Skin Cancer Image Classification

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Presentation Outline

Business Understanding

Project Goal

Data & Modeling

Results

Recommendations

Next Steps

Business Understanding

Skin cancer most commonly diagnosed cancer in the U.S.

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1 in 5 Americans

will develop skin cancer by the age of 70

More than 2 people

die of skin cancer every hour in the U.S.

When detected early,

the 5-year survival rate for melanoma is 99%.

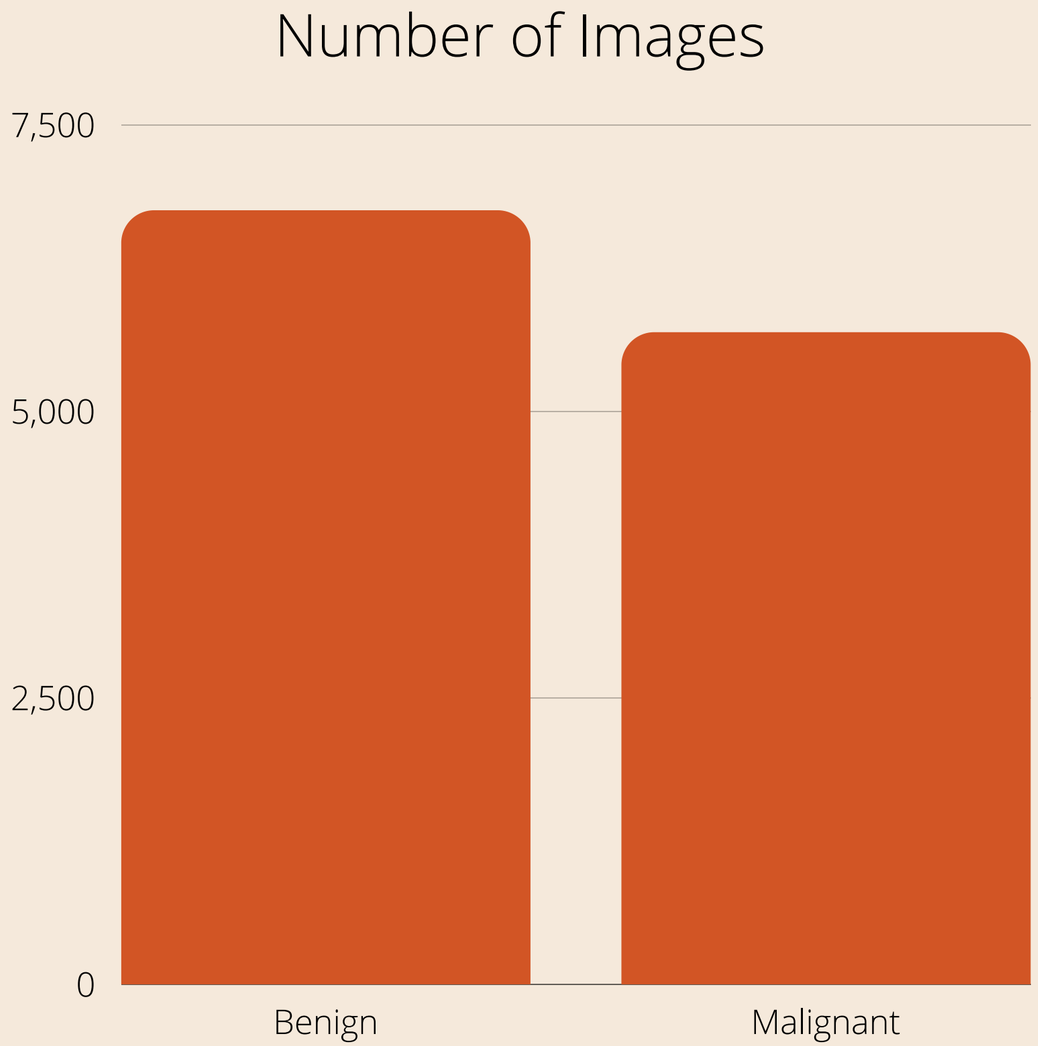
Project Goal

to predict whether a skin lesion is malignant or benign by image classification

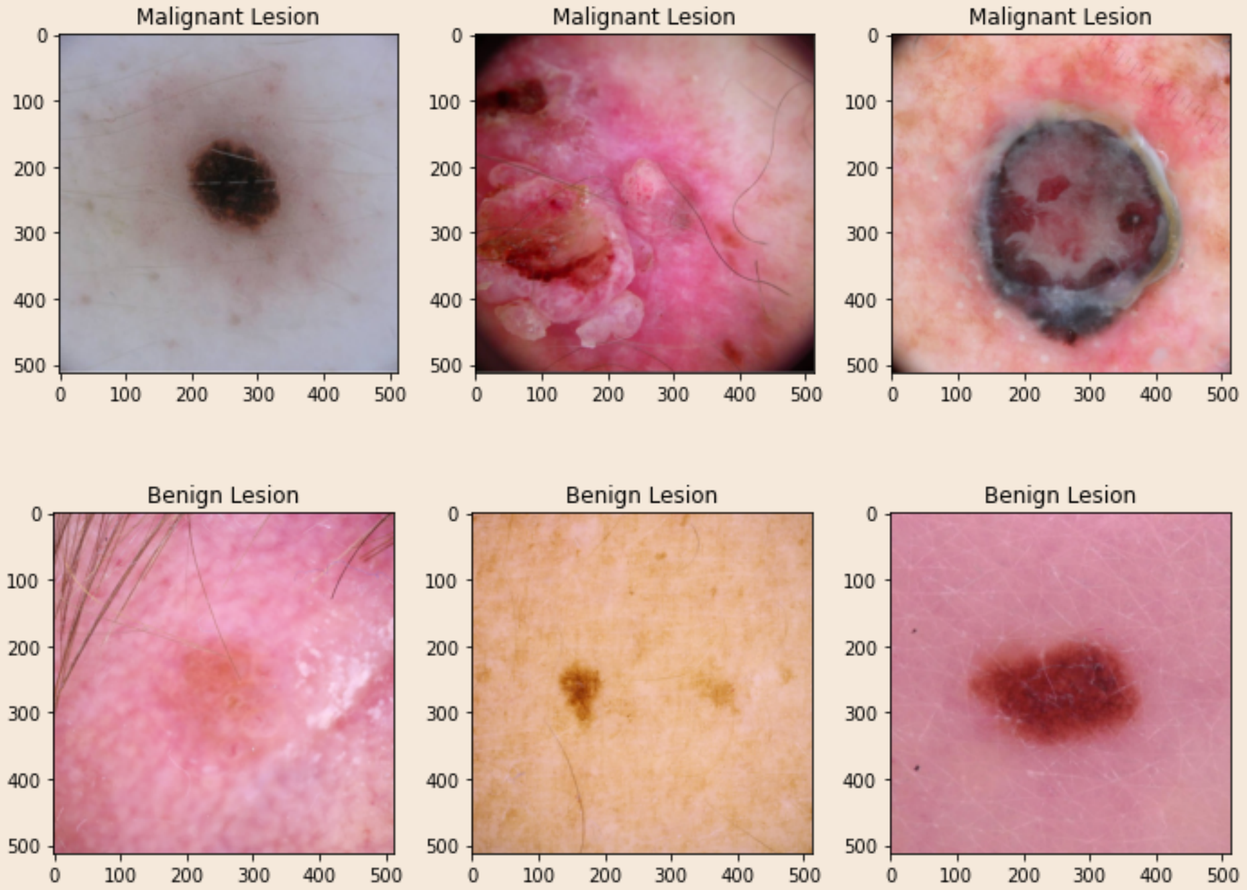
Data

The International Skin Imaging Collaboration (ISIC) Archive

12,436 Skin Lesion Images



Data Sample


Malignant Lesion
Malignant Lesion
Malignant Lesion
Benign Lesion
Benign Lesion
Benign Lesion

