

Objective & Application

To develop a clinically-affordable, handheld device to identify erythema and bruising.

This *Point of Care* technology is being designed for people who require non-contact and simple assessment of bruises, erythema and Stage I pressure ulcers. The many potential users include nurses, podiatrists, prosthetists, social workers home health professionals, physicians and therapists. This device has potential application in the fields of *forensics, abuse, geriatrics, nursing, and pressure ulcer prevention*

Bruises and erythema both represent an insult to tissue with intact skin, therefore:

- Visual indicators are masked by melanin
- Clinical visual inspection has poor reliability

The device is being designed to answer the following clinical questions:

Is it erythema?

If so,

Is it transient or persistent?

Is it a bruise?

If so,

How old is it?

How extensive is it?

Accomplishments to date:

- Spectral analysis and filter optimization used to select the most significant filter bands for hand-held device
- Algorithms able to identify erythema and bruises across different skin tones
- Spectral normalization and an energy feature appear promising to distinguish the bruise age
- Proposed hand-held hardware design based upon tunable filters, CMOS sensor and on-board microprocessor



Digital photo of erythema	1st pass of erythema detection algorithm	Enhanced detection algorithm
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