

新聞稿

Press Release

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MTR Enhances Tree Monitoring for Light Rail with LiDAR Leveraging Innovative Technology to Prepare for Typhoon and Rainy Season

MTR Corporation is committed to enhancing the efficiency of railway maintenance and management as well as passenger experience with innovative technology. The Corporation has implemented its “Tree Intrusion Monitoring System”, which received an award at the International Exhibition of Inventions Geneva, Switzerland, in Light Rail to help tackle the typhoon season and minimise the potential impact of fallen trees on railway service.

Meanwhile, all MTR stations have completed relevant inspections and drills to prepare for adverse weather that may occur during the upcoming typhoon season.

“Tree Intrusion Monitoring System”

MTR has been exploring innovative and smart solutions to meet various needs in railway operations and maintenance. The Corporation’s I&T team developed the “Tree Intrusion Monitoring System” in 2023 using LiDAR (Light Detection And Ranging) to collect data on trees in the network, followed by AI analysis to enhance preventive tree management. The system has been adapted to suit the Light Rail operating environment and implemented in the Light Rail network since then. The Corporation received a silver award for the system at last year’s International Exhibition of Inventions in Geneva, Switzerland.

The “Tree Intrusion Monitoring System” is currently installed on two Light Rail vehicles. The LiDAR-units installed atop on the vehicles automatically collect data such as the trees’ height, shape and distance from the Light Rail operating area during passenger service. The AI in the system then analyses the risk of tree encroachment into the operating area and sends alerts to notify the tree management team for early inspection and arrangement to prune trees with higher risk.

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The two Light Rail vehicles can complete inspections of the entire network once a month on top of regular inspections by the tree management team, thus increasing the frequency of inspections. The system provides objective, accurate and insightful data analysis. Since its implementation in 2023, over 600 alerts have been issued, effectively assisting the tree management team in the early identification of vegetation growth that poses potential risks to Light Rail operations. Use of the system allows the team to prioritise tree pruning works with a more targeted approach, enhancing overall risk management with innovative technology.

“During the development phase, the I&T team worked closely with the tree management team to understand the needs from the user and adjust the design of the system. The aim is to provide targeted and objective data analysis that complements the professional assessment of tree health conditions by the tree management team and effectively enhances the risk management of trees for Light Rail. The team will continue to leverage technology to advance ‘smart railway’,” said Mr HK Chan, Chief of Operating Engineering Service & Innovation of MTR Corporation.

The Corporation is dedicated to realising “smart operations”. In response to the dynamic environment where Light Rail tracks are shared with other vehicles, the “Intelligent Safety 2.0 for Light Rail” system was developed and adopted to enable early detection of potential hazards and implements proactive safety measures by using computer vision, AI, and IoT technologies to further enhance Light Rail safety.

Service Arrangements During Typhoons

Fallen trees are a common scenario affecting railway service in open sections during adverse weather. MTR has a stringent risk management regime for trees along railway lines that is implemented by a dedicated tree management team who conduct large-scale tree surveys and continuously monitor vegetation growth and the condition of trees through an electronic database. Prior to the typhoon season, enhanced inspections, pruning of tree branches and crowns, and removal of dead branches are carried out to prevent tree branches coming into contact with overhead lines or trees falling and obstructing railway operations as a result of strong winds and heavy rain.

MTR strives to maintain service under safe circumstances during typhoons as far as practicable. When Typhoon Signal No. 1, No. 3 or No. 8 is in effect, service will remain normal in general (MTR Bus will suspend service three hours after Signal No. 8 is issued). Upon the issuance of Signal No. 9 or above, train service in open sections of the heavy rail and the Light Rail will be suspended to ensure the safety of passengers and MTR staff. Trains still operating in open sections will continue their journeys to the original destinations or stations connected to shopping malls under safe conditions as far as practicable, allowing passengers to take shelter in safe areas. All stations will also remain open whenever possible. (Please refer to the annex for details on the service arrangements)

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To prepare for adverse weather, all MTR stations have completed annual drills and detailed inspections of station drainage systems and nearby ditches. Flooding sensors have been installed at the entrances/exits with higher flooding risk of 32 MTR stations to enhance alerts and contingency. During typhoons, the maintenance team will stand by along railway lines to repair damaged facilities and clear fallen trees and debris on tracks under safe and feasible circumstances. As repair and clearing works take time, service in open sections may not be able to resume immediately once Signal No. 9 is lowered to Signal No. 8. The Corporation will resume service in open sections as soon as possible and in an orderly manner after checking track conditions and confirming railway safety.

