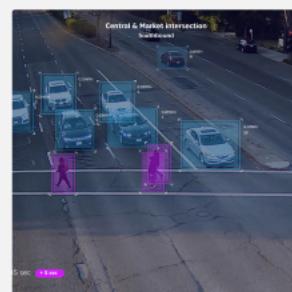
SOLUTIONS DEPLOYED

PRO Series**Driver Fatigue Monitoring**

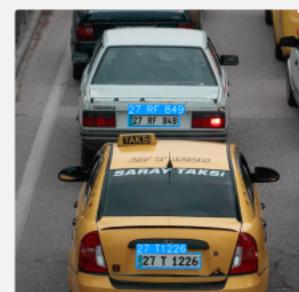
Monitoring driver behavior in real time & generating audio & visual alerts

**Driver Assistance**

Object detection & classification

**Driver Assistance:****Radar Fusion**

AI based Radar Fusion

**License Plate Recognition**

Automatic Reading of License & Container Numbers

**Audience Metrics**

Gaze tracking
demographics & emotions

**Operations Compliance**

Access to sensitive areas

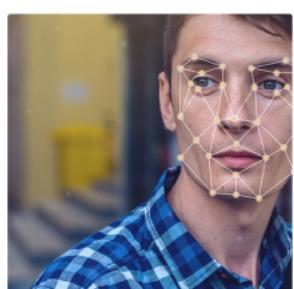
**Expo Metrics**

Visitor Counts & Gaze Tracking

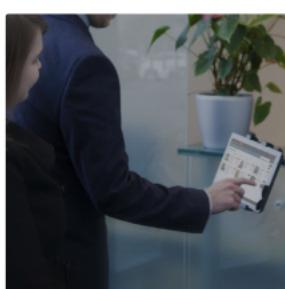
SOLUTIONS DEPLOYED

PLUS Series**Insights Platform**

Monitoring driver behavior in real time & generating audio & visual alerts

**Facial Recognition**

Access Control based on FR Technology

**Visitor Tracking**

Track public & private places for visitors

**Quality Inspection**

Aid Manufacturing with Inspecting for defects

**Leakage Prevention**

Manage sensitive hardware operations

**Retail Checkouts & Contactless kiosks**

Customer service through audio command & gestures

Outdu

Products

 <p>480 gms 130mm x 42mm x 140mm 7W, 5V, 1.4A</p> <p>Certifications IP, IEC, BSI, IK, FCC, CE, UL, EN</p>	<p>Driver Fatigue Management System Recognizer</p> <p>Fatigue is a major cause of road accidents, especially among long-haul drivers. Experienced drivers may take breaks, but accidents still occur, particularly among new or pressured drivers.</p> <table border="1"> <thead> <tr> <th colspan="4">Features</th> </tr> </thead> <tbody> <tr> <td></td><td></td><td></td><td></td></tr> <tr> <td>Purpose-built, integrated, and software-defined</td><td>Sensor fusion with GPS and IMU</td><td>Recognises fatigue signs Yawning, drowsiness, looking around and distractions</td><td>Ensures compliance (seat belt use, authorized driver, geo-fencing)</td></tr> </tbody> </table>	Features								Purpose-built, integrated, and software-defined	Sensor fusion with GPS and IMU	Recognises fatigue signs Yawning, drowsiness, looking around and distractions	Ensures compliance (seat belt use, authorized driver, geo-fencing)
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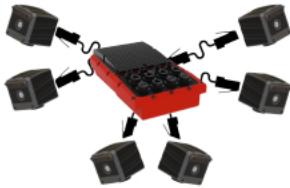
 Hardware Specs	
8MP CMOS Sensor	Operates in IR mode (Visible cut)
IP Camera • FHD at 60 fps/30 fps	HDR/WDR • AE/AF/AWB
IMU for image stabilisation	In-built Pulsed IR Illuminator
Synchronised VIS Cut Filters	DC12V Power in RJ45 Out
64 GB local storage (expandable)	Designed to support multiple Ai models
Inbuilt compute with option for M2	PCIe support for neural net accelerator of 4/8 TOPS
IP67 rated for harsh conditions	Industry standard interface
Integrated 4G / 5G modem	Integrated with GPS
Firmware/Middleware integrated	Edge AI module for close loop control and improved accuracy

