



GBS

singapore

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ACTIVE SOLUTION

OUR FINDINGS

FACTS & FIGURES

80%

Car crashes involve driver intention within 3 secs before the event

60%

Road fatalities due to unintended lane departures.

94%

Accident caused by driver's error.

FACTS & FIGURES

*With ADAS, we
found that:*

43%

Reduce in of lane
departure warnings

57%

Reduction of foreword
collision warning

71%

Reduction in headway
monitoring warnings

DIRECT & INDIRECT COST

Direct Costs

- Property damage
- Mobile vehicle repair & replacement
- Healthcare costs
- Municipality/utility fees for damage to public property
- Insurance liability claims and settlements
- Increase in insurance premiums

Indirect Costs

- Time spent by supervisor/manager to coordinate and make special arrangements
- Overtime pay (cover missing worker's workload)
- Employee replacement
- Failure to meet customer's requirements
- Bad publicity and business loss
- Administrative costs (documentation of injuries, treatment, absences, crash investigation)

DAMAGE COSTS

US\$518B

Global damage costs from road accidents

US\$32000

Average cost per accident

US\$50-60M

Costs due to harmful driving

US\$32000

Additional cost per vehicle
Insurance premium fleet owners
are paying due to history of
accidents

5 AIMS OF AUTOMOTIVE VISION DRIVE SYSTEM

1.

Increase driver's awareness to
road situations

2.

Reduce cost of ownership

3.

Increase cost efficiency

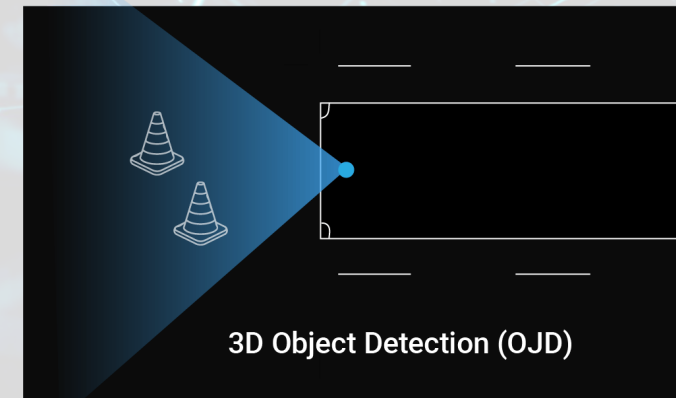
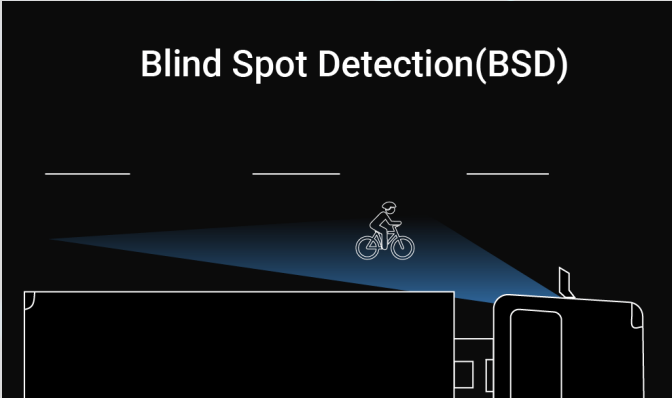
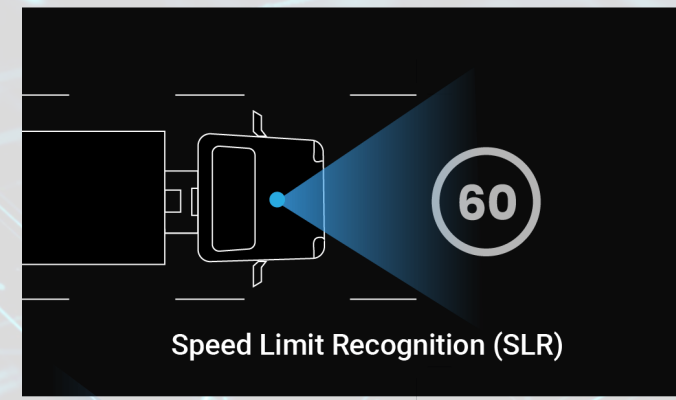
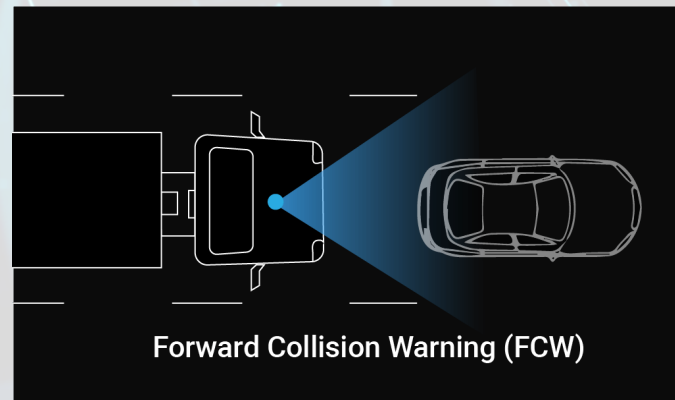
4.

