A Deep Learning-Based Automatic Object Detection and Classification Mechanism

Thi My Truong *, Seong Gon Choi *

* College of Information and Communication Engineering, Chungbuk National University, Chungdae-ro 1, Seowon-gu

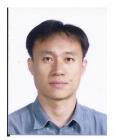
mytruong@cbnu.ac.kr, choisg@cbnu.ac.kr

Abstract— Acne is a common skin disease that affects people of all ages and can result in hyperpigmentation, scarring, and negative psychological impacts. Therefore, detecting acne early and accurately diagnosing its severity is crucial for treatment and management. To address this issue, we proposed a system using a sequence of deep-learning models to automatically detect acne lesions and classify the severity of the global acne lesion existing in the face. Then, we propose a new grading algorithm to grade the final severity of acne lesions. Additionally, we develop a user-friendly application to help users who do not have expertise-knowledge can use it easily. It can serve as a support tool to assist dermatologists in making more precise diagnoses. Through experiments, our system has shown acceptable accuracy.

Keyword—deep learning, artificial intelligence, acne grading, object detection, classification.



Thi My Truong received B.S. degree in College of Information & Communication Engineering from Chungbuk National University in 2023. She is currently pursuing the Master degree in Radio Communication Engineering, Chungbuk National University. Her research interests include cybersecurity, Blockchain, computer vision.



Seong Gon Choi received B.S. degree in Electronics Engineering from Kyungpook National University in 1990, and M.S. and Ph.D. degree from KAIST in Korea in 1999 and 2004, respectively. He is currently a professor in College of Electrical & Computer Engineering, Chungbuk National University. His research interests include V2X, AI, smart grid, IoT, mobile communication, high-speed network architecture and protocol.