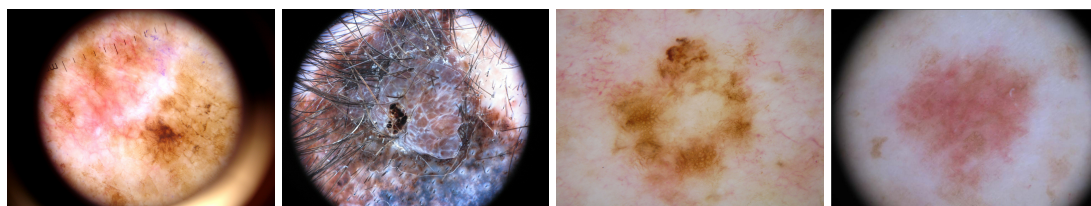


Melanoma Detection Pierre Fabre Challenge

Context :

I've developed this project for the Melanoma Detection - IA Pierre Fabre challenge (Online).
I've reached the 5th position with a VGG-16 and data preparation based on dermatologic rules ABCDE.



ABCDE rule

This rule is used by dermatologist and medicine student to detect melanoma on skin mole.

A - Asymmetrical Shape

Melanoma lesions are often irregular, or not symmetrical, in shape. Benign moles are usually symmetrical.

B - Border

Typically, non-cancerous moles have smooth, even borders. Melanoma lesions usually have irregular borders that are difficult to define.

C - Color

The presence of more than one color (blue, black, brown, tan, etc.) or the uneven distribution of color can sometimes be a warning sign of melanoma. Benign moles are usually a single shade of brown or tan.

D - Diameter

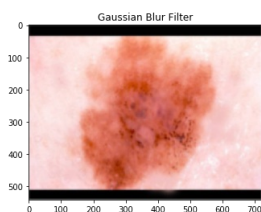
Melanoma lesions are often greater than 6 millimeters in diameter (approximately the size of a pencil eraser).

E - Evolution

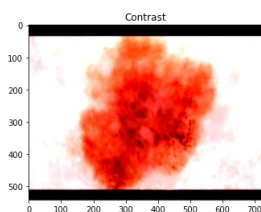
The evolution of your mole(s) has become the most important factor to consider when it comes to diagnosing a melanoma. Knowing what is normal for YOU could save your life. If a mole has gone through recent changes in color and/or size, bring it to the attention of a dermatologist immediately.

Image preprocessing

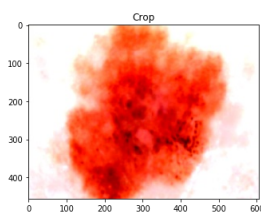
- Gaussian Blur Filter :



- Contrast agumentation :



- Crop :



- class have been rebalanced with data augmentation (rotation, crop, color)
- No transfer learning

Algorithm : VGG-16

Layer (type)	Output Shape	Param #
zero_padding2d_14 (ZeroPaddi	(None, 5, 258, 256)	0
conv1_1 (Conv2D)	(None, 3, 256, 64)	147520
zero_padding2d_15 (ZeroPaddi	(None, 5, 258, 64)	0
conv1_2 (Conv2D)	(None, 3, 256, 64)	36928
max_pooling2d_6 (MaxPooling2	(None, 3, 128, 32)	0
zero_padding2d_16 (ZeroPaddi	(None, 5, 130, 32)	0
conv2_1 (Conv2D)	(None, 3, 128, 128)	36992
zero_padding2d_17 (ZeroPaddi	(None, 5, 130, 128)	0
conv2_2 (Conv2D)	(None, 3, 128, 128)	147584
max_pooling2d_7 (MaxPooling2	(None, 3, 64, 64)	0
zero_padding2d_18 (ZeroPaddi	(None, 5, 66, 64)	0
conv3_1 (Conv2D)	(None, 3, 64, 256)	147712
zero_padding2d_19 (ZeroPaddi	(None, 5, 66, 256)	0
conv3_2 (Conv2D)	(None, 3, 64, 256)	590080
zero_padding2d_20 (ZeroPaddi	(None, 5, 66, 256)	0
conv3_3 (Conv2D)	(None, 3, 64, 256)	590080
max_pooling2d_8 (MaxPooling2	(None, 3, 32, 128)	0
zero_padding2d_21 (ZeroPaddi	(None, 5, 34, 128)	0
conv4_1 (Conv2D)	(None, 3, 32, 512)	590336
zero_padding2d_22 (ZeroPaddi	(None, 5, 34, 512)	0
conv4_2 (Conv2D)	(None, 3, 32, 512)	2359808
zero_padding2d_23 (ZeroPaddi	(None, 5, 34, 512)	0
conv4_3 (Conv2D)	(None, 3, 32, 512)	2359808
max_pooling2d_9 (MaxPooling2	(None, 3, 16, 256)	0
zero_padding2d_24 (ZeroPaddi	(None, 5, 18, 256)	0
conv5_1 (Conv2D)	(None, 3, 16, 512)	1180160
zero_padding2d_25 (ZeroPaddi	(None, 5, 18, 512)	0
conv5_2 (Conv2D)	(None, 3, 16, 512)	2359808
zero_padding2d_26 (ZeroPaddi	(None, 5, 18, 512)	0

conv5_3 (Conv2D)	(None, 3, 16, 512)	2359808
max_pooling2d_10 (MaxPooling)	(None, 3, 8, 256)	0
flatten_2 (Flatten)	(None, 6144)	0
dense_3 (Dense)	(None, 256)	1573120
dropout_2 (Dropout)	(None, 256)	0
dense_4 (Dense)	(None, 2)	514
=====		
Total params: 14,480,258		
Trainable params: 14,480,258		
Non-trainable params: 0		
None		

News :

- [Pierre Fabre News](#)
- [Offline Challenge](#)

Publications :

- [Vision based classification of skin cancer using deep learning, Simon Kalouche, Stanford](#)
- [Deep features to classify skin lesions](#)
- [Fully Convolutional Networks to Detect Clinical Dermoscopic Features](#)
- [*Knowledge Transfer for Melanoma Screening with Deep Learning](#)
- [Skin Lesion Analysis towards Melanoma Detection Using Deep Learning Network](#)
- [Melanoma detection using deep learning technology](#)
- [An Overview of Melanoma Detection in Dermoscopy Images Using Image Processing and Machine Learning](#)