The confidence level and the images to learn the AI model

PS2/Group 5: Artificial intelligence AI and data analisation, Q 2.19
- What was the confidence level of the AI system inspection conductors and towers? How many images were used to train the AI for recognition?

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1.The conductor diagnosis-imaging system using helicopter VTR and AI

➢ We used VTR data taken by helicopters during inspections over the period 2013 to 2017 to learn the AI model.

➢ As verifying the AI accuracy, both the non-detection and false detection rates were confirmed as under 6%.

For normal state teacher data	For failure state teacher data	Total		Non-detection rates	False detection rates
Approximately 133,000	Approximately 7,000	Approximately 140,000		5%	6%

Examples of failure state images used for learning

Wire breakage

Melting

Corrosion

2.The steel tower deterioration diagnostic method using drones and AI

➢This AI model is constructed by additionally learning images of rusting on 22 steel towers as part of a versatile rust detection approach, which involves the AI deep-learning numerous rust images of all kinds.

➢About 1300 images are used for learning, with the versatile rust detection AI as a base. We conducted additional learning by adding 350 or so still images.

➢The accuracy of this AI included confirmation of recall rate of 97% or more, conformity rate of 91% or more.
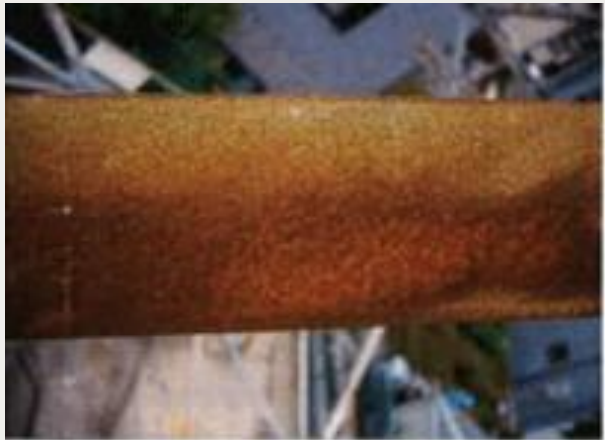
Enlarged still image of the rusted area

Overhead view of the steel tower containing the rusted area

Recall rate (probability of finding rust without missing it)	97.66%
Conformity rate (probability of the existence of actual rust in target points where existence is predicted)	91.91%