



Skanner

Skin lesion detection mobile app



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WHY THIS SUBJECT ? 01

What is a skin lesion, its different shapes,
and its effects worldwide ?

OUR SOLUTION & CHALLENGERS 03

The mobile app : mole scanner

02 PATHOLOGY & TREATMENTS

How to prevent from cancerous mole ?

04 AWS SUPPORT

Which technology is going to be used ?

Why this subject ?



01

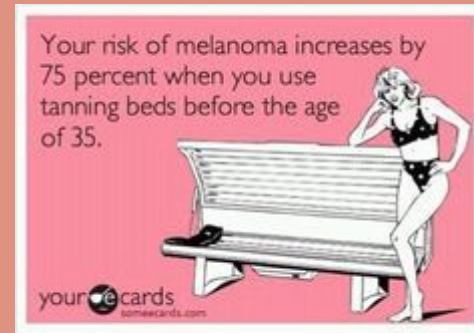
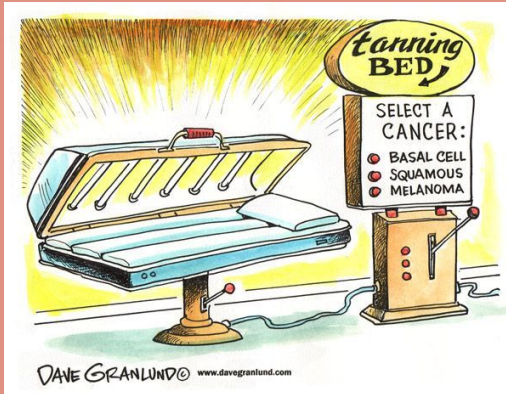
What is a skin lesion, its different shapes, and its effects worldwide ?

A woman with blonde hair tied back, wearing safety glasses and a white lab coat, is looking through a microscope. The entire image has a reddish-orange tint. The text is overlaid on the center of the image.

«It's not "Just Skin Cancer" when it's the largest
organ of your body »

Thekinographie.com

Dark Humour..



ABOUT THE DISEASE



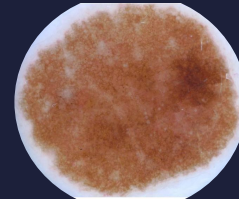
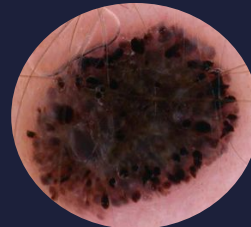
A skin lesion is an abnormal lump, bump, ulcer, sore or colored area on the skin

A benign **mole** can change into a cancer at anytime.

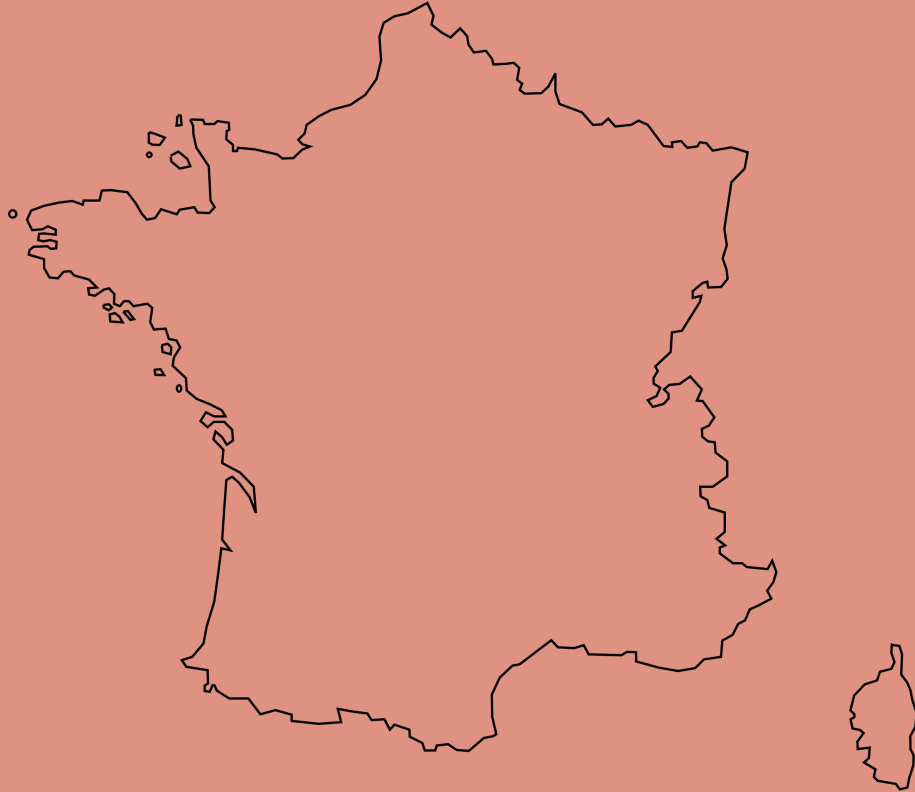
Actinic keratosis are mark cause by a long exposure to sunlight.



Mole are small skin marks. The shape can be fat, raised, smooth or rough. The colour is dark, brown, red or yellow.