 Software Specs	
Inference & Interpretation	
Pipeline • Fusion • Domain correction	
Interaction & Action	
Operator • Device • Triggered standard • Triggered SLM Gen A	
Information & Ingestion	
Live Streaming • Full Recording • Synopsis • Side-loading • Uploading • Mesh-loading	
Insights & Improvement	
Dashboard • Ai led descriptors • GenAI driven search	
Software	
C++ with libraries • Java with frameworks • Hardened Linux	

 <p>350 gms 70mm x 102mm x 112mm 40W, 12V, 3.3A</p> <p>Certifications IP, IEC, BSI, IK, FCC, CE, UL, EN</p>	<p>Detection & Recognition Cameras</p> <h2>Inspector</h2> <p>Enterprises perform numerous operations, from material receipt to product delivery. Our Inspector solutions enable real-time, autonomous monitoring of these activities, allowing enterprises to reduce defects, rework, and leakages, while boosting staff productivity</p> <table border="0" data-bbox="547 511 1572 722"> <thead> <tr> <th data-bbox="547 511 679 542">Features</th><th data-bbox="547 558 850 722"></th><th data-bbox="850 558 1135 722"></th><th data-bbox="1135 558 1572 722"></th></tr> </thead> <tbody> <tr> <td data-bbox="547 558 679 722">  Purpose-built, integrated, and software-defined with sensor fusion </td><td data-bbox="850 558 1135 722">  Edge intelligence ensures performance with unreliable network connections </td><td data-bbox="1135 558 1572 722">  Inbuilt battery backup for continuous operations during power outages </td><td data-bbox="1572 558 1572 722">  Supports multiple lensing options and real-time updates via GPRS/GSM </td></tr> </tbody> </table>	Features				 Purpose-built, integrated, and software-defined with sensor fusion	 Edge intelligence ensures performance with unreliable network connections	 Inbuilt battery backup for continuous operations during power outages	 Supports multiple lensing options and real-time updates via GPRS/GSM
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 <p>Camera</p> <ul style="list-style-type: none"> 300 gms • 40W, 12V, 3.3A 68mm x 78mm x 75mm <p>AI Unit</p> <ul style="list-style-type: none"> 2.76 Kg • 60W, 19V, 3.15A 285mm x 70mm x 160mm <p>Certifications</p> <ul style="list-style-type: none"> IP, IEC, BSI, IK, FCC, CE, UL, EN 	<p>Surround View Cameras</p> <h2>Navigator</h2> <p>Vehicles often face challenging conditions like low visibility and difficult terrain. Drivers must stay aware of their surroundings to avoid accidents and damage. Our surround view solutions enhance visibility with extended-range IR lighting, cameras, and radar, offering a 360-degree view for safer driving.</p> <p>Features</p> <table border="0"> <tbody> <tr> <td></td><td>Purpose-built, integrated, and software-defined</td><td></td><td>Six cameras fused into one rugged AI unit with optimized code</td><td></td><td>Edge intelligence, battery backup, and redundant architecture ensure reliable performance.</td><td></td><td>Innovative 120-degree lens design offers robust, low-maintenance birds-eye view.</td></tr> </tbody> </table>		Purpose-built, integrated, and software-defined		Six cameras fused into one rugged AI unit with optimized code		Edge intelligence, battery backup, and redundant architecture ensure reliable performance.		Innovative 120-degree lens design offers robust, low-maintenance birds-eye view.
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Hardware Specs	
6 x 8MP CMOS Sensor	IP67 Ready Camera
IP Camera • FHD at 60 fps/30 fps	HDR/WDR • AE/AF/AWB
IMU for image stabilisation	In-built Pulsed IR Illuminator
Synchronised VIS Cut Filters	DC18V Power In RJ45 Out
USB3, HDMI, USB2 out	Designed to support multiple Ai models
Inbuilt compute with option for M2	IP Camera with multiple streams
IP67 rated for harsh conditions	Integrated POE switch
Integrated 4G / 5G modem	Octa thread processor • 4GB RAM, 64GB Local Storage

