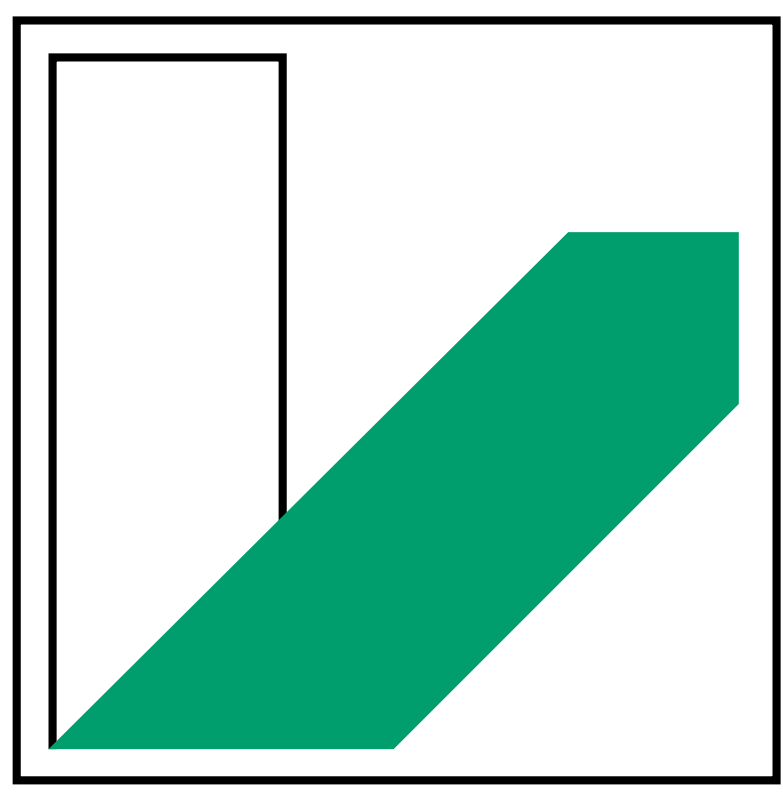




Introducing CicatrixVision (CiVi) Dataset: First steps into AI assisted Chronic Wound Assessment

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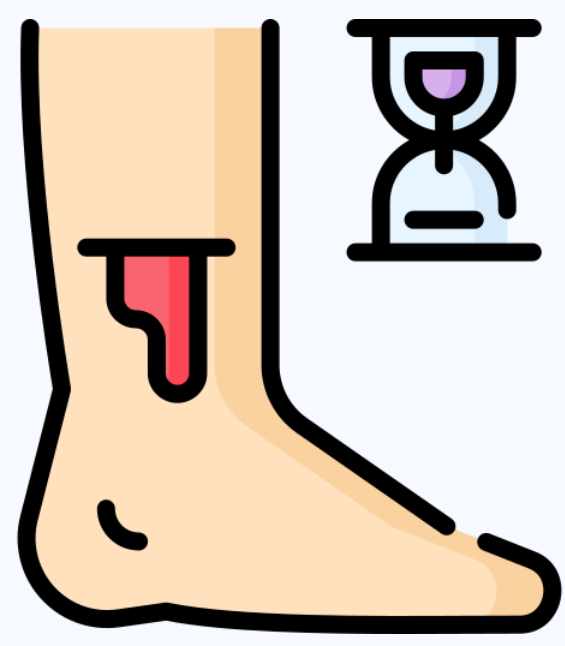
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Chronic Wound Healing