Avoid potentially dangerous situations

5.

Educate drivers on safe driving

6 MAIN FUNCTIONS OF AUTOMOTIVE VISION DRIVE SYSTEM



LAND DEPARTURE WARNING (LDW)

Generally, more than 25% of fatal accidents involve drivers falling asleep at the wheel. 60% of highway fatalities were resulted from unintended lane departures.

Fatigued drivers, travelling at high speeds, are likely to skewer off their lane; resulting in crash fatalities and incurring collateral damage.

Our system accurately identifies the borders of the lane to alert the driver via visual and audio signals when the driver veers of their path without signaling.

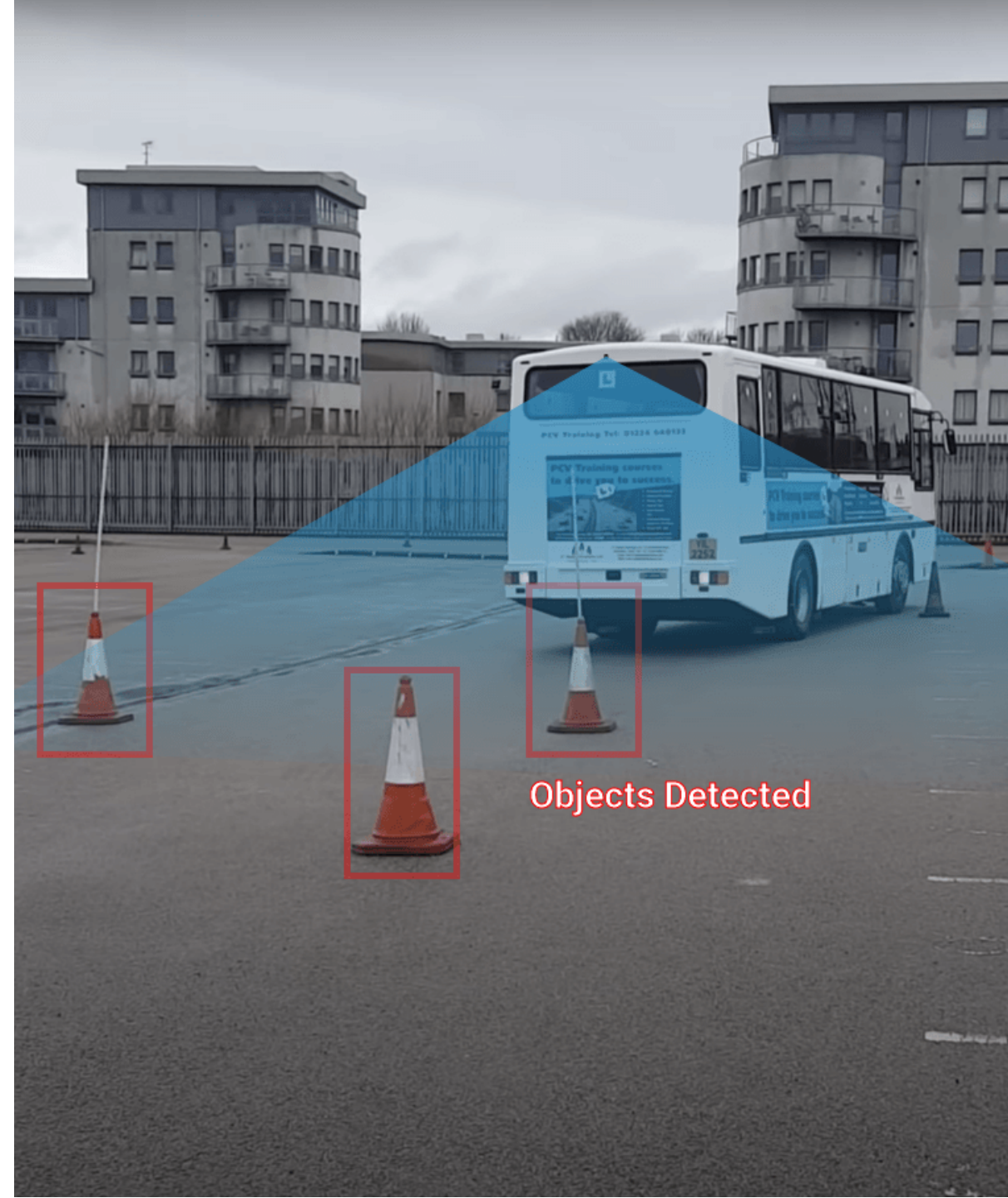


OBJECT DETECTION (OJD)

Trucks, buses and other commercial vehicles are designed with a larger exterior to perform heavy-duty tasks. When reversing, objects/structures (e.g. lamp posts, poles, cones) can be easily overlooked by the driver due to the limited vision. Thus, increasing the likelihood of collision.

Not only can OJD detect objects, it can differentiate between human, fixed structures and stationary objects with precision.

An audio alert is activated whenever the vehicle comes into proximity with stationary objects detected within the camera's field of vision.



SPEED LIMIT RECOGNITION (SLR)

Speeding related violations is the one of the main causes for vehicle collisions, severe injuries and death in the world.

To mitigate speeding related accidents, our system accurately identifies the speed limit in each geographical zone by scanning for the nearest speed limit signage.

When the driver exceeds the speed limit, a visual and audio indicator will prompt him to slow down.



FORWARD COLLISION WARNING (FCW)

Many drivers underestimate the distance and time taken to decelerate to prevent a collision. 80% of rear end crashes can be avoided with a forward collision warning system.

Our system detects an imminent collision by considering the relative speed of the driver's vehicle and that of the vehicle ahead.

It sends a warning alert to the driver up to four seconds before collision; giving the driver enough time to respond and decelerate.