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 <p>1350 gms 100mm x 250mm x 98mm 40W, 12V, 3.3A</p> <p>Certifications IP, IEC, BSI, IK, FCC, CE, UL, EN</p>	<h3>Traffic Camera Commander</h3> <p>Unsafe roads endanger people and goods, especially in poor weather, and lack safety features for vulnerable users. The commander manages traffic by detecting, tracking, and counting vehicles, monitoring speed and direction, and using sensor fusion for alerts.</p> <table border="1"> <thead> <tr> <th colspan="4">Features</th> </tr> </thead> <tbody> <tr> <td></td><td></td><td></td><td></td></tr> <tr> <td>Purpose-built, integrated, and software-defined with optimized code</td><td>Fusion-ready design combining visible camera and RADAR data</td><td>High-quality components showing relative speed, distance, and angle of approach</td><td>Dynamic alerts based on vehicle speed and braking distance</td></tr> </tbody> </table>	Features								Purpose-built, integrated, and software-defined with optimized code	Fusion-ready design combining visible camera and RADAR data	High-quality components showing relative speed, distance, and angle of approach	Dynamic alerts based on vehicle speed and braking distance
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 Hardware Specs	
Multi Sensor Array: Visible + NIR + mm Radar	Dedicated cooling and ventilation systems
External peripherals like speaker and lights used for warning drivers	120 db + multiple speakers for redundancy
RED and BLUE LED lights for visual warning	8MP CMOS Sensor
Inbuilt compute with option for M2	DC12V Power in RJ45 Out
Internal storage (expandable)	HDR/WDR • AE/AF/AWB
Color in day / Mono at night	In-built Pulsed IR Illuminator
IP68 within IP65 works in all harsh environment	Synchronised VIS Cut Filters
Integrated 4G / 5G modem	Custom cooling and lens cleaning technology
Firmware/Middleware integrated	Industry standard interface
IP Camera with multiple streams	FHD at 60 fps/30 fps

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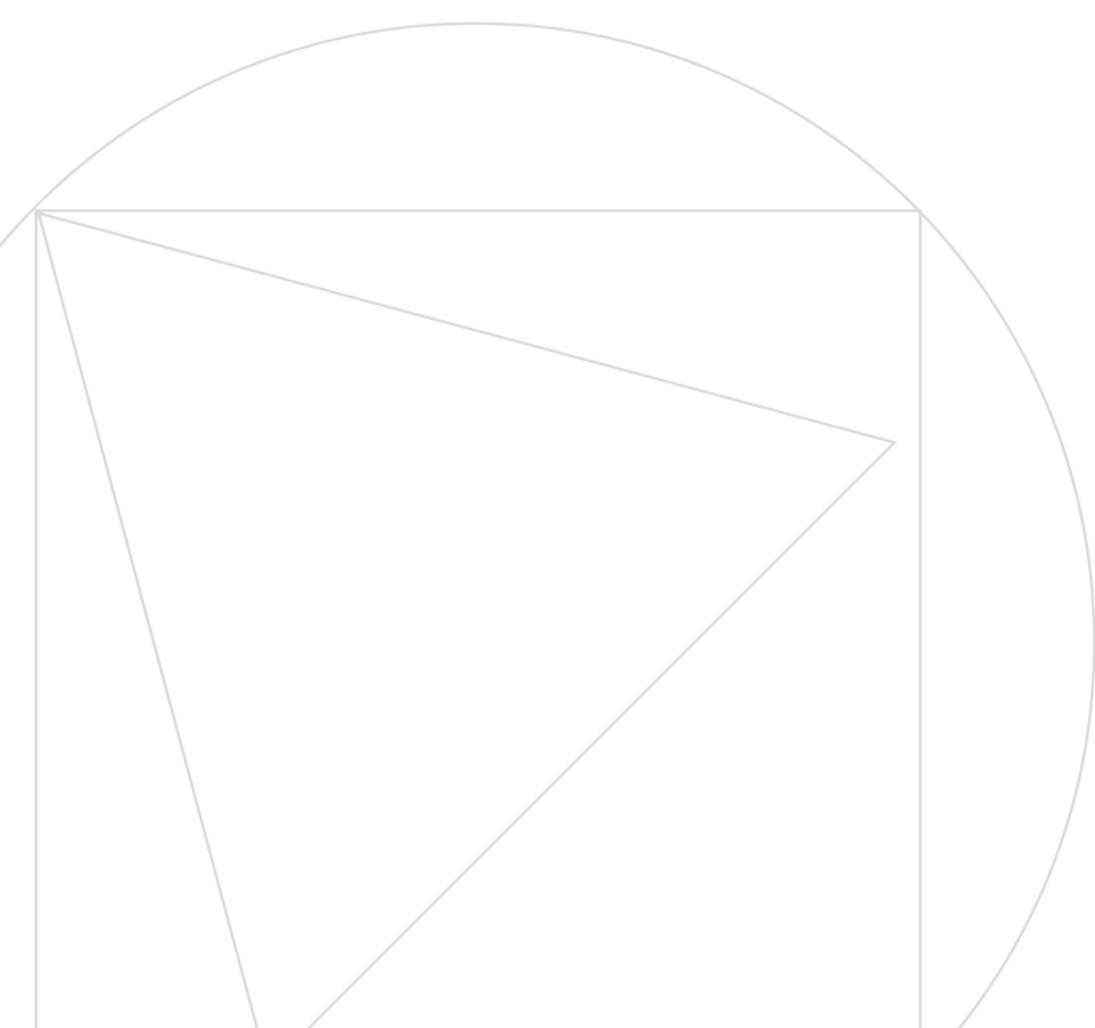
 <p>135 Kg 610mm x 7620mm x 610mm 120W, 24V, 5A</p> <p>Certifications IP, IEC, BSI, IK, FCC, CE</p>	<h3>Pole Camera PreEmptor</h3> <p>Pole cameras enhance perimeter and border security by providing constant, 24/7 monitoring in areas where human vigilance is difficult. They offer real-time data and high-definition footage, helping security personnel make swift, informed decisions to address various threats.</p> <h4>Features</h4> <table> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Detects and identifies threats from 10m to 500m with sensor fusion (visible, thermal, RADAR, GPS, IMU)</td> <td>Innovative tower and camera design enable easy installation and low-maintenance performance.</td> <td>Edge intelligence ensures performance with unreliable network connections.</td> <td>Redundant architecture and inbuilt battery backup provide continuous, reliable operations.</td> </tr> </tbody> </table>					Detects and identifies threats from 10m to 500m with sensor fusion (visible, thermal, RADAR, GPS, IMU)	Innovative tower and camera design enable easy installation and low-maintenance performance.	Edge intelligence ensures performance with unreliable network connections.	Redundant architecture and inbuilt battery backup provide continuous, reliable operations.
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 Hardware Specs	
mm Radar + Thermal	Dedicated cooling and ventilation systems
All in one package for harsh environment deployment	8 x 8MP CMOS Sensor
Inbuilt compute with option for M2	DC12V Power in RJ45 Out
Internal storage (expandable)	HDR/WDR • AE/AF/AWB
Color in day / Mono at night	In-built Pulsed IR Illuminator
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Outdu