Chronic Wounds

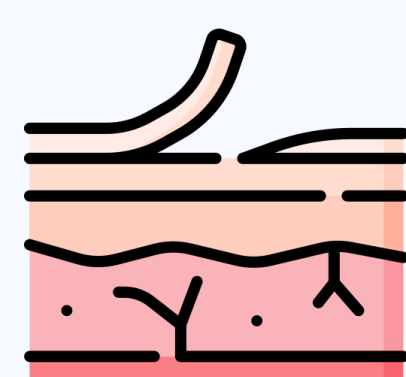


Do not heal in expected time

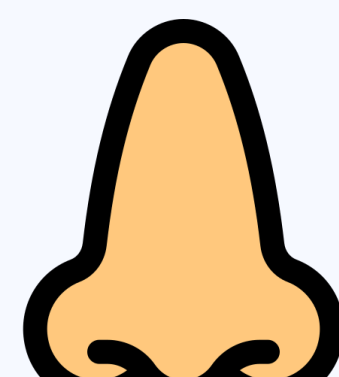
Current Assessment Parameters



Appearance



Surrounding Skin



Odour



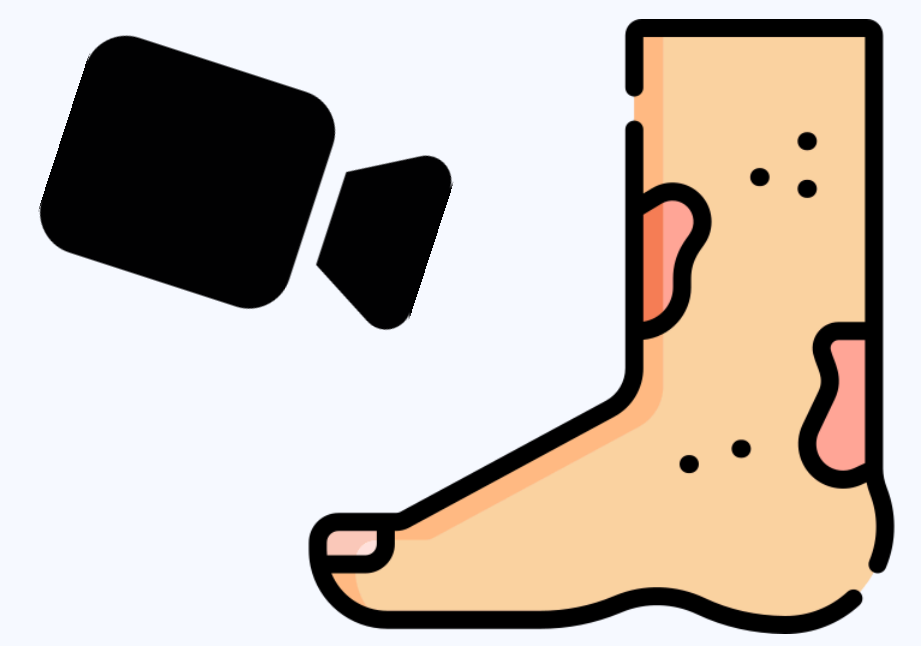
Pain



Size

Subjective and difficult to standardize

Objective



Estimate tissue composition using AI

Motivation

Provide CiVi: an open source dataset with high-quality annotations for wound tissue types

CicatrixVision (CiVi) Dataset

6500 High Quality Images



Filtered by:

- Year - 2014
- Quality of Image
- Wound Types

Segment and crop using
WSNet^[3]



66 Patients



3 Tissue Classes



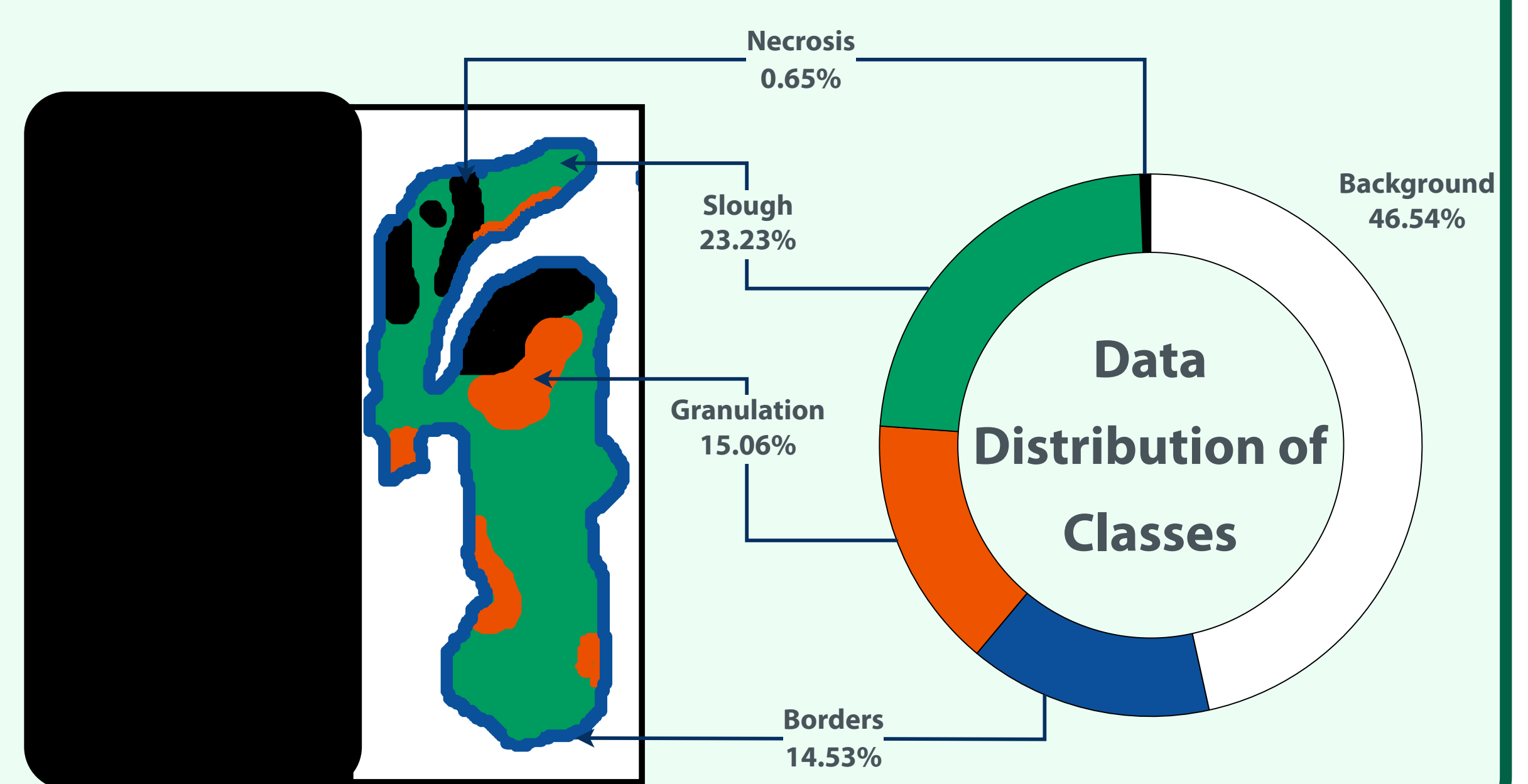
721 Wound Images



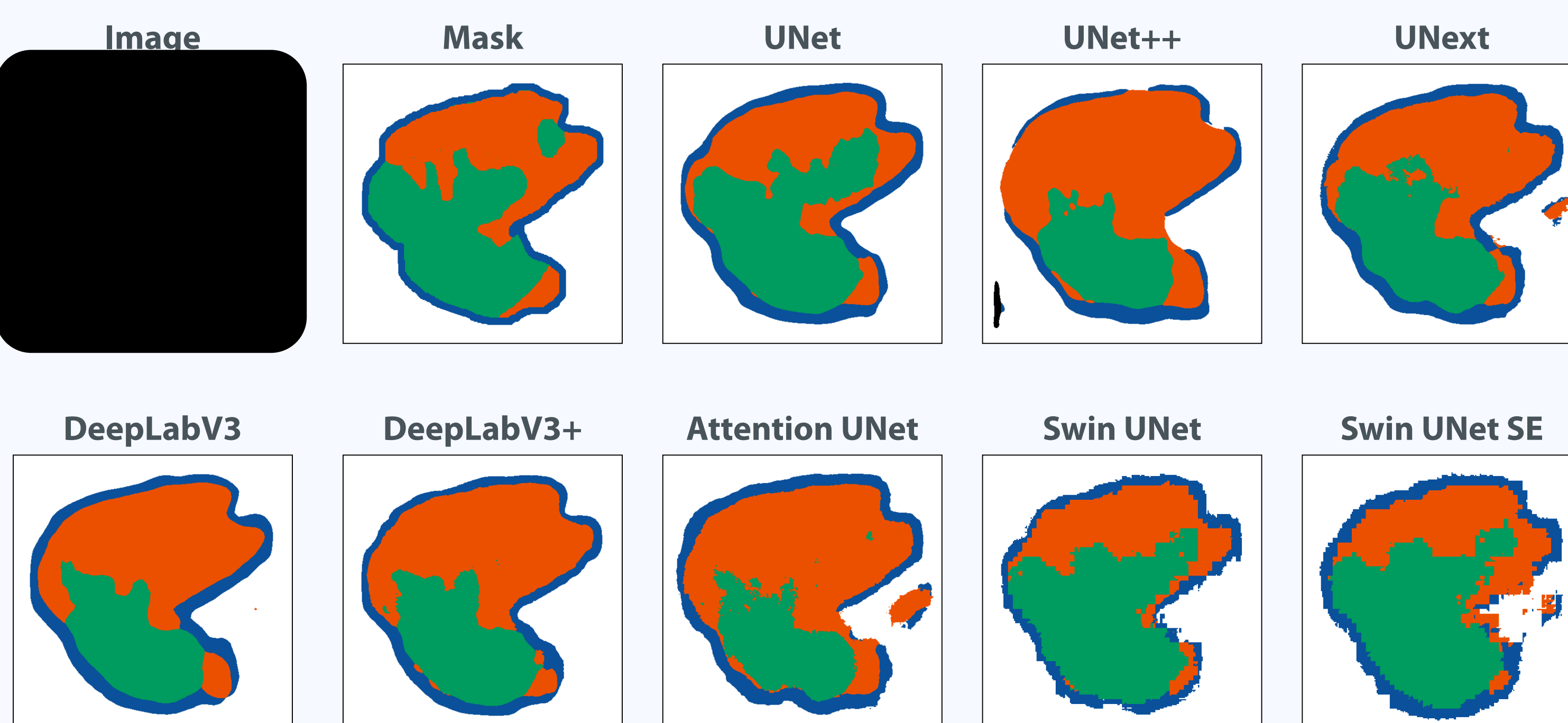
Label with LabelStudio

5 Types of Wounds

- Venous Ulcers
- Arterial Ulcers
- Vasculitis
- Graft-versus-Host Disease
- Pyoderma Gangrenosum



Benchmark Tests and Results



Model	Backbone	Loss Function	Accuracy	IoU	Dice
UNet	EfficientNetB0	RCE	0.82	0.67	0.80
UNet++	EfficientNetB2	DL	0.78	0.52	0.66
UNext	Baseline	RCE	0.76	0.63	0.77
DeepLabV3	EfficientNetB2	CE	0.81	0.60	0.73
DeepLabV3+	EfficientNetB0	CE	0.77	0.62	0.75
Attention UNet	Baseline	RCE	0.64	0.51	0.66
Swin UNet	Baseline	FL	0.75	0.61	0.75
Swin UNet	With SE	FL	0.73	0.61	0.75

Conclusion & Future Work

- Design a Computer Vision training architecture using spatial knowledge about the structure of the wound images.
- Utilise the vast amount of unannotated images in a Semi-Supervised Learning pipeline.
- Understand the relationship between wound tissue composition and wound healing in chronic wounds.

References

- [1] Izadi, K. (2005). Chronic wounds. *Clinics in plastic surgery*.
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- [3] Oota, S.(2023). WSNet: towards an effective method for wound image segmentation. In *Proceedings of the IEEE/CVF WACV*.
- [4] Ramachandram, D.(2022). Fully automated wound tissue segmentation using deep learning on mobile devices: Cohort study. *JMIR mHealth and uHealth*.

