

CNN Infection Detection

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Wound Infection Cost

Economic Cost



- U.S. cost of wound treatment is about \$25 billion per year

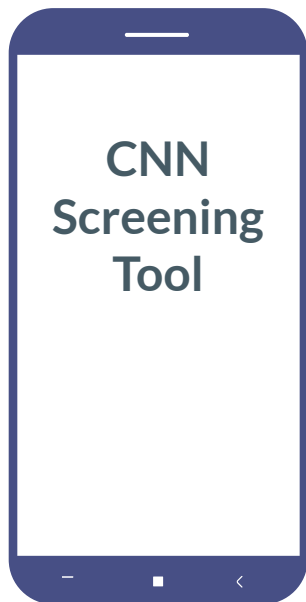
Human Cost



- Prolonged hospital stays
- Chronic morbidity or even death
- Anxiety



Use Case



Advantages



Efficiency



Saves money



Saves time



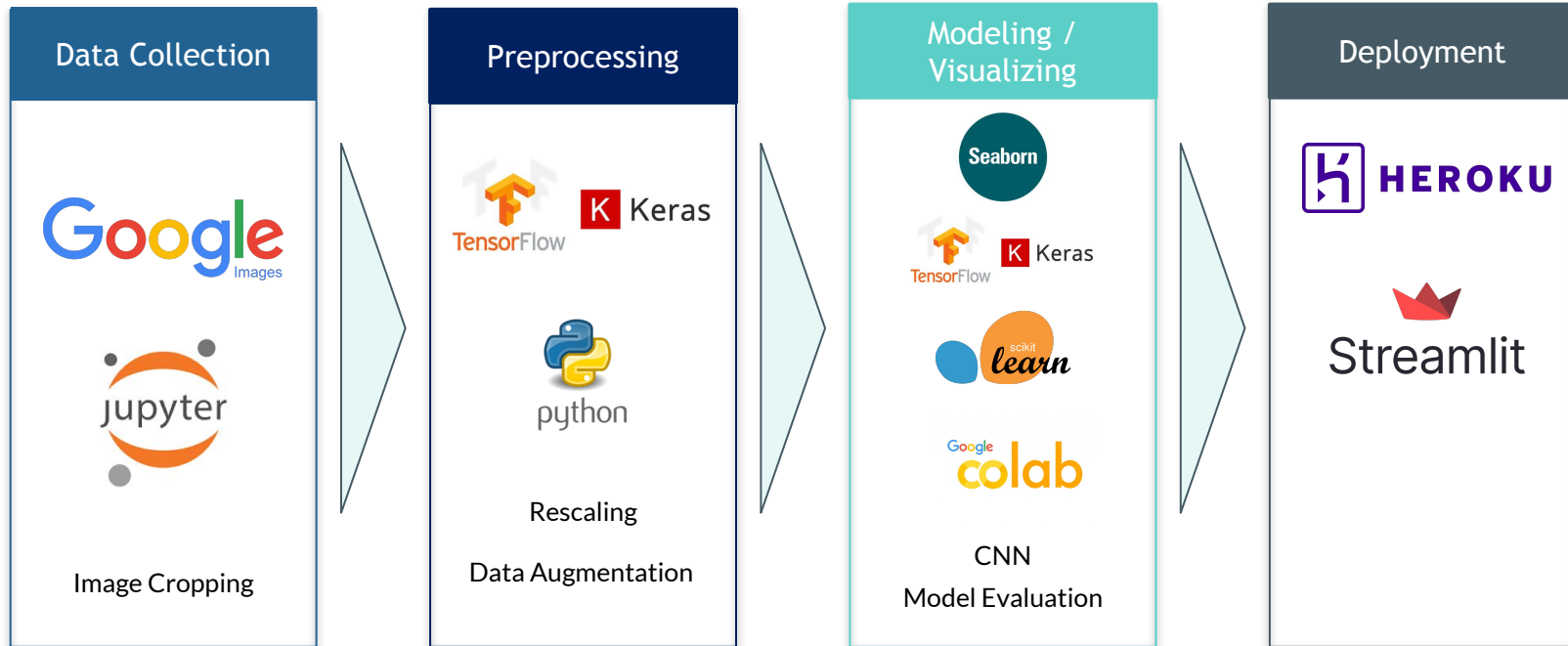
Flexibility



Accessibility



Methods



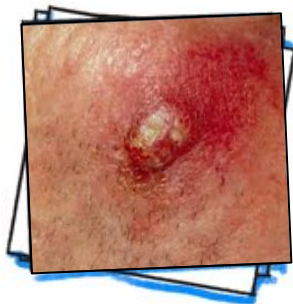


Data / Model

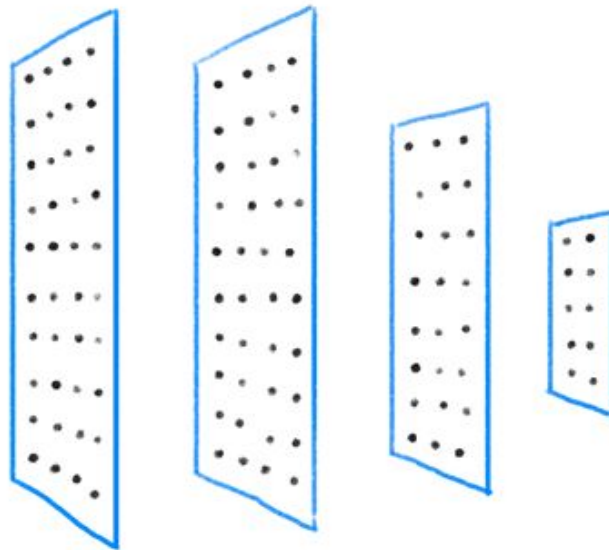
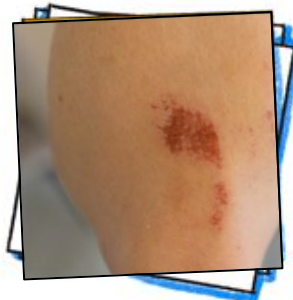
CNN Model

- Trained on ~2,500 images
- ~300 images in validation set
- 177,041,602 total params

- Infected
610 images



- Not Infected
610 images
 - ~50% scabs, cuts and scrapes
 - ~50% healthy skin



Output

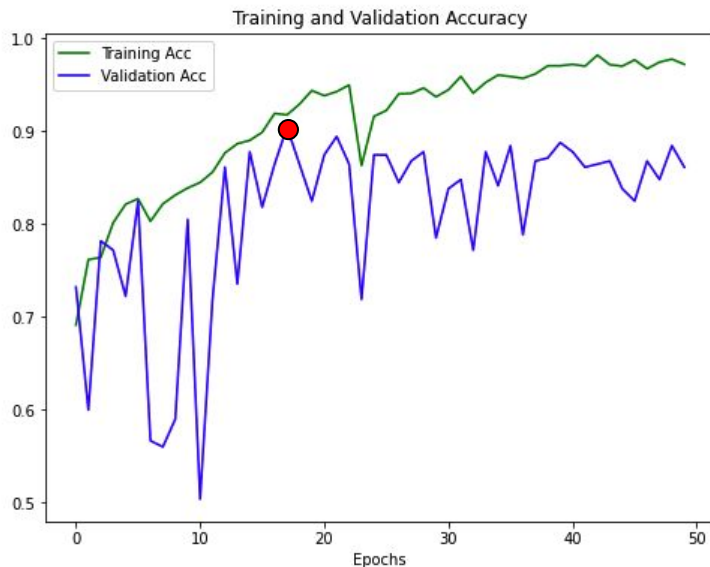


Model Evaluation

● Best Weights

Accuracy: .90

Infection Recall: .92

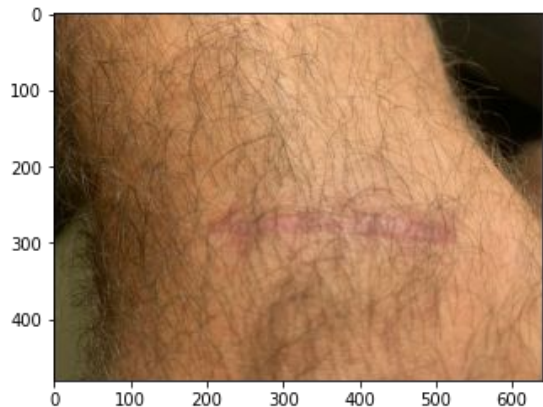


Actual	Infection	<div>True Pos 139 46.03%</div>	<div>False Neg 12 3.97%</div>
	No Infection	<div>False Pos 17 5.63%</div>	<div>True Neg 134 44.37%</div>
		Infection	No Infection
		Predicted	

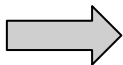


Deployment

My knee following ACL surgery



Not Infected (I hope)



Model

P(Infected): .1111

P(Not Infected): .888



Next Steps



Gather More Data

- Partner with providers to obtain larger dataset with medically reviewed labels

Add Classes

- Create more nuanced classes for infection types and healing stages

Tweak Model

- Continue to tune parameters with an eye on minimizing false negatives

Launch App

- Embed within patient portals such as MyChart so Dr. receives alert and uploaded images

THANKS

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