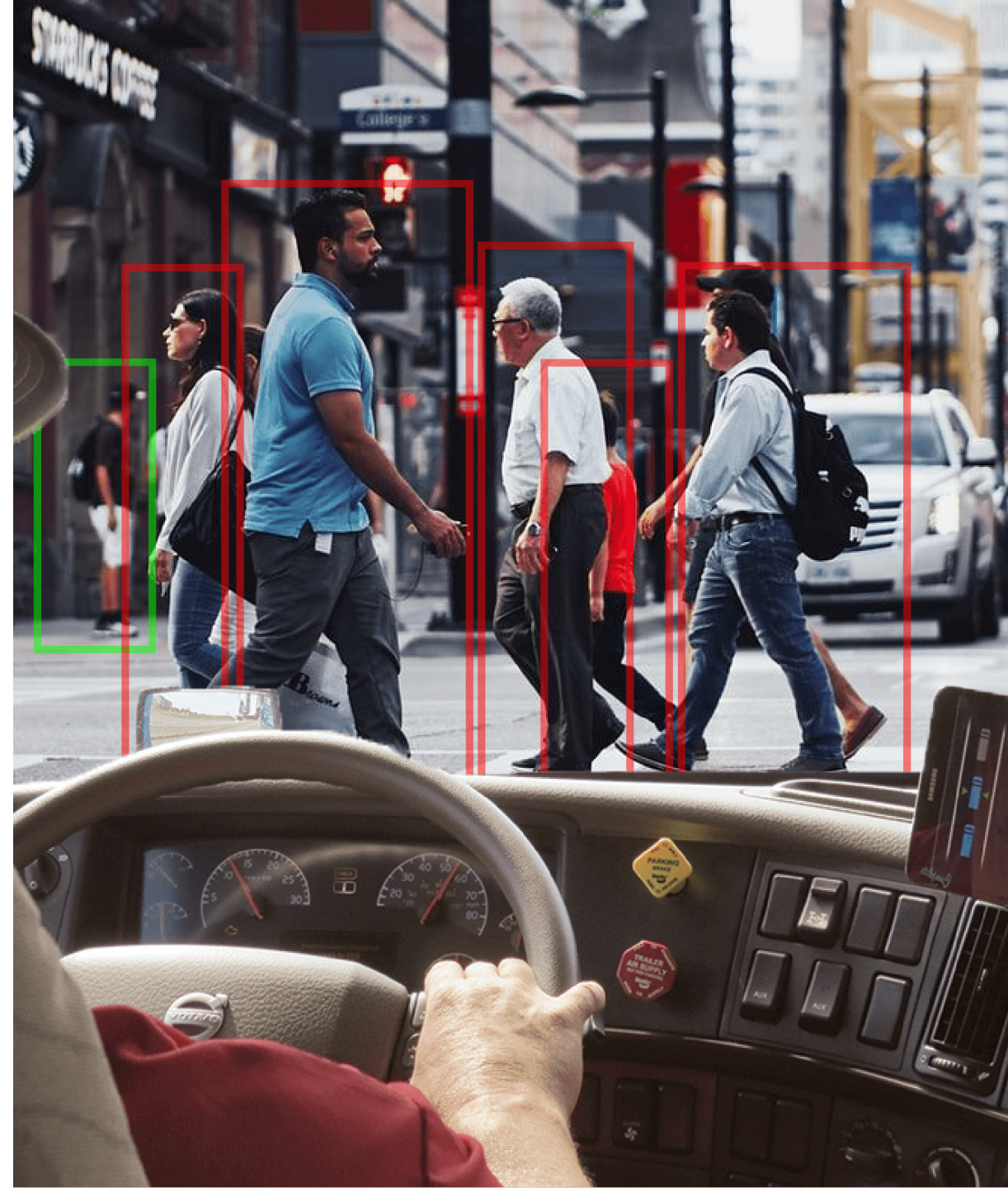


PEDESTRIAN DETECTION WARNING (PCW)

22% of pedestrians account for the road fatalities. For specialty vehicles drivers, their seats are positioned at an elevated height. Alongside a bigger hood, drivers may not see a pedestrian clearly especially in urban cities where these vehicles must maneuver through crowded areas.

Our solution identifies the pedestrians and sends a visual and audio warning to the driver when the pedestrian is less than four seconds away from collision based on the driver's speed.

Another warning will be sounded if the driver does not take corrective action. A critical alert is displayed if a collision is expected within two seconds.



BLIND SPOT DETECTION (BSD)



Blind spots are the most common dangers for drivers when they are reversing, turning or maneuvering. Particularly for heavy vehicles, their sheer size creates larger blind spots that lead to higher chances of collision with cyclists, motorists or pedestrians.

Our solutions resolves the issue by extending the detection range with cameras placed strategically around the vehicle.

A warning alert is sounded when a pedestrian/cyclist is identified within the detection zone. Drivers will be more cautious especially during lane filtering or turning.



