

## The AI Method and System for Analyzing Wound Status in Wound Care Nursing

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**Abstract :** This project presents an AI-based method and system for wound status analysis. The system uses a three-in-one sensor device to analyze wound status, including color, temperature, and a 3D sensor to provide wound information up to 2mm below the surface, such as redness, heat, and blood circulation information. The system has a 90% accuracy rate, requiring only one manual correction in 70% of cases, with a one-second delay. The system also provides an offline application that allows for manual correction of the wound bed range using color-based guidance to estimate wound bed size with 96% accuracy and a maximum of one manual correction in 96% of cases, with a one-second delay. Additionally, AI-assisted wound bed range selection achieves 100% of cases without manual intervention, with an accuracy rate of 76%, while AI-based wound tissue type classification achieves an 85.3% accuracy rate for five categories. The AI system also includes similar case search and expert recommendation capabilities. For AI-assisted wound range selection, the system uses WIFI6 technology, increasing data transmission speeds by 22 times. The project aims to save up to 64% of the time required for human wound record keeping and reduce the estimated time to assess wound status by 96%, with an 80% accuracy rate. Overall, the proposed AI method and system integrate multiple sensors to provide accurate wound information and offer offline and online AI-assisted wound bed size estimation and wound tissue type classification. The system decreases delay time to one second, reduces the number of manual corrections required, saves time on wound record keeping, and increases data transmission speed, all of which have the potential to significantly improve wound care and management efficiency and accuracy.

**Keywords :** wound status analysis, AI-based system, multi-sensor integration, color-based guidance

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