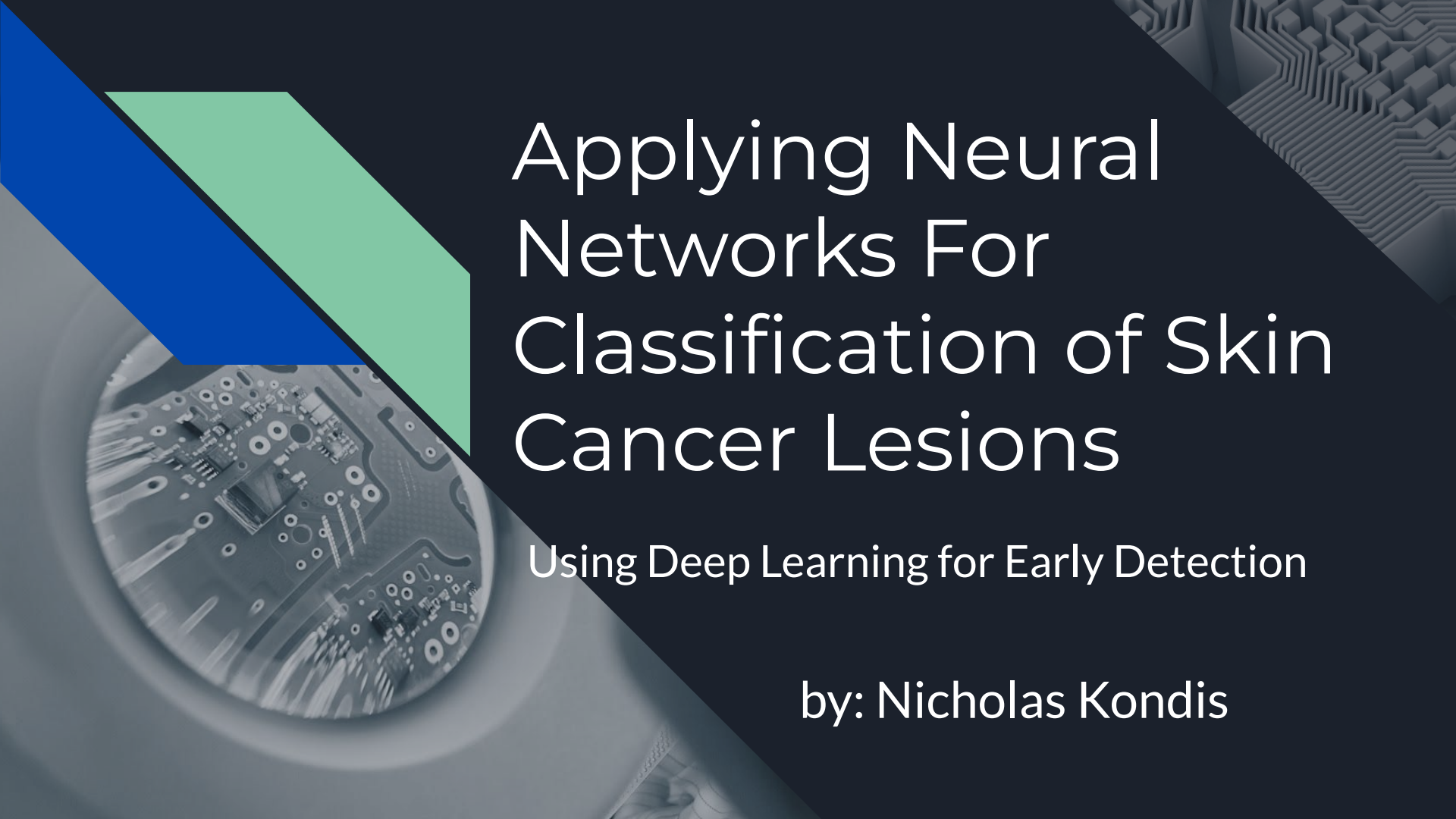


Applying Neural Networks For Classification of Skin Cancer Lesions

Using Deep Learning for Early Detection

by: Nicholas Kondis

The Impacts of Skin Cancer

More people are diagnosed with skin cancers than all other types of cancers combined

1 in 5 Americans will develop skin cancer by age 70

In the US, on average, more than 2 people die from skin cancer every hour

With early detection, the survival rate of skin cancer is over 99 percent

Effective identification of types of skin cancers allows efficient use of resources and therapies

The annual cost of treating skin cancers in the U.S. is estimated at $8.1 billion

Benefits Of Early Identification of Skin Cancer

1. Improved Survival Rates
2. Less Aggressive/ Invasive Treatment
3. Lower Healthcare Costs
4. Better Cosmetic Outcomes
5. Decreased Risk of Metastasis
6. Enhanced Monitoring and Follow-Up
7. Psychological Benefits

Proposed Solution:
Creating a deployable model for identifying skin cancer types using deep learning

1. Creating and optimizing a CNN a Deep Learning Model

2. Modifying pretrained models to find the most effective model

3. Employing an ensemble model to find the most effective classification

Data set: HAM10000

HAM10000 is a well known dataset containing labeled images of skin cancer lesions.

This data will be further augmented (ImageDataGenerator) by flip, rotation, shift, shear, zoom.

Data set: HAM10000

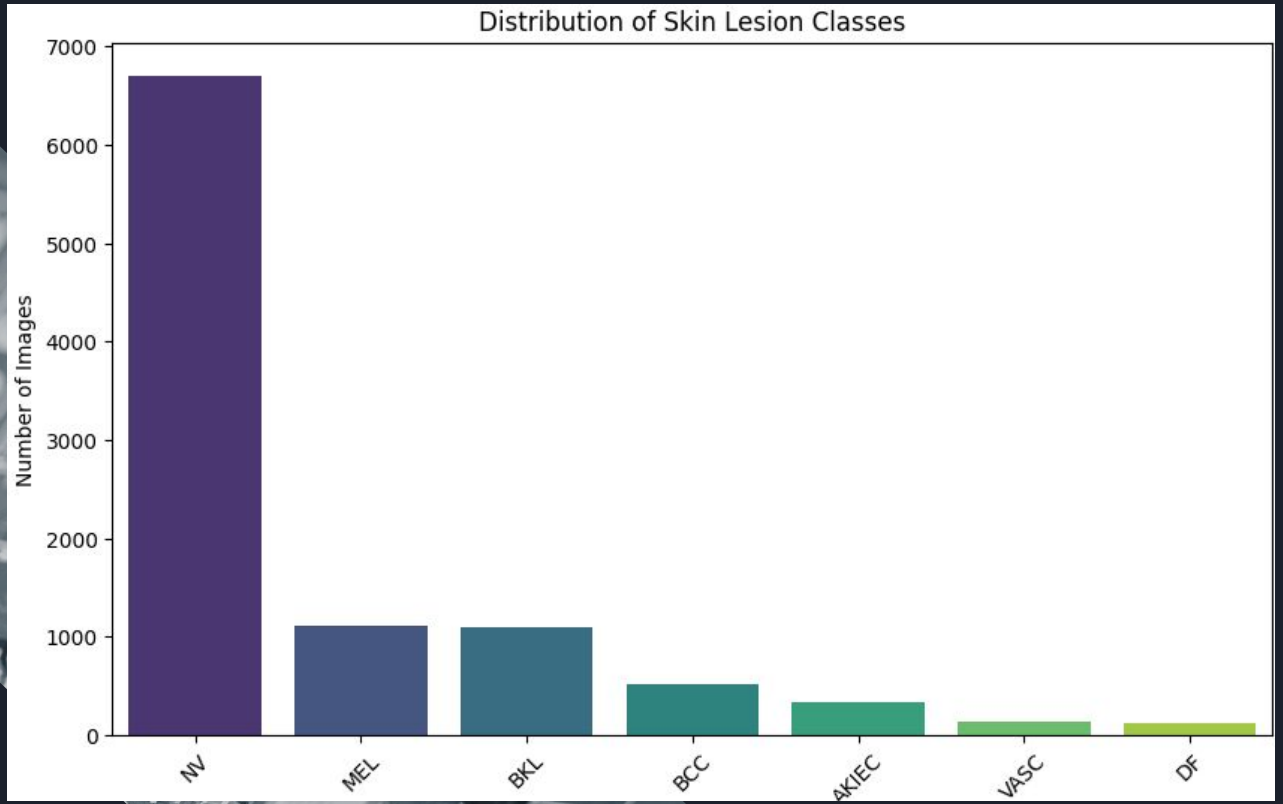
HAM10000 is a “clean” dataset.

- no duplicates
- no multiple labelling

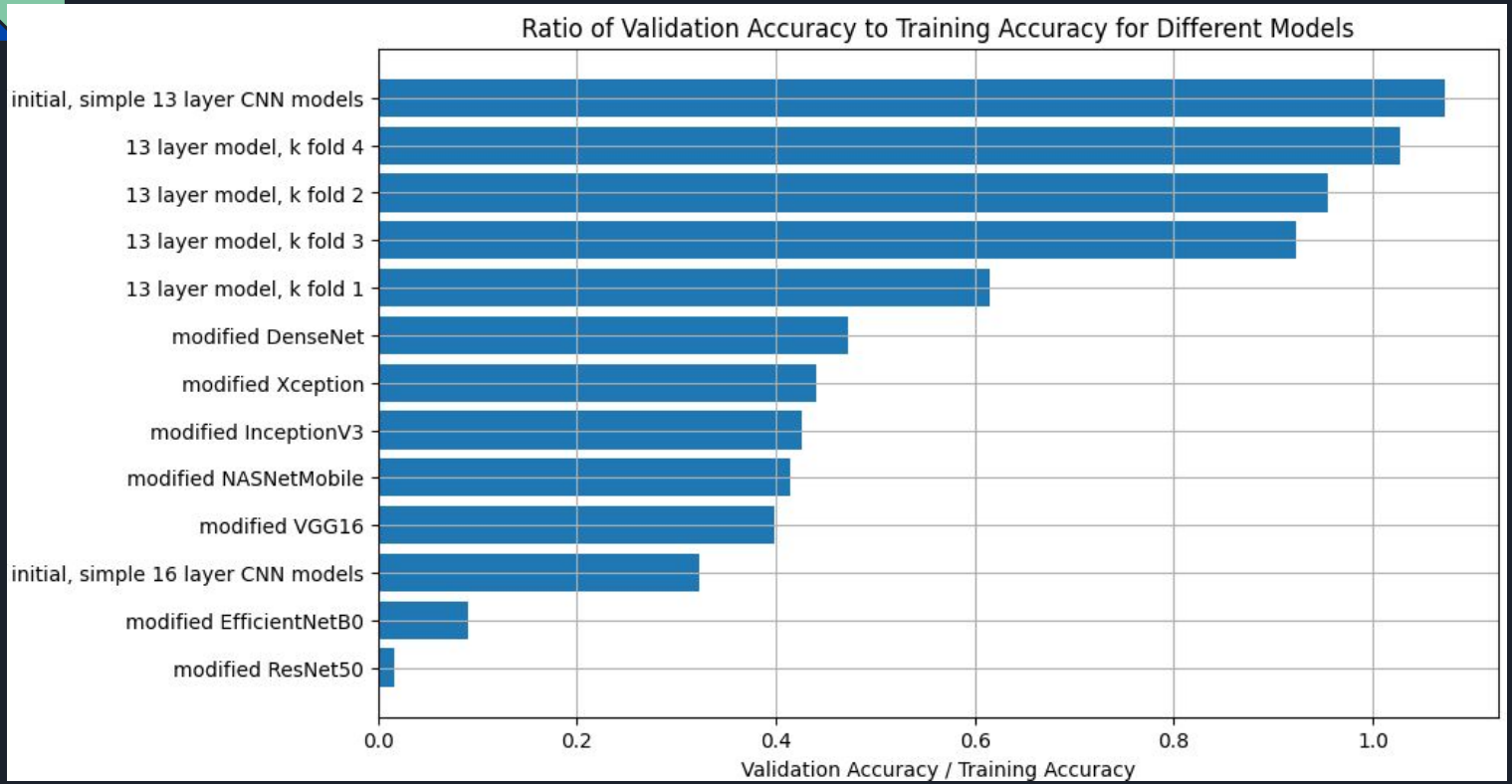
EDA uncovered two issues:

- racial bias in the data
- highly imbalance data
  - - 7 classes, 67% NV

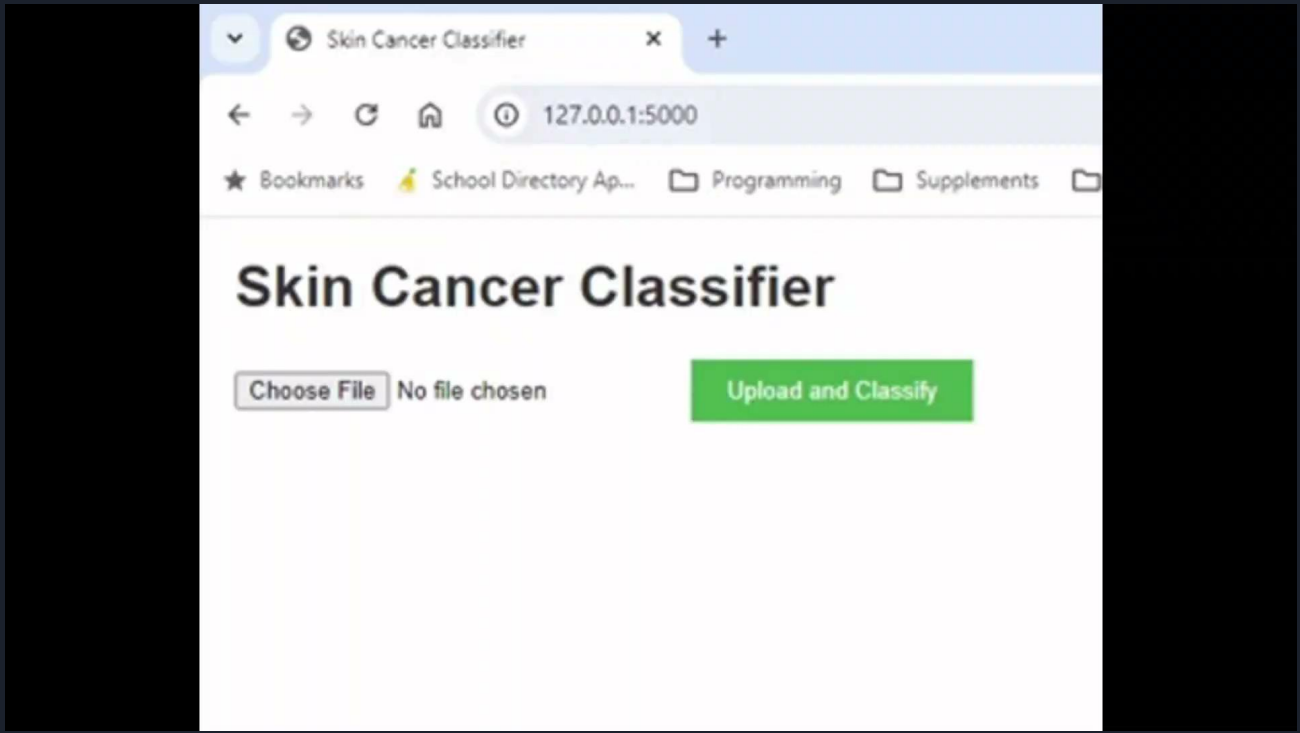
Data set: HAM10000



Model Comparison and Interpretation



My Model In Action



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