AMV 1

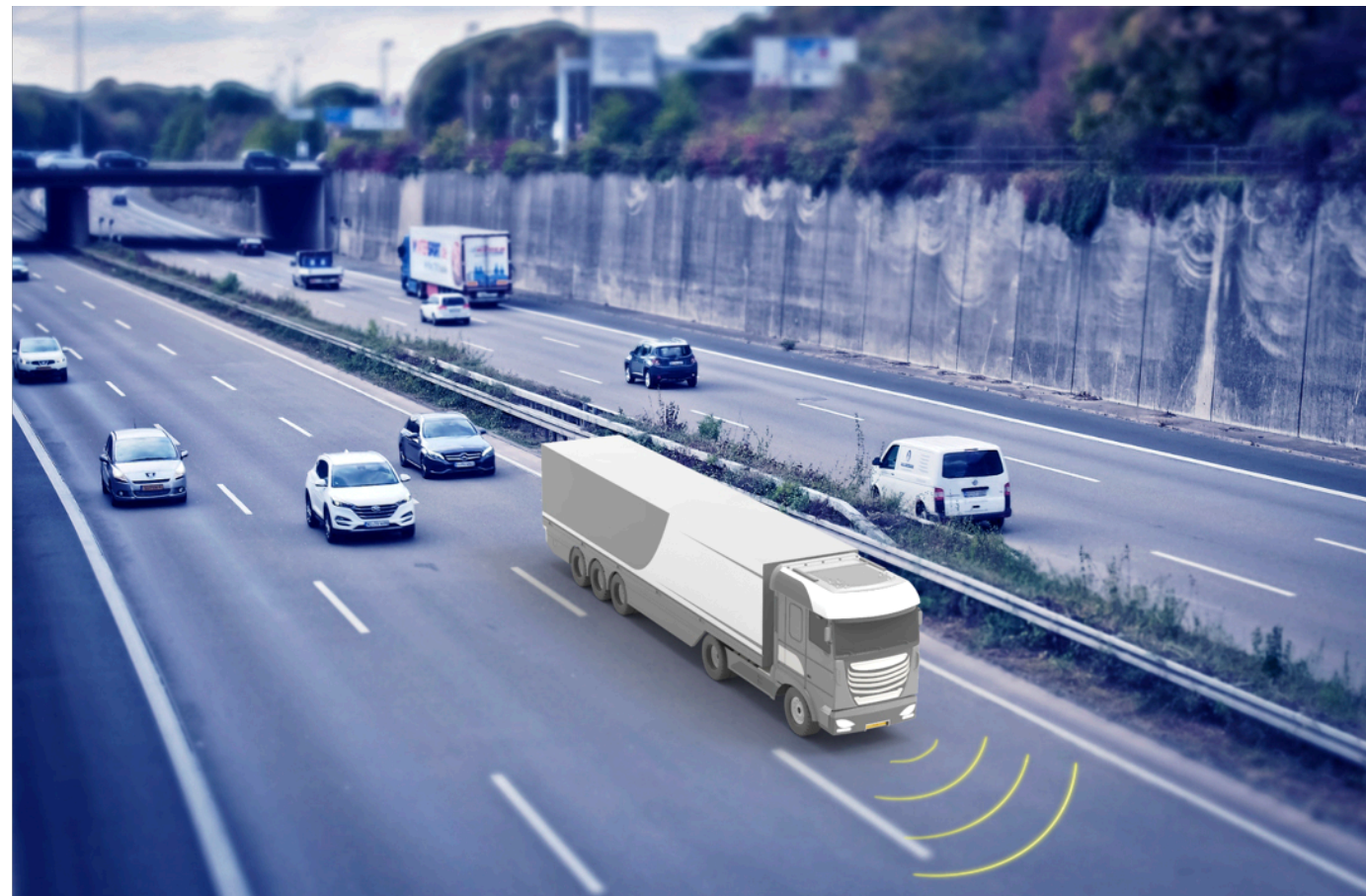
Front

Driving a municipal or commercial vehicle can be tricky in urban environments. Drivers are exposed to situations, such as heavy traffic, narrow roads and cyclists on the road.

When driving, our camera widens the driver's visual scope with a **60 FOV** and detect pedestrians and cyclists up to **70m** from the vehicle. The driver receives the alert when he comes too close to another vehicle, veers off the designated road or exceeds the speed limit.

Upon exceeding the speed limit, AMV 1 automatically records up to 1 min before and after a near collision incident and transmits the feed to the designated server.

It captures clear footage under various weather conditions and perform under vast temperatures from **-20 °C to 70 °C**.



Available Functions:



Applicable Vehicles



Forklift



Bus



Ambulance



Garbage Truck



Container Truck

AMV 2

Front + Rear

Most municipal vehicles lack the necessary coverage for the rear. Drivers only have limited vision when reversing.

