

Exploring Correlation Between Tissue Composition and Healing in Chronic Wounds

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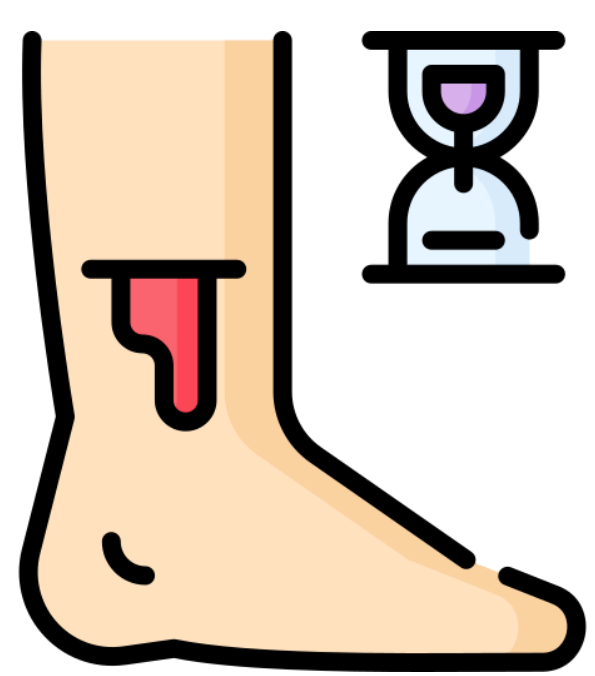
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Chronic Wound Healing

Chronic Wounds

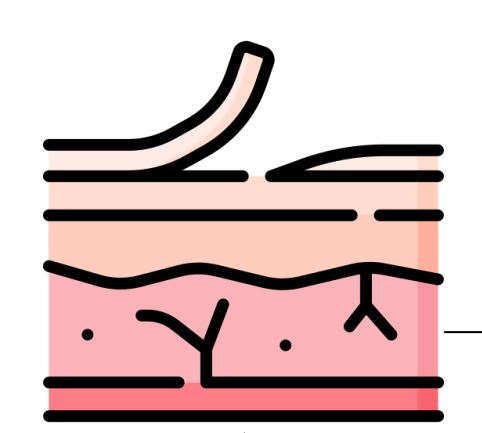


Do not heal in expected time

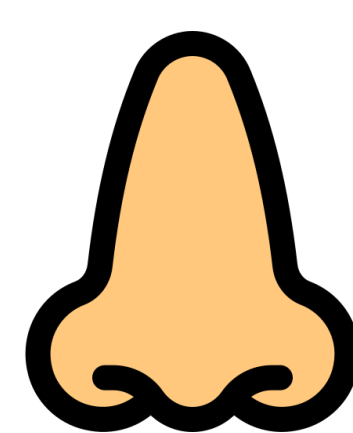
Current Assessment Parameters



Appearance



Surrounding Skin



Odour



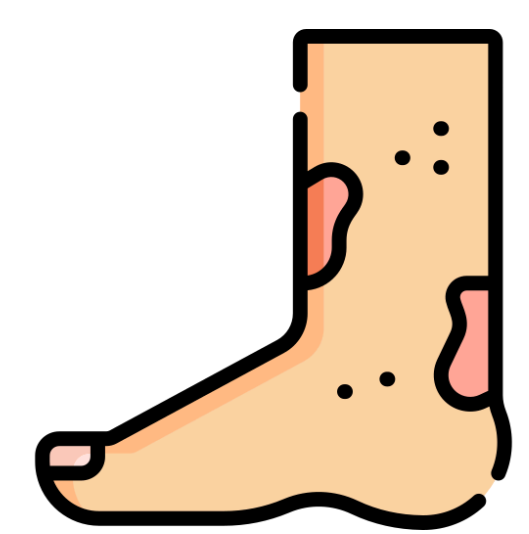
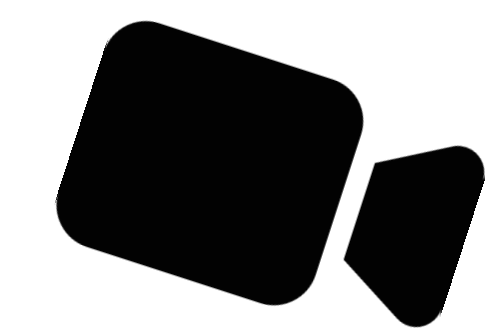
Pain