Weather conditions can suddenly deteriorate during typhoons. The Corporation urges the public to stay in safe places when Signal No. 8 or above is in effect and avoid unnecessary travel. Passengers can check the latest service information on MTR and High Speed Rail on MTR Mobile, MTR Facebook page, MTR website, High Speed Rail website and app, 12306 website and app, public announcements made in stations and on trains, notices and the media to plan their journeys ahead.

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About MTR Corporation

To Keep Cities Moving, MTR makes encounters happen and rendezvous for a more connected tomorrow. As a recognised world-class operator of sustainable rail transport services, we are a leader in safety, reliability, customer service and efficiency.

MTR has extensive end-to-end railway expertise with over 45 years of railway projects experience from design to planning and construction through to commissioning, maintenance and operations. Going beyond railway delivery and operation, MTR also creates and manages dynamic communities around its network through seamless integration of rail, commercial and property development.

With more than 50,000 dedicated staff*, MTR carries over 10 million passenger journeys worldwide every weekday in Hong Kong, Mainland China, Australia, the United Kingdom and Sweden. Together, we Go Smart and Go Beyond.

For more information about MTR Corporation, please visit www.mtr.com.hk.

*includes our subsidiaries, associates and joint ventures in Hong Kong and worldwide

Photo Caption:

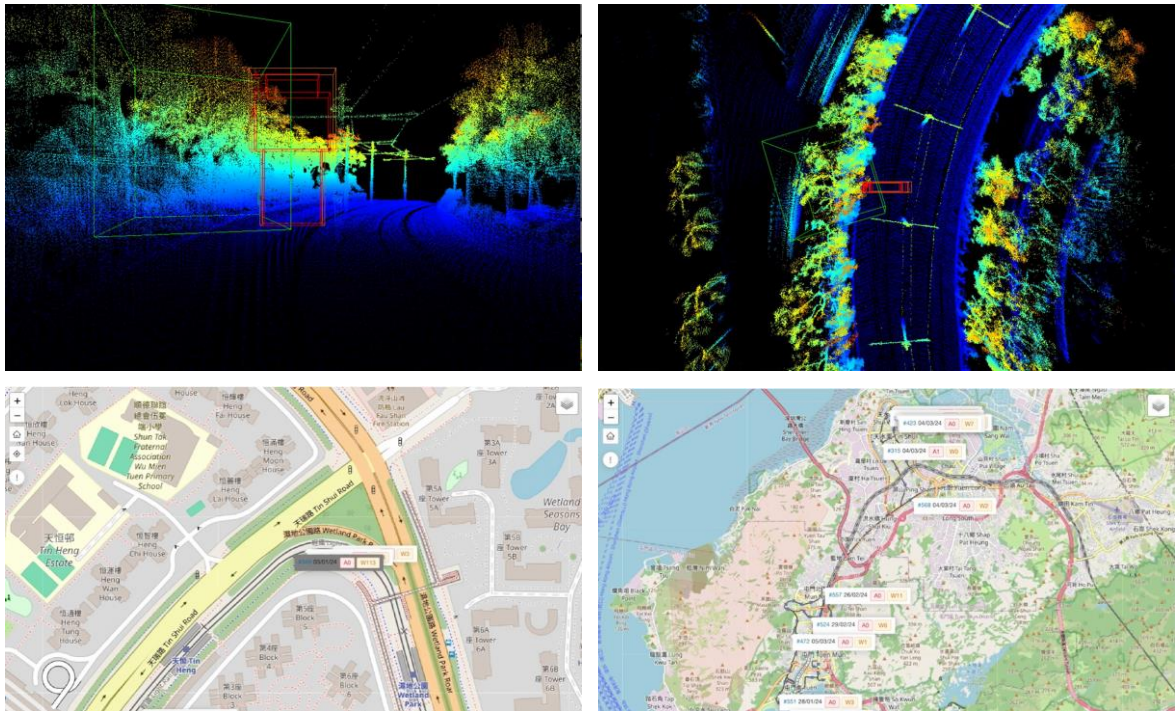
1. Mr HK Chan, Chief of Operating Engineering Service & Innovation of MTR Corporation (right), introduced the “Tree Intrusion Monitoring System” implemented in the Light Rail network which enhances risk management of trees. Mr David Chan, Head of Line Group Management – Tuen Ma Line, Light Rail & Bus of MTR Corporation (left), called on passengers to pay attention to service arrangements during typhoons.



2. The two Light Rail vehicles equipped with the “Tree Intrusion Monitoring System” automatically collect data on trees’ height, shape and distance from the Light Rail operating area during passenger service using LiDAR installed on top of the vehicles.



- Data collected by the “Tree Intrusion Monitoring System” will be analysed by AI to predict the risk of trees encroaching into the Light Rail operating area. Alerts will be issued to notify the tree management team to arrange pruning of trees with higher risks and the use of innovative technology enhances risk management as a whole.



- When the Increasing Gale or Storm Signal No. 9 or Hurricane Signal No.10 is issued by the Hong Kong Observatory, service in all open sections of the railway will be suspended immediately while limited service will be maintained in underground sections.

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Travel tips during typhoons

10+ No service on open sections
 ✗ Train service on open sections, Airport Express, Light Rail, and MTR Bus will be suspended
 ✓ Limited service on underground sections

8 Limited service

7 3 Service remains normal

Know more

*** No service on open sections

Train service arrangements during 10+

Limited service on underground sections ✓		No service on open sections ✗
Tsuen Wan Line	Lai King ⇌ Central	Tsuen Wan ⇌ Lai King
Kwun Tong Line	Choi Hung ⇌ Whampoa	Tiu Keng Leng ⇌ Choi Hung
Island Line	Heng Fa Chuen ⇌ Kennedy Town	Chai Wan ⇌ Heng Fa Chuen
South Island Line	South Horizons ⇌ Lei Tung	Lei Tung ⇌ Admiralty
Tseung Kwan O Line	All stations	—
Tung Chung Line	Kowloon ⇌ Hong Kong	Tung Chung ⇌ Kowloon
East Rail Line	Hung Hom ⇌ Admiralty	Lo Wu/Lok Ma Chau ⇌ Hung Hom
Tuen Ma Line	Tsuen Wan West ⇌ East Tsim Sha Tsui Ho Man Tin ⇌ Diamond Hill	Tuen Mun ⇌ Tsuen Wan West East Tsim Sha Tsui ⇌ Ho Man Tin Diamond Hill ⇌ Wu Kai Sha
Disneyland Resort Line	—	All stations
Airport Express	—	All stations

Light Rail and MTR Bus services suspended

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Annex

MTR Service Arrangements During Typhoons

Typhoon Signal	MTR Service
Heavy Rail, Light Rail and MTR Bus	
Standby Signal No. 1 and Strong Wind Signal No. 3	<ul style="list-style-type: none">• Service will remain normal
Gale or Storm Signal No. 8	<ul style="list-style-type: none">• Service will remain normal in the initial stage of the signal being issued. MTR will gradually increase the frequency of trains and deploy additional staff to assist passengers as needed.• As the storm approaches Hong Kong, service will be gradually reduced to a limited level.• MTR Bus will suspend service three hours after Signal No. 8 is issued.
Increasing Gale or Storm Signal No. 9 and Hurricane Signal No. 10	<ul style="list-style-type: none">• Trains in open sections of the railway will suspend service immediately• To ensure safety, limited service with reduced train frequencies will be maintained in underground sections* while service may stop at any time without prior notice <p>*Underground sections include:</p> <ul style="list-style-type: none">➤ East Rail Line (between Hung Hom and Admiralty)➤ Island Line (between Heng Fa Chuen and Kennedy Town)➤ Kwun Tong Line (between Choi Hung and Whampoa)➤ South Island Line (between South Horizons and Lei Tung)➤ Tseung Kwan O Line (all stations)➤ Tsuen Wan Line (between Lai King and Central)➤ Tuen Ma Line (between Tsuen Wan West and East Tsim Sha Tsui, and between Ho Man Tin and Diamond Hill)➤ Tung Chung Line (between Kowloon and Hong Kong)
High Speed Rail (Hong Kong Section)	
Standby Signal No. 1 and Strong Wind Signal No. 3	<ul style="list-style-type: none">• Service will remain normal
Gale or Storm Signal No. 8 and Increasing Gale or Storm Signal No. 9	<ul style="list-style-type: none">• High Speed Rail (Hong Kong Section) is connected to the national high speed rail

	<p>network on the mainland. MTR Corporation will coordinate with mainland railway authorities on train service during typhoons based on the weather conditions in Hong Kong and on the mainland. Passengers are advised to pay attention to the latest service information.</p>
Hurricane Signal No. 10	<ul style="list-style-type: none"> • Service will be suspended