Our proprietary AI Vision feature differentiates between pedestrians and objects; and predicts their trajectory course to provide an advance notice up to **4 seconds/15m** before the expected collision.

The rear camera widens the driver's visual scope with a **120 FOV** and alerts him of the pedestrians and objects identified through the graphic display on the monitor. Effectively preventing accidents and saving costs through efficient procedures.

With AMV2, drivers enjoy pre- and post-event recording. In the event of collision, the video feed can be pulled out for insurance and investigation purposes.



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Available Functions (Rear):



Available Functions (Front):



Forklift

Bus

Empty Container
Handler

Ambulance

Garbage Truck

Reach Stacker

Container Truck

Applicable Vehicles

AMV 4

Front + Rear + Side (L&R)

With commercial vehicles, it can be difficult to maneuver through narrow roads and heavy traffic. Despite the use of additional mirrors, drivers may not always have full visibility of the entire vehicle during the journey.

AMV 4 complies with the requirements for municipal transport and goods traffic. The open interface allows for a comprehensive integration and interconnectivity with the installed cameras through the module. Drivers can refer to the feed via the monitor near their seat.

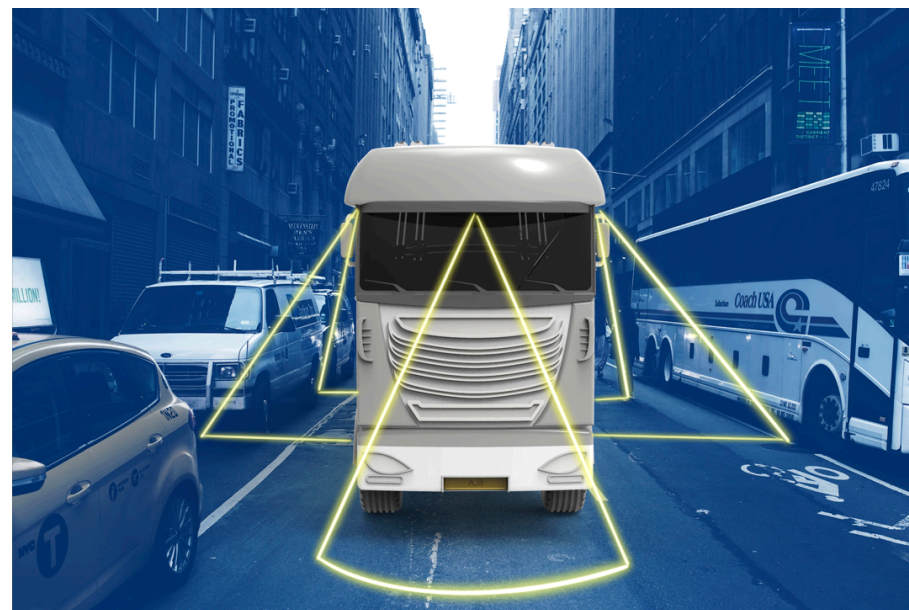
Through our proprietary AI vision feature, our cameras alert the driver of any impending collision or incoming person/obstacles from the vehicle.

With AMV4, drivers receive **60-120 degrees coverage** around the vehicle's rear; giving them sufficient time to respond to oncoming obstacles. Hence, avoiding hazardous situations.

Available Functions:



Applicable Vehicles



Alert ranges from every 3s, 5s & 7s depending on the severity of the potential danger.



Bus



Fire Truck



Reach Stacker



Container Truck

ADDITIONAL FEATURES

Danger Zone

Danger zoning is designed to detect humans within the designated area of the vehicle. When a garbage truck operator accidentally falls into the rear area, our camera will immediately trigger an alert.

The driver then shuts off the compactor and vehicle to rescue his co-worker from impending danger. Thereby, preventing accidents and saving lives.



