

A review of non-invasive sensors and artificial intelligence models for diabetic foot monitoring, Kaselimi et. al.
Physiol., October 2022

DOI: 10.3389/fphys.2022.924546

Level of Evidence: 5

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This paper focused on the importance of implementing cost effective artificial intelligence techniques in diabetic foot ulcer (DFU) monitoring. According to the paper, four important factors for assessing DFU have been recognized through artificial intelligence; these include glucose levels, foot deformities, pedal temperature and hemoglobin concentration. In order to measure these factors, there are various sensors that can be utilized, including:

1. Red Green Blue (RGB) sensors - can be utilized to visualize deformities on the skin
2. NIR spectroscopy (700 nm-1300nm) - can be utilized to capture hemoglobin saturation
3. Thermal infrared spectroscopy - can be used to detect hyper/hypothermia (rule out Charcot foot)
4. Mid-IR (5.7 μm – 9.3 μm) absorbance - can give information regarding lipid and glucose metabolism.

As of yet, there is not a commercially available device that implements all 4 characteristics collectively. Furthermore, there is very little development in this area of research to bring these ideas to light. With that being said, AI monitoring of DFUs also faces many challenges such as keeping trust in an AI device(s), providing a cost-effective device and privacy/safety issues. The paper also did not specify which of the currently four available types of sensors was the most effective in monitoring for DFUs.



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