Modeling

False Positive

Classifying image as Malignant when it is Benign

Unnecessary Biopsies

Financial Burden

False Negative

Classifying image as Benign when it is Malignant

Delay in Treatment

Mortality Rate Increase

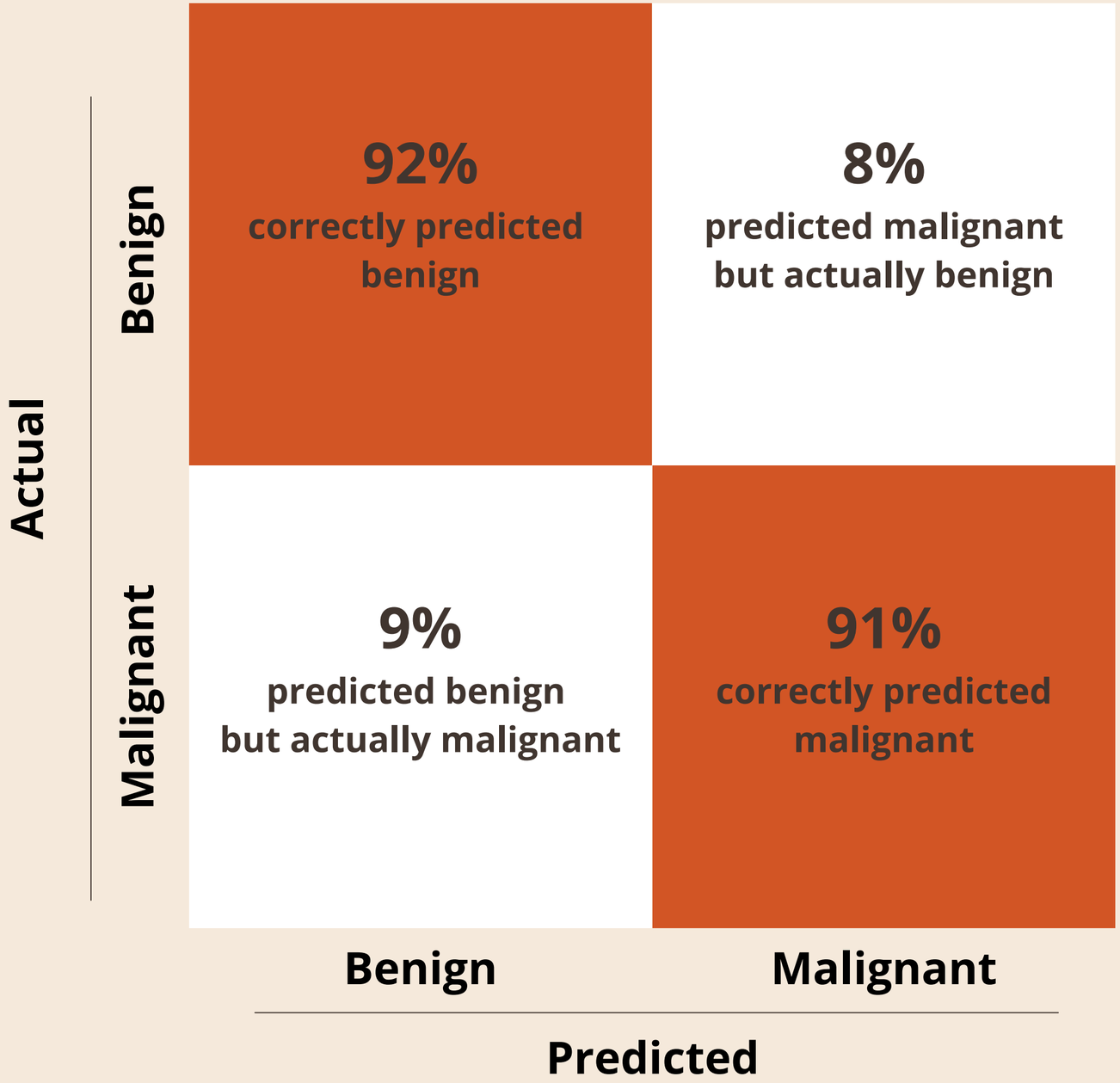
Results

Convolutional Neural Network

Scores:

91% Accuracy

90% Recall

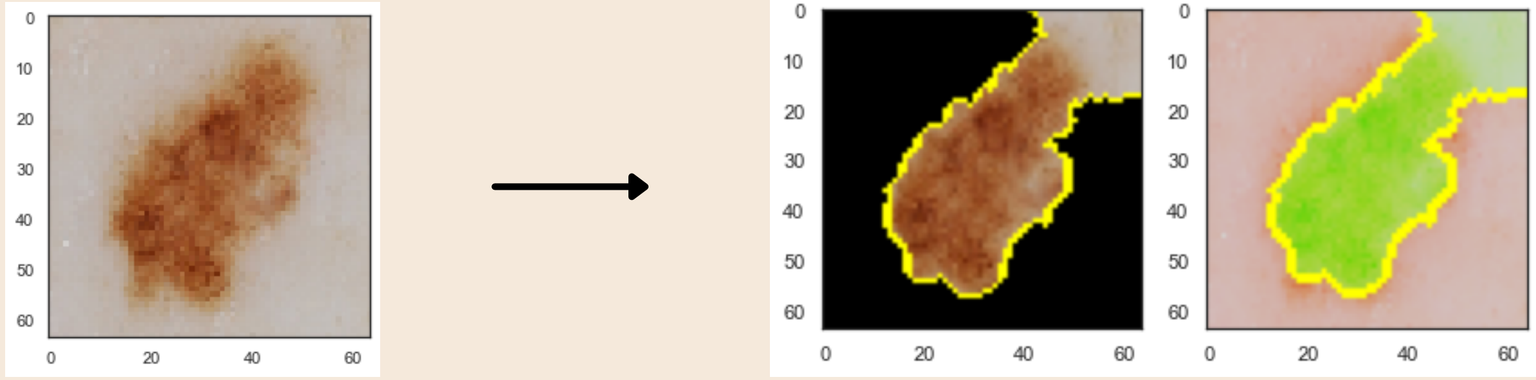


Exploring the Black-Box

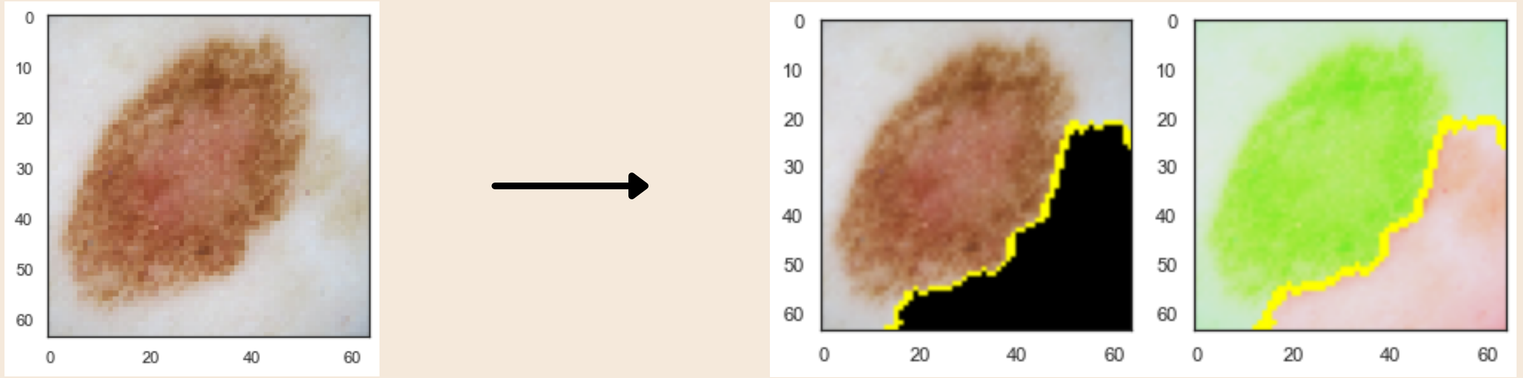
The reasoning behind final model predictions

