FORESIGHT

Heavy Machinery & Industrial Vehicles

The Challenge

Heavy machinery operating in construction, mining, logistics, and material handling often faces harsh terrains, low visibility, and diverse types of obstacles. Traditional systems struggle to deliver the situational awareness needed for operational efficiency and safety. OEMs and Tier-One suppliers require scalable, reliable 3D perception to automate and secure off-road and industrial operations, while maximizing sensor efficiency and reducing downtime.

The Solution

Foresight's 3D perception system, employs advanced stereovision technology that integrates both visible-light and thermal infrared cameras, delivering a robust perception layer tailored for heavy-duty vehicles. From hauling materials in open-pit mines to navigating narrow construction zones and warehouse aisles, Foresight's multi-sensor solution provides real-time 3D mapping, all obstacle detection, and terrain analysis. By combining visible-light and thermal LWIR cameras, Foresight ensures mission-critical awareness even in the most challenging environments, including complete darkness, fog, rain, and glare.

Applications

Construction

Obstacle detection, and 3D point cloud to enable SLAM

Mining & Quarrying

Real-time terrain modeling, haul truck navigation

Transportation & Logistics

Safety automation in ports, yards, and warehouses

Material Handling

Forklift automation, blind spot elimination, and indoor/outdoor localization

Autonomous Articulated Dump Truck

Designed to optimize repetitive tasks in quarries, such as material transportation enabling safer, smarter, and more efficient heavy machinery operations.

Unique Capabilities

- Accurate **3D depth perception** and distance estimation
- **All-around any object detection** for total situational awareness
- Dynamic **automatic calibration** to handle shock and vibration
- **Road and surface segmentation** for uneven or shifting terrain
- Optional **thermal stereo vision** for zero-visibility conditions (dust, fog, dark)
- **Multi-resolution perception** enabling small object detection at long ranges
- **Optimized software for real-time performance** on constrained hardware
- **3D point cloud** to enable simultaneous localization and mapping (SLAM)
- **Enables tele-operation for remote operation** of heavy machinery and robotics

info@foresightauto.com | foresightauto.com