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On the Development of Anemia Measurement Using Smartphone

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Abstract—Anemia is a global health issue. There are around 2 billion patients in the world. Traditionally, diagnosing anemia requires invasive blood tests. However, in recent years, the emergence of the big health industry, the proliferation of big data technologies, and the widespread adoption of artificial intelligence have sparked discussions on utilizing non-invasive methods for accurate detection of anemia. While there have been related studies conducted abroad, it is lacking suitable datasets tailored to Taiwanese patients for corresponding neural network models. This project aims to develop a mobile application that integrates neural network models for non-invasive anemia detection. After capturing the images of eyelids, the mobile application performs a series of steps processing the image in order to detect anemia. This includes environmental light correction algorithms, image correction algorithms, automatic photo detection, and an anemia prediction model. This enables users to quickly understand the status of anemia through an efficient and user-friendly interface. Utilizing non-invasive methods allows early detection of anemia before it gets worse, alerting patients to seek further treatment. It also enables real-time monitoring through photo capture at home, thus being a step toward telemedicine.

Key words: Mobile healthcare, Neural network, Image color analysis, Non-invasive Method.

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