Company Profile



About

Delivering autonomous solutions with superhuman vision & split-second action

with more than a decade of expertise...

2010 - 2015

Digital Video Processing & Management

Developed digital video logistics, storage, play listing & display platform for advertising in cinemas and signages.

Acquired customers like IBM, TCS, Airtel, Kinetic, Reliance for digital video related software

2016 - 2024

AI Analytics & Autonomous Devices

Pivoted from digital video logistics to digital video analytics as market potential was enormous, demand is agnostic to cyclical variations, and the need is global

Started building Autonomous Vision System hardware to meet the needs of high end vision AI. Extended application to adjacent markets as they are severely under served.

With clients from USA, Japan and India - the company addresses the needs of high end, multispectral, mission critical autonomous vision requirements

C U S T O M E R S



Our Leadership

GS Sridhar

CEO

NIT, IIM-A
35 years in High Tech Industry
Expertise in Analytics, Ai,
Vision Processing Visiting
Faculty at IIIT-B

Abhay Kelkar

EVP

IIT-B, IIM-A
35 years in Tech Consulting Industry
Global delivery leadership role at
Accenture Extensive experience in
system architecture and delivery

Ajay V

EVP

IIIT-B
20 years in Tech Industry
delivering high quality
products and solutions to
global customers

Sanjeev Keskar

ADVISOR

30+ years in Electronics and SemiCon
Industry Country head for Arrow
Electronics Deep expertise in
electronics supply chain and
procurement

Our Partners

Technology Partners

Our Products are driven by the best technology available in the Industry

accenture

SONY

VATICS
睿緻科技

kinara

RENESAS

intel

**AiFA
LABS**

onsemi



Manufacturing

**Our Partners
delivering state of the
art manufacturing**

In the news

Recognized by Industry, Clients & Partners



Intel powered Outdu delivering Audio & Video Analytics for contact less operations

Powered by Intel's processors, Outdu's video & audio analytics solutions transforms self-help kiosks & touch-screen displays into contactless devices

[Solution Brief](#)



IESA (India Electronics & Semi-conductor Association) Annual Techno Vision Award

2022



"Outdu has delivered an innovative AI based solution that helps track driver fatigue in our large mining vehicles"

We are collaborating BEML to expand the product usage in Indian markets and to develop further products that will deliver 360 degree tracking

Testimonial from BEML, 2022