CNN Infection Detection

Kevin McDonough

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Wound Infection Cost

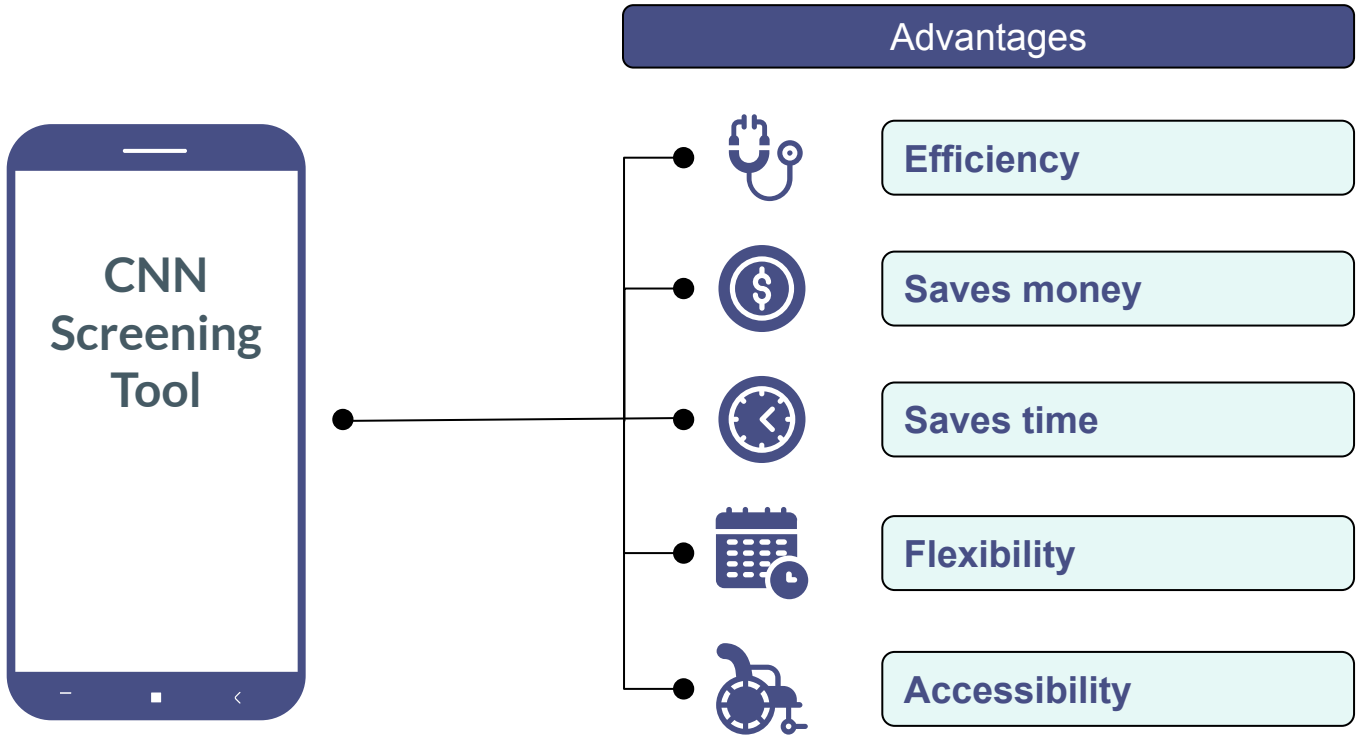
Economic Cost

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

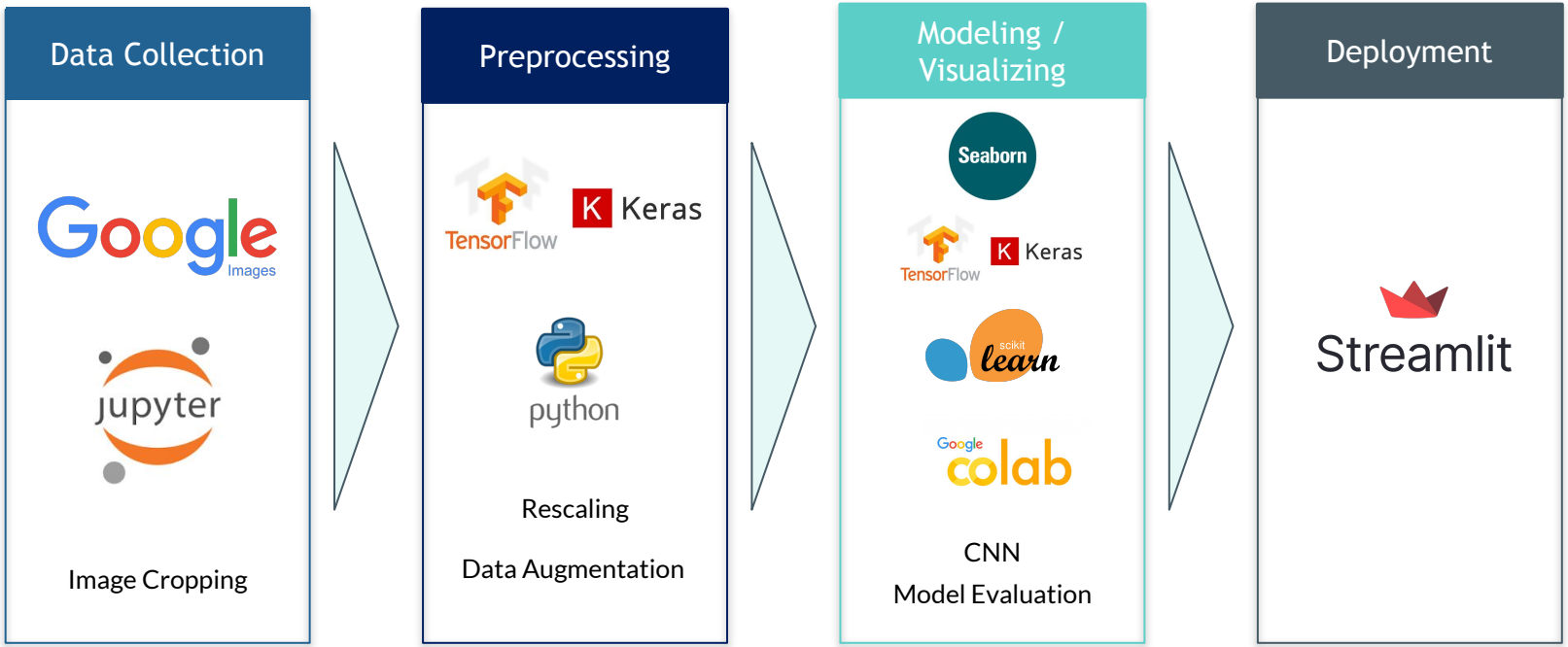
Human Cost

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

Use Case


CNN Screening Tool
Advantages
Efficiency
Saves money
Saves time
Flexibility
Accessibility

Methods


Data Collection
Google Images
jupyter
Image Cropping
Preprocessing
TensorFlow
Keras
python
Rescaling
Data Augmentation
Modeling / Visualizing
Seaborn
TensorFlow
Keras
scikit learn
Google colab
CNN
Model Evaluation
Deployment
Streamlit

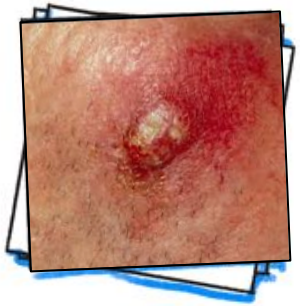
Data / Model

CNN Model

- Trained on ~2,500 images
- ~300 images in validation set

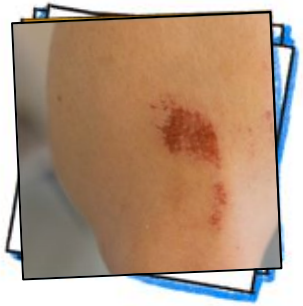
Infected

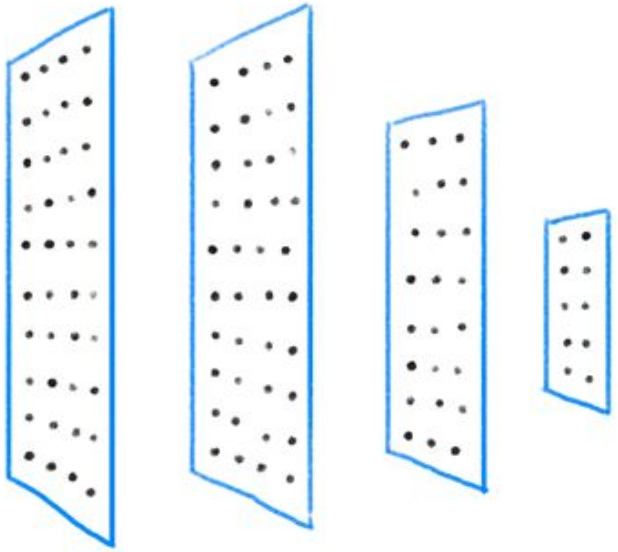
- 610 images



Not Infected

- 610 images
  - ~50% scabs, cuts and scrapes
  - ~50% healthy skin

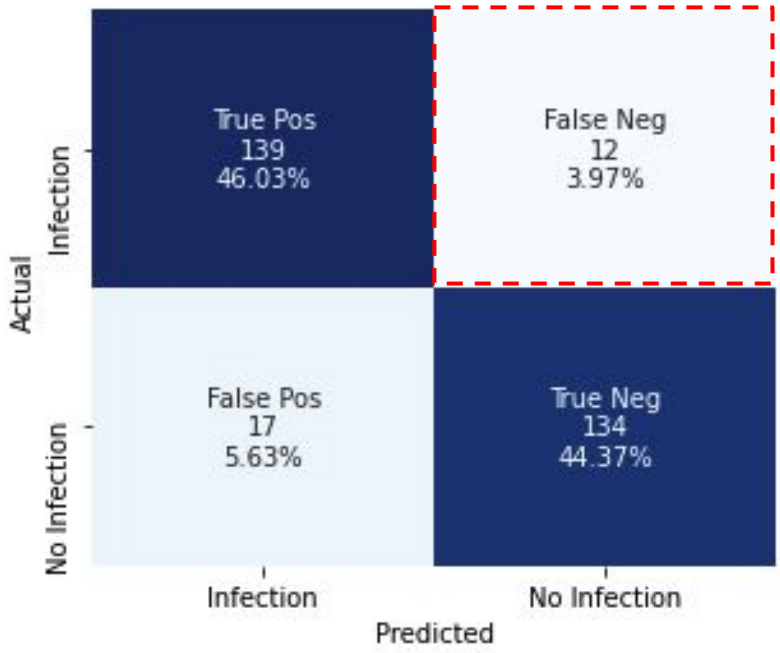




Output

Model Evaluation

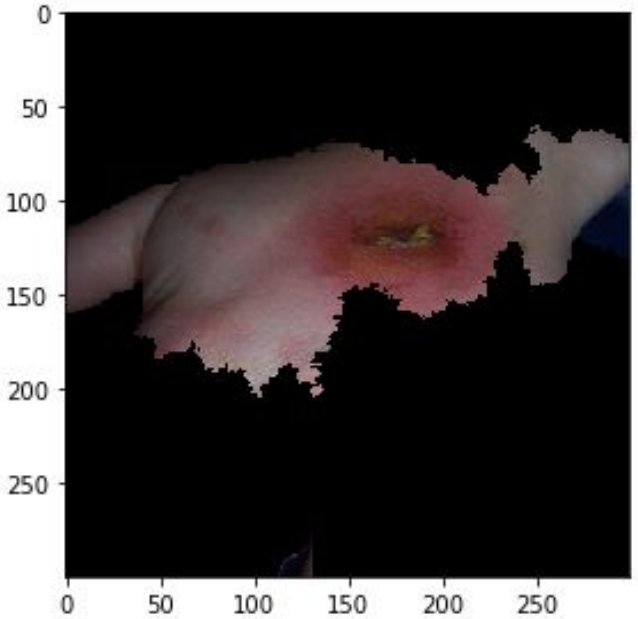
Accuracy: 90.4%
Infection Recall: 92%



Deployment

Streamlit

Model Evaluation



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

Kevin McDonough
Email: kpmcdonough@gmail.com
Github: https://github.com/KPMcDonough49
Linkedin: https://www.linkedin.com/in/kevin-mcdonough-01466a178/