

DermaGuard: AI-Driven Precision in Skin Cancer Detection

Leveraging Machine Learning for Accurate Skin Cancer Detection

- By Daryl Wanji





Data Science

Daryl Wanji

Data Scientist | Bsc Computer Science & Diploma in Data Science | Python, R, SQL, Tableau, Machine Learning

📍 Toronto, Canada

OPEN TO RELOCATION



Degree

B.Sc Computer Science



4 Years

Data Analyst

Customer Service



Skills

Python, R, SQL, Tableau, Machine Learning



Project

DermaGuard: AI-Driven Precision in Skin Cancer Detection



Certifications

Databricks - GenAI fundamentals



PCEP - Python Programmer



Languages

Fluent in English & French

✉️ Daryl.wanji@gmail.com

🌐 github.com/Darylwanji

linkedin.com/in/darylwanji

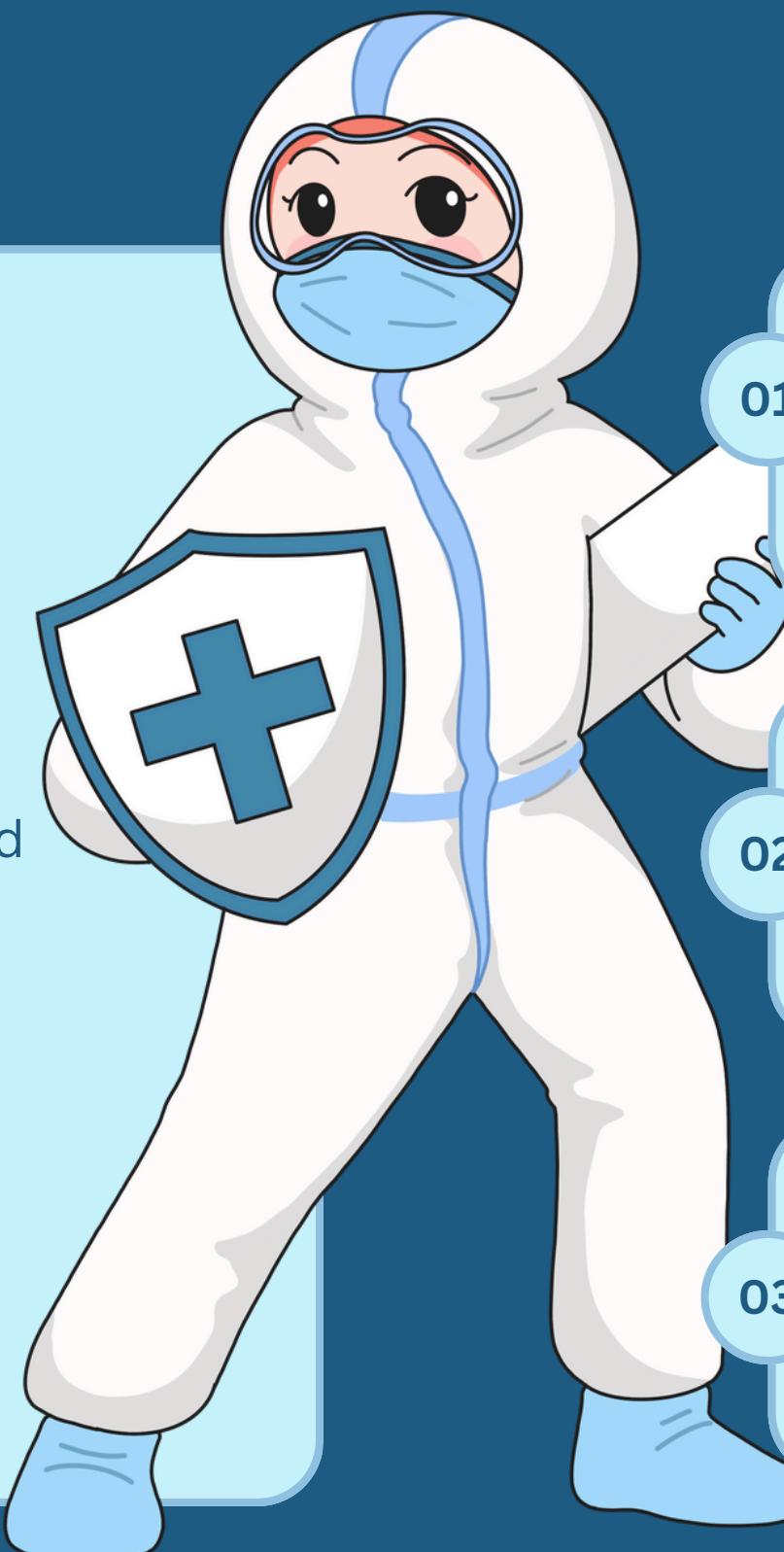
Introduction

- Training of neural networks for automated diagnosis of pigmented skin lesions.
- Dermatoscopic images are critical for developing accurate machine-learning models that can assist in diagnosing various skin conditions.
- Neural networks may not perform well across different populations and types of lesions, leading to less reliable diagnostic tools.



Project objectives

Early detection of skin cancer is crucial for effective treatment and improved survival rates.



01

Precise boundary segmentation aids dermatologists by providing accurate lesion size and shape measurements, which are essential for surgical planning and monitoring treatment progress.

02

Serve as educational tools for training dermatology students and residents, providing high-quality examples of skin lesions and their boundaries.

03

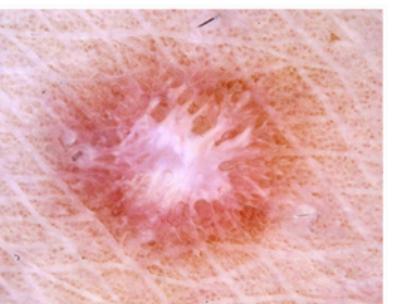
Using this dataset, improved diagnostic tools can enable earlier and more accurate detection of skin cancers, leading to better patient outcomes through timely treatment.

