ANNEX

Exoskeleton

Exoskeletons are lightweight wearable mechanical devices designed to support and enhance the physical capabilities of our staff during their daily routine duties. These devices boost staff efficiency and productivity, especially for older workers, by enabling them to perform tasks with reduced fatigue and increased endurance. They help reduce the risk of injuries by alleviating joint and muscle strain.

Virtual Reality (VR) Trainer

The VR Trainer is designed to instil safety awareness and habits. It simulates track access scenarios, effectively training our staff's responses to safety incidents, such as hazard identification and responses to unsafe behaviour.

This training tool is equipped with visual tracking and voice recognition capabilities, providing an immersive and interactive learning environment. Trainers can observe trainees' focus areas and assess their ability to scan for hazards effectively, offering timely and targeted safety feedback. Trainees can also independently practise radio communication protocols in various scenarios.

Smart Driver's Assistant

With the aim of making manual train driving safer, especially during maintenance, SBS Transit is exploring the development of a portable handheld device to enhance track and driver safety. This device, mounted on the driving console and equipped with front and rear cameras, uses advanced Artificial Intelligence (AI) algorithms and video analytics to monitor trackside conditions, train speed, and driver behaviour. For instance, the device sounds an alarm for approaching stop signals in the tunnel, detects foreign objects or people on the tracks, or alerts if the train exceeds the recommended speed. It can also monitor the train driver for signs of fatigue or inattentive behaviour, promptly alerting the driver to refocus on driving.

Robots to Augment Maintenance

SBS Transit is constantly exploring the use of autonomous AI-enabled devices to amplify the capabilities of our technicians in their daily maintenance activities, especially in conducting visual train inspections. The robotic dog efficiently scrutinises train components for potential faults and detects anomalies invisible to the naked eye, allowing us to pre-emptively address minor issues before they escalate into major problems. Designed to execute tasks independently, the robotic dog can potentially mitigate risks faced by technicians, such as injuries due to fatigue or heat during maintenance activities under warm weather conditions.

VAnGuard

VAnGuard is a track intrusion detection system that utilises video analytic technologies to analyse surveillance footage and detect intrusions on the tracks. When a passenger or a foreign object is detected, the system promptly alerts our Operations Control Centre. This enables our staff to take immediate action to stop the train, investigate the situation, and implement necessary measures to minimise the risk of injuries or service disruption. VAnGuard is scheduled to be installed at all 28 stations on the Sengkang-Punggol LRT network by 2024.

Track Access Management System (TAMS)

TAMS is a digitised in-house solution developed for track access management. Currently, track access booking, planning, and allocation are done manually and involve many time-consuming processes. With the help of TAMS, all processes are consolidated into a single digital platform to improve work productivity and safety. The platform also includes built-in safety rules to check for conflicting track work that may arise during manual planning. TAMS has been implemented on our Downtown Line and will be further expanded to the North East Line and Sengkang-Punggol LRT.

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