PREVALENCE



80 K

Number of people diagnosed
with a skin lesion per year

2 K

Number of deaths from a skin
lesion per year

RISK FACTORS

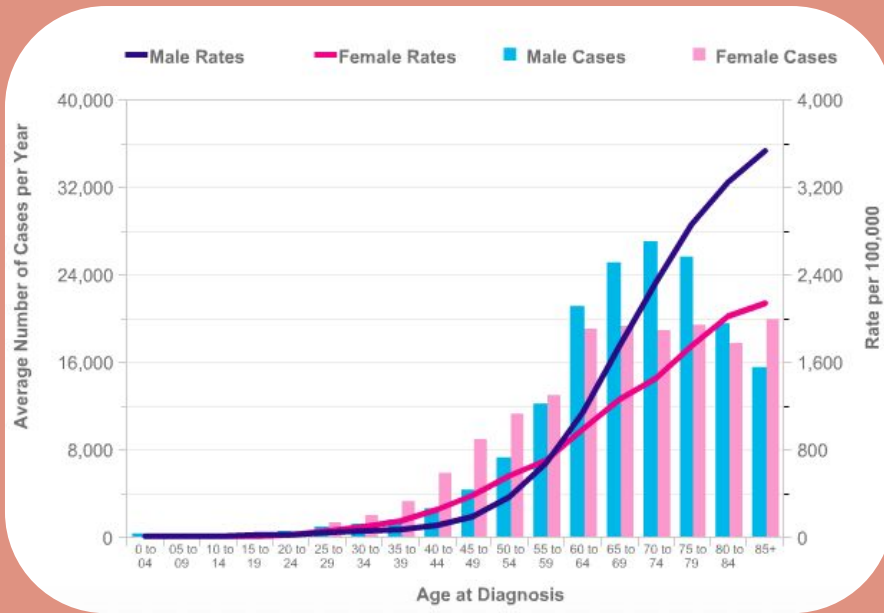


Figure 1 – Incidence Statistics for Cancers (excluding non-melanoma skin cancer) in the UK 2009-11. There is an exponential increase of incidence with age supporting the Knudson Hypothesis [9].

But..

95 %

Although the mortality is significant, **when detected early**, melanoma survival exceeds 95%

Pathology & Treatments

02

How to prevent from skin cancer?



PATHOLOGY

What is a skin cancer?

Due to the development of abnormal cells that have the ability to invade or spread to other parts of the body

Skin cancer classification

Skin cancers are of two distinct types: nonmelanoma and melanoma.

Risk factors

More than 90% of cases are caused by exposure to ultraviolet radiation from the Sun.

Genetic factors

« [Skin cancer] involves some degree of inherited risk. »

Dr. Kelly Cha
(Michigan Medicine and dermatologist)

SIGNS AND SYMPTOMS

Basal-cell skin cancer

Usually presents as a raised, smooth, pearly bump on the sun-exposed skin.



Melanoma

Warning signs of malignant melanoma include change in the size, shape, color or elevation of a mole.



Squamous-cell skin cancer

Commonly a red, scaling, thickened patch on sun-exposed skin.

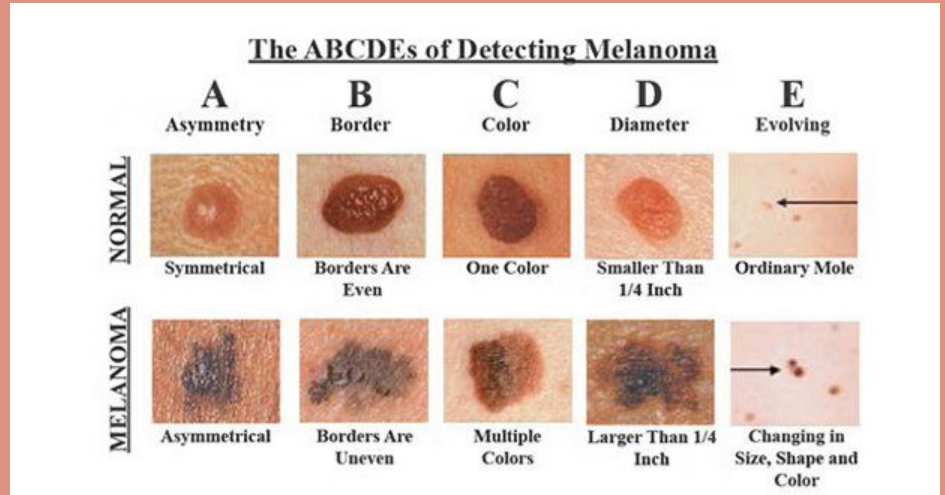
DIAGNOSIS

Biopsy

extraction of sample cells or tissues for examination to determine the presence or extent of a disease

Histopathology

microscopic examination of tissue in order to study the manifestations of disease



TREATMENT

depend on the specific type of cancer

Radiotherapy

Uses high-powered energy beams to kill cancer cells

Chemotherapy

In chemotherapy, drugs are used to kill cancer cells.

Immunotherapy

Uses your body's immune system to kill cancer cells.

Excisional surgery

This type of treatment may be appropriate for any type of skin cancer.

Mohs surgery

Removing the skin growth examining each layer under the microscope

Freezing

Destroy actinic keratoses and some small, early skin cancers by freezing them with liquid nitrogen (cryosurgery).