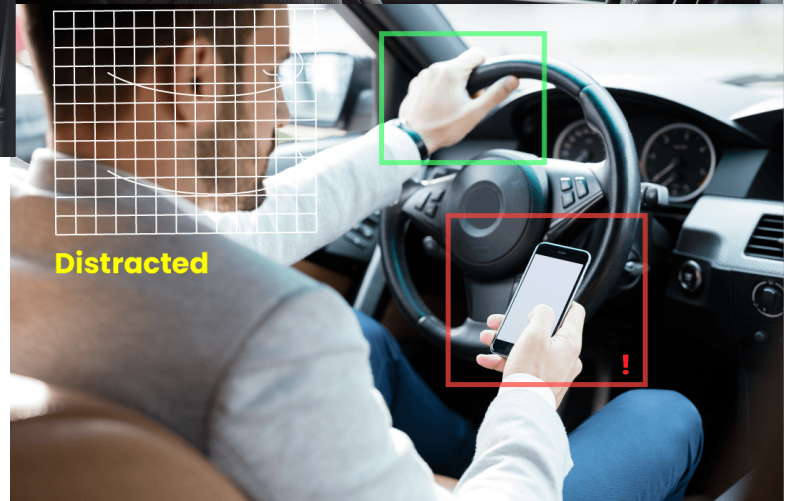
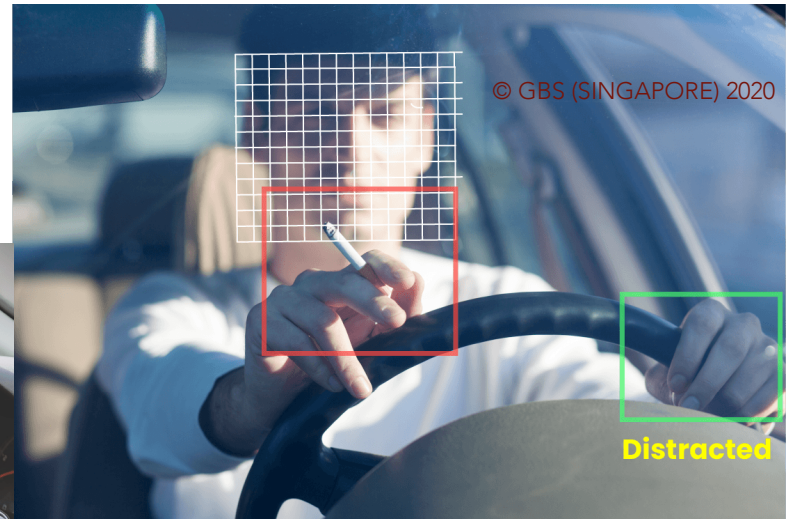
ADDITIONAL FEATURES

Driver Status Monitoring

94% of accidents caused resulted from driver's error. Via the DSM camera, we monitor the driver's driving habits on the road (via actions and facial expressions) and determine if they are safe drivers.

Hazardous actions detectable include yawning & sleeping, distraction, smoking, cellphone usage and other abnormal activities. Upon detecting these actions, an alert is sounded to notify the driver and fleet manager.

Based on the findings, fleet managers can highlight these hazardous habits and aid their drivers in rectifying the issue.



ADDITIONAL DEVICES

In-Vehicles Sensors



Our in-vehicle sensors monitor a variety of in-vehicle condition required for specific goods during transportation.

The real-time findings are uploaded to the fleet management system for further analysis. Fleet owners can track these goods and ensure that they are preserved in optimal condition during the entire shipment process. Hence, reducing likelihood for damage and save costs.

Type of Sensors Available

- Temperature
- Humidity
- Vibration
- Pressure
- Weight
- Magnetic
- Electrical, Immobilizer
- RFID



Temperature control for medication



Humidity control



Pressure control for technical parts

PRODUCT COMPONENTS

AMV 1



AMV Front Camera



AMV Alert Indicator

AMV 2



AMV Front Camera



AMV Rear Camera



Speaker



LED (Optional)



AMV Module



AMV 5" Module (Includes extension cable)

AMV 4



AMV Front Camera



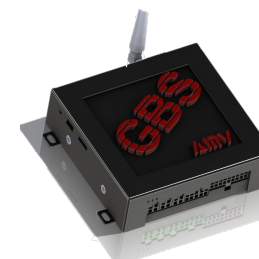
AMV Rear Camera



AMV Side Camera



LED (Optional)



AMV Module



AMV 5" Module (Includes extension cable)



Speaker

QUESTIONS?

Let us know!



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