

# Deep Learning Based Platform for Vehicle Parts Defect Classification and Anomaly Detection

**Hanseok Seo and Taesu Cheong**  
School of Industrial and Management Engineering  
Korea University  
Seoul, 02841, South Korea  
[seohanseok@korea.ac.kr](mailto:seohanseok@korea.ac.kr), [tcheong@korea.ac.kr](mailto:tcheong@korea.ac.kr)

## Abstract

In this study, we propose the deep learning based platform for defect classification based on machine vision and perform the empirical analysis with various image data supplied by the mid or small-sized companies in South Korea to evaluate the performance of the proposed approach. Through this platform, we aim to perform full inspection of products with reasonable cost investment. Specifically, this study uses deep learning based algorithm to perform foreign material inspection, processing shape inspection, and processing omission inspection based on product image data of three manufacturing companies. A classification model and anomaly detection model were used, and empirical analysis was performed through actual product image data. All defective products were judged as defective, and a small number of good products were judged as false defects, with an accuracy of 97.9%. Through the experiments, we believe that a machine vision-based defect classification model we developed would be a highly cost-effective way to identify defects through images. Through this manufacturing data-based platform for the same industry, it is expected that even small and medium-sized enterprises with low manufacturing data-based technology can introduce and develop defect classification technology at a low cost.

## Keywords

Defect classification, Anomaly detection, Deep learning platform

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## Biographies

**Hanseok Seo** received the B.S. degree in logistics; the M.S. degree in logistics system from Incheon National University, South Korea. He is currently a Ph.D. student in the Department of Industrial and Management Engineering, Korea University, South Korea. His research interests include deep learning, supply chain management, and vehicle routing problems.

**Taesu Cheong** received the B.S. degree in industrial engineering from Korea University, Seoul, Korea, in 1998; the M.S. degree from the Korea Advanced Institute of Science and Technology, Daejeon, Korea, in 2001; and the Ph.D. degree in industrial and systems engineering from the Georgia Institute of Technology, Atlanta, GA, USA, in 2011. He is currently a Professor with the School of Industrial and Management Engineering at Korea University. He is research interests include stochastic optimization with applications in transportation, supply chain management, healthcare management, and information system management.