Yongmin KIM
Korea Advanced Institute of Science and Technology (KAIST)
Department of Civil and Environmental Engineering
291 Daehak-ro, Yuseong-gu
Daejeon 34141
South Korea
e-mail: yongmin@kaist.ac.kr

QIRT-2024-030

ABSTRACT

PRESENTATION

PAPER

Yongmin Kim is specialized in the advanced science and engineering of smart materials across diverse domains including automotive, semiconductor, civil and mechanical systems. His expertise lies in integrating active thermal imaging and computer vision technologies.

Jaeyoung JOE
Autopedia AI Research, Seoul, South Korea

Boseong KIM
Autopedia AI Research, Seoul, South Korea

Hyeonjin KIM
Korea Advanced Institute of Science and Technology, Department of Civil and Environmental Engineering, Daejeon, South Korea

Hoon SOHN
Korea Advanced Institute of Science and Technology, Department of Civil and Environmental Engineering, Daejeon, South Korea

TRACKING OF CAR ACCIDENT HISTORIES BY DISCRIMINATING OEM AND REPAIRED COATING AREAS THROUGH ACTIVE THERMOGRAPHY

Using active thermography, this study had developed an automotive coating evaluation system aimed at assessing the coating conditions of used cars and ultimately detecting repaired segments in them. The system utilizes halogen lamps as heat sources and a LWIR camera for thermal imaging. In order to facilitate the commercial deployment of this development system, the study addresses the following three key issues:

1. enabling rapid long-range inspection of large-areas;
2. facilitate the inspection of curved surfaces, which are often susceptible to wear and damage;
3. distinguishing repainted coating areas from intact OEM areas.

In particular, it envisions that the prior accident history of a used car can be unveiled through the instantaneous visualization of OEM, replaced, sheet metal and non-sheet metal coating segments of a used car. This visualization of coating conditions will eventually allow for an objective appraisal of used cars, safeguarding potential customers from purchasing vehicles with unreported accidents. It also aims to establish an open market platform for the sales of used cars. The study examines the effectiveness of the proposed system and its commercial potential by using real used cars with a history of prior accidents.