Size

Subjective and difficult to track over time

Objective



Correlate tissue composition with healing for an objective comparison

Data Collection and Labelling

Data Filtering

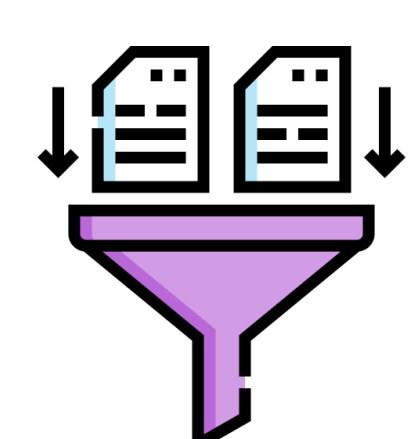
Data collected from hospital

66 Patients, 500 Images



Filter for relevant patients

35 Patients, 73 Wounds, 373 Images



Data Labelling

Annotate various tissues



Calculate wound composition and area



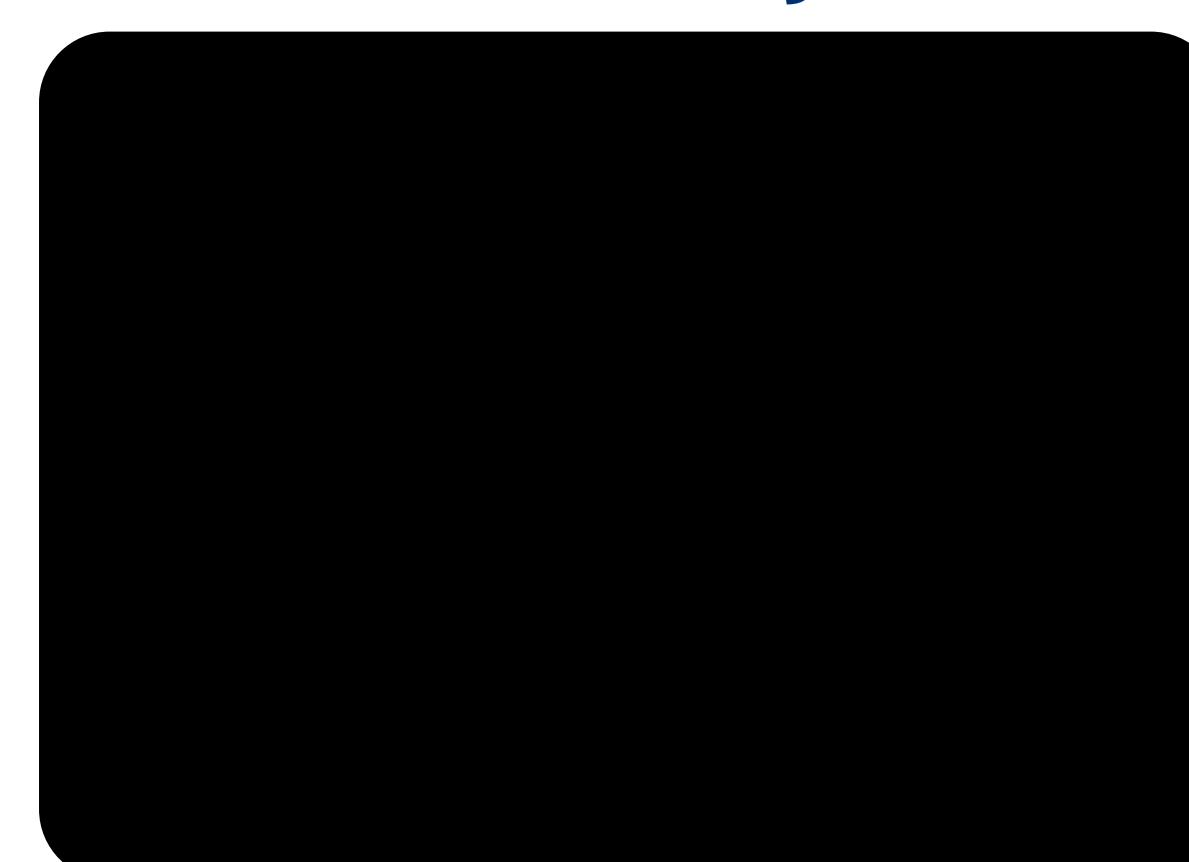
Analysis

Correlate tissue composition and healing evolution

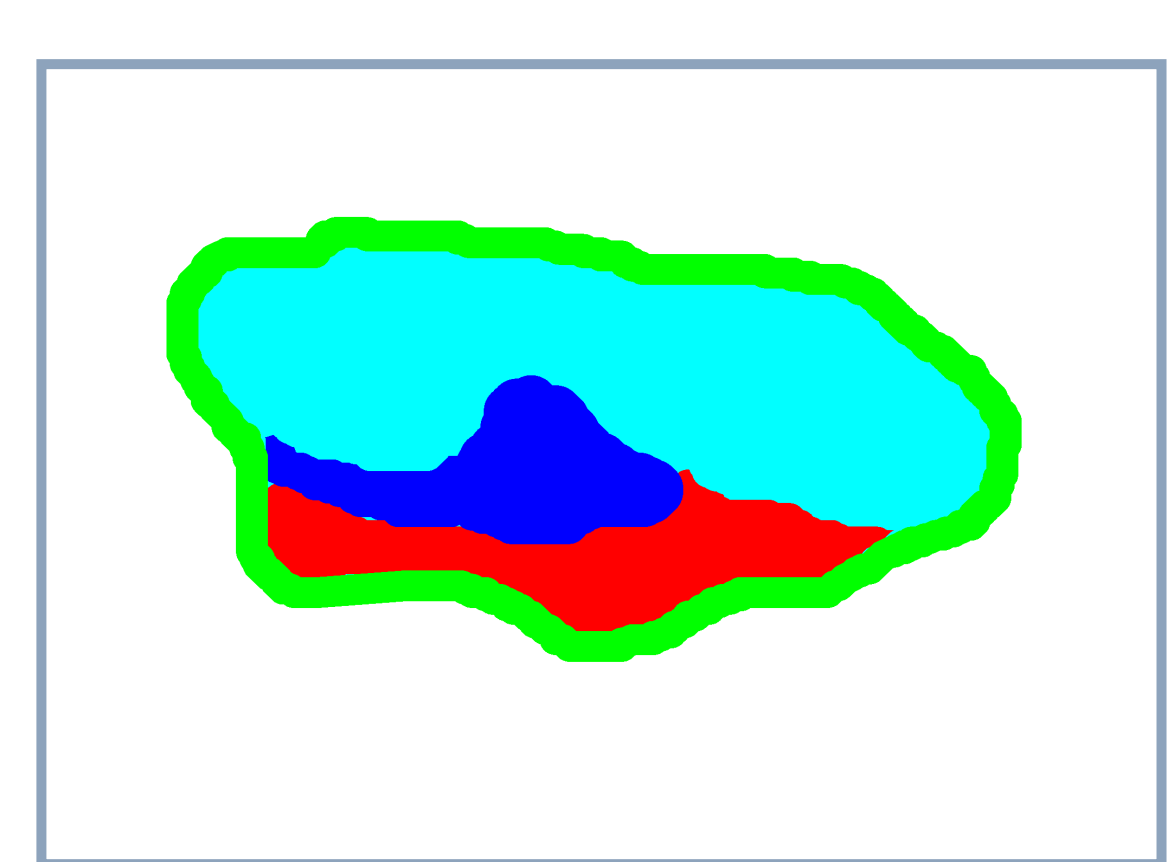


Feature Description

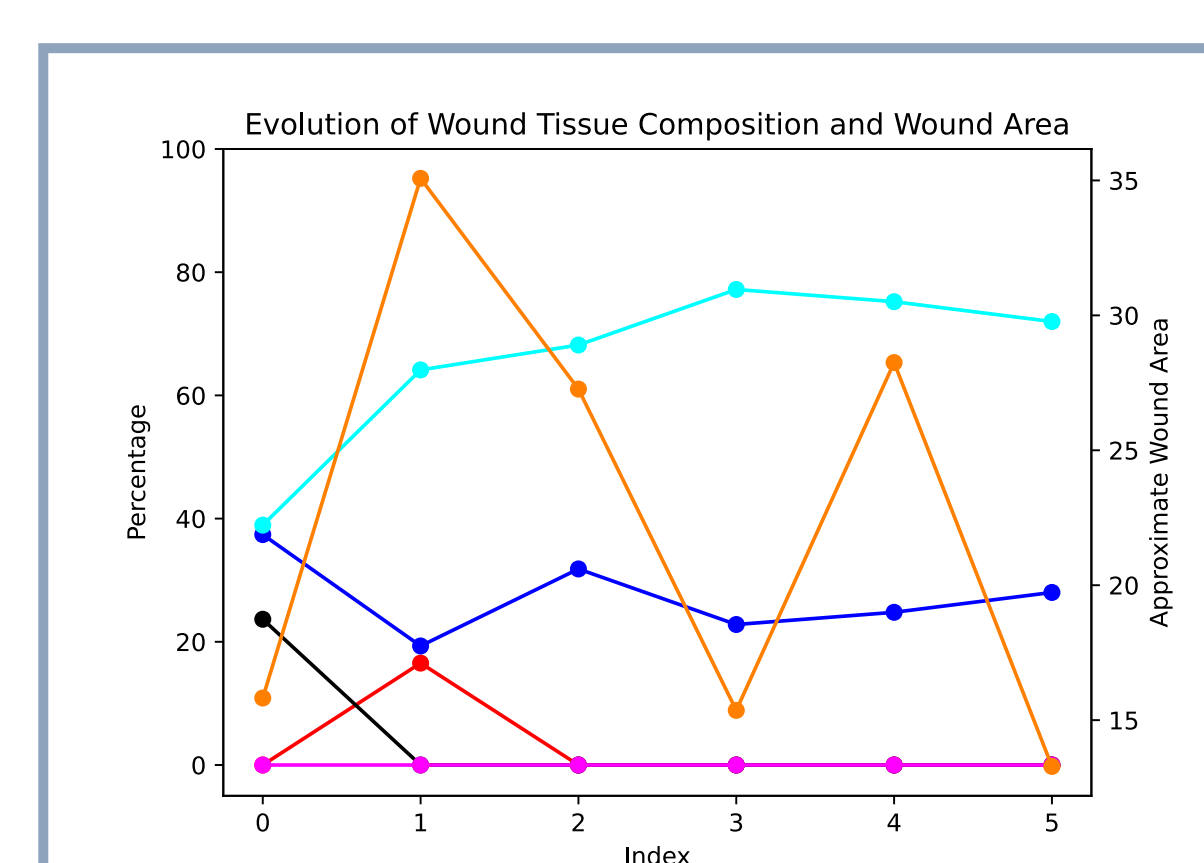
Wound Image



Wound Tissue Labels



Wound Evolution



Wound Properties

Granulation Healthy Red	16.54
Granulation Unhealthy Anergic	19.32
Hard Necrosis	0
Necrotic Slough	64.13
New Epithelium	0
Approximate Wound Area	35.07mm ²

Next Steps

- Further filter for wounds with decreasing area.
- Among healing wounds, establish direct and indirect correlations for various tissues.
- Explore correlation between type of border and healing.

- [1] A. Fadzil and D. Kumar, "Skin Image Analysis Granulation Tissue for Healing Assesment of Chronic Ulcers", *Optical Imaging for Biomedical and Clinical Applications*. CRC Press, 2017, Sec 2.1.2.
- [2] Maxim Tkachenko, undefined., et al, "Label Studio: Data labeling software," 2020-2022.
- [3] Nejati, H., Ghazijahani, H., Abdollahzadeh, M., Malekzadeh, T., Cheung, N.M., Lee, K.H., & Low, L.L. (2018). Fine-grained wound tissue analysis using deep neural network. In *2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*.



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