Correct Predictions

Benign



Malignant

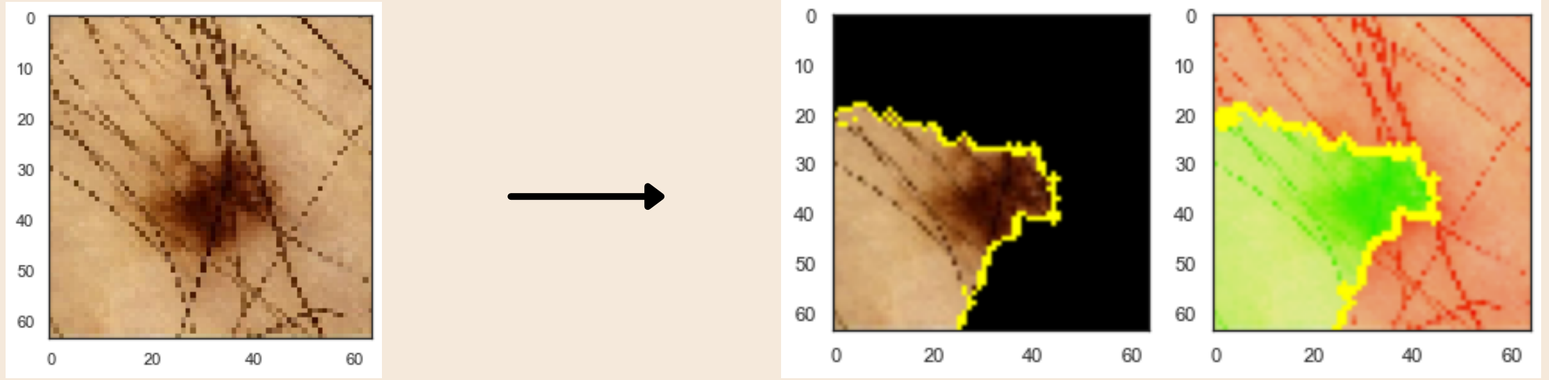


Exploring the Black-Box

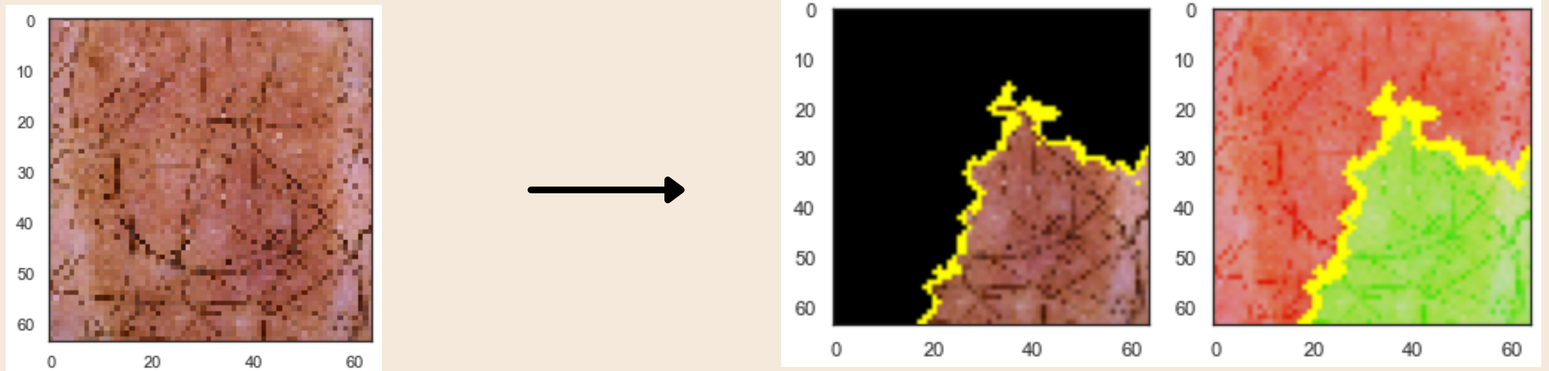
The reasoning behind final model predictions

Incorrect Predictions

Benign



Malignant



Recommendations

Decision Support Tool	For dermatologists and/or medical professionals
Clean Image Usage	No extra disturbances on the images

Next Steps

Image Cleaning

Remove disturbances from images

More dermoscopic images

Increase number of training images

Deep Learning Classifier

Metadata info + skin lesion image

Thank You!

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