

International Joint R&D: Technology to Inspect the Damage on Railroad Facilities Based on AI

■ Background of Technology

- In the image acquisition behavior of drones, there are many problems such as a lot of noise and shooting without approaching the structure. This frequently leads to false detection results.
- In the railway environment, there is a problem that it is difficult for drones to cope with changes in magnetic fields for flight in the railway environment because the magnetic field changes are severe, which causes disturbances in the navigation sensor.

■ Technology Overview

- Technology to detect damage to a facility in footage using specific algorithms when a drone returns from filming a facility.
- GIS-based presentation technology of images captured by drones, with accurate positional and posture information, is provided through a system that corrects navigation information for geomagnetic disturbances when the drone approaches a catenary.



International Joint R&D: Technology to Inspect the Damage on Railroad Facilities Based on AI

■ Key Characteristics

- **AI-based automated inspection system for inaccessible and vulnerable railroad facilities**

: Analyzed by a deep learning-based damage analysis system

- **Image management and GIS-based presentation technology for unmanned vehicles**

: Managing image data acquired from an imaging device mounted on drones during a three-dimensional autonomous flight of a railway structure

: Displaying overlapping a three-dimensional model on a GIS platform using the photographed position and posture

■ Expected Effects of Applying Technology

- **Preventing safety accidents for inspectors by inspecting inaccessible railroad facilities using drones**
- **Work time is reduced by more than 60 percent, with consistent damage inspection at the level of a skilled worker**

