A Deep Learning-Based Automatic Object Detection and Classification Mechanism

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***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.**

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