Goal

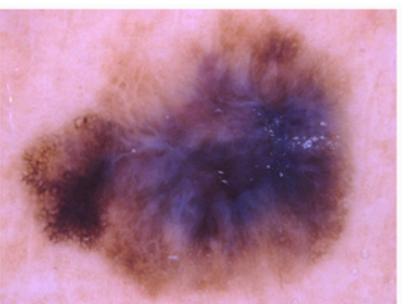
Nevus



Dermatofibroma



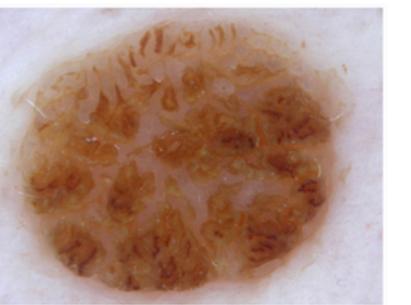
Melanoma



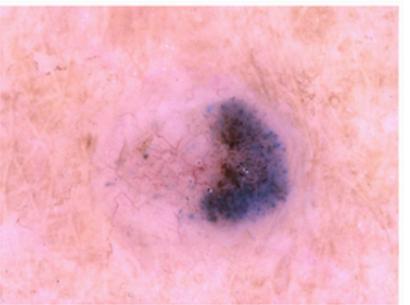
Pigmented
Bowen's



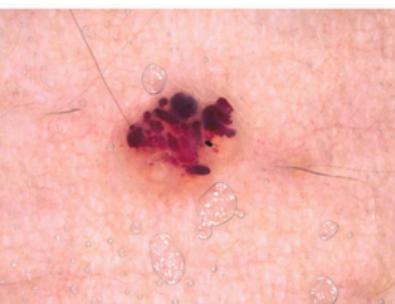
Pigmented
Benign
Keratoses



Basal Cell
Carcinoma

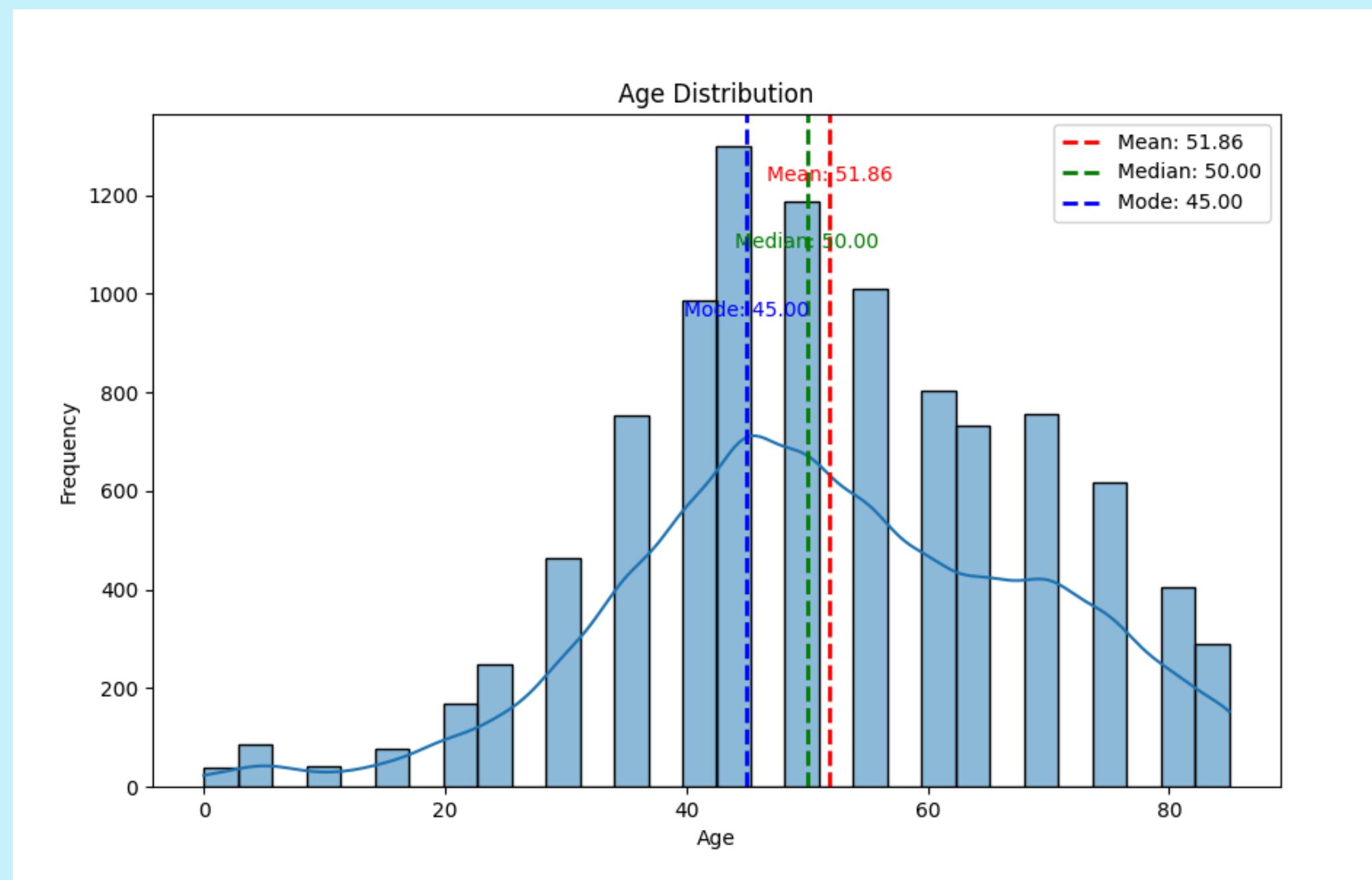


Vascular



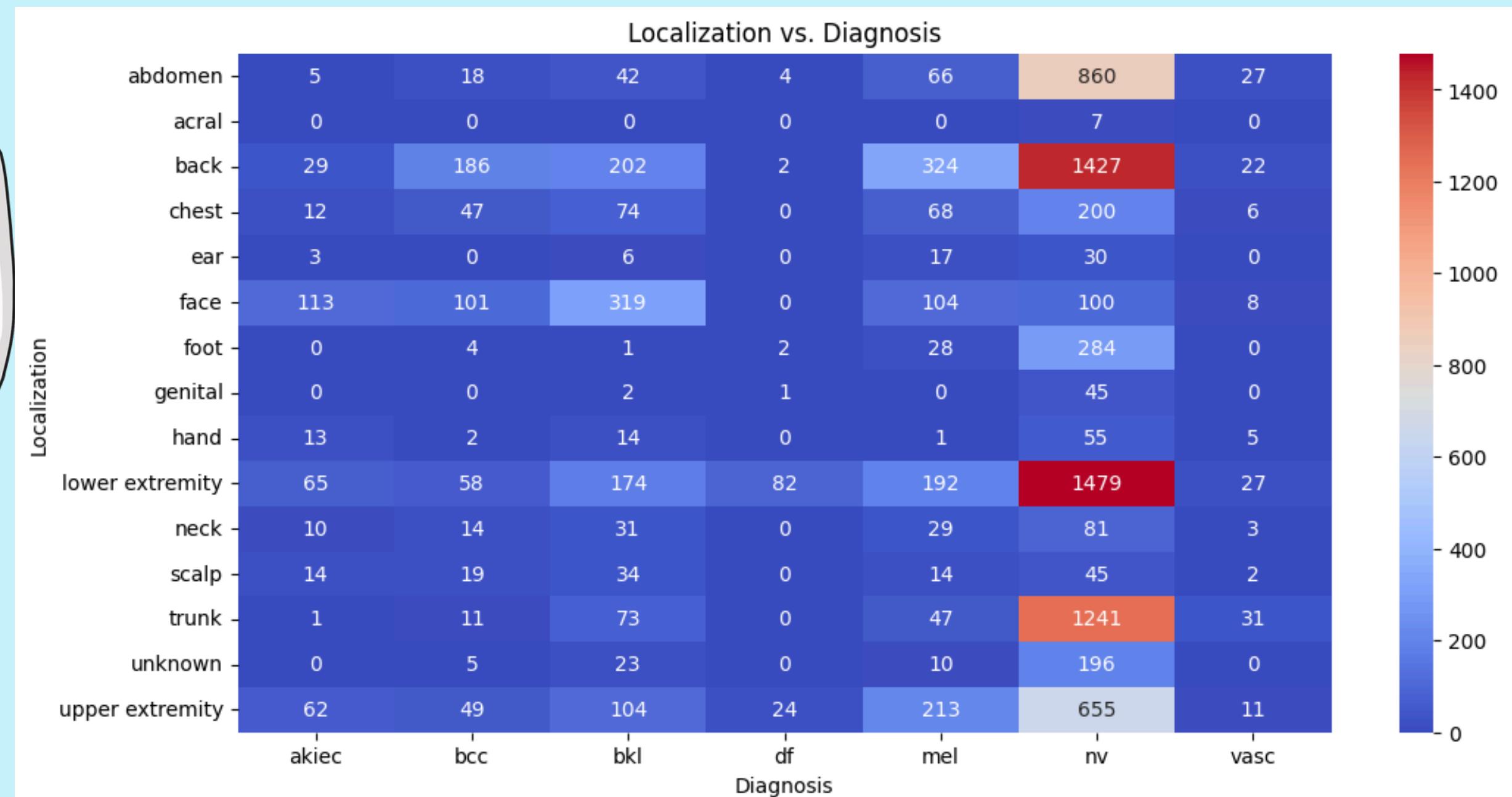
Insights

Age - Diagnosis



Insights

Localization - Diagnosis



Model

ResNet

Loss	Accuracy
0.91	0.718



Model

DenseNet

AUC	Accuracy
0.90	0.77



DEMO



Key Learning

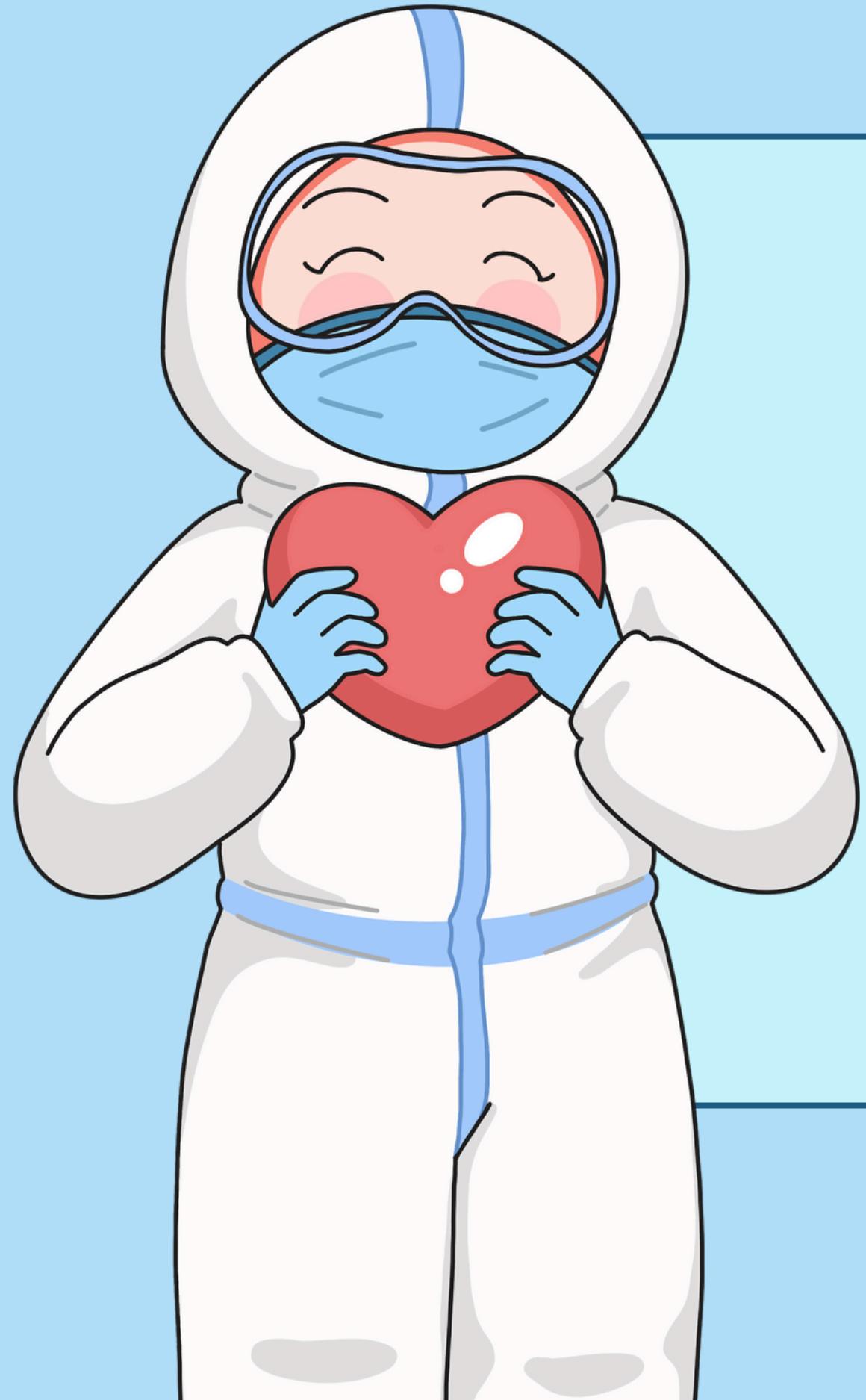
- DenseNet & ResNet Architecture
- Image processing



References

- U-net Architecture : <https://lmb.informatik.uni-freiburg.de/people/ronneber/u-net/>
- Dataset via Paul S.:
[https://www.kaggle.com/datasets/kmader/skin-cancer-mnist-ham10000?resource=download&select=HAM10000_metadata.csv.](https://www.kaggle.com/datasets/kmader/skin-cancer-mnist-ham10000?resource=download&select=HAM10000_metadata.csv)
- Model Evaluation: <https://challenge.isic-archive.com/landing/2018/45/>





THANK YOU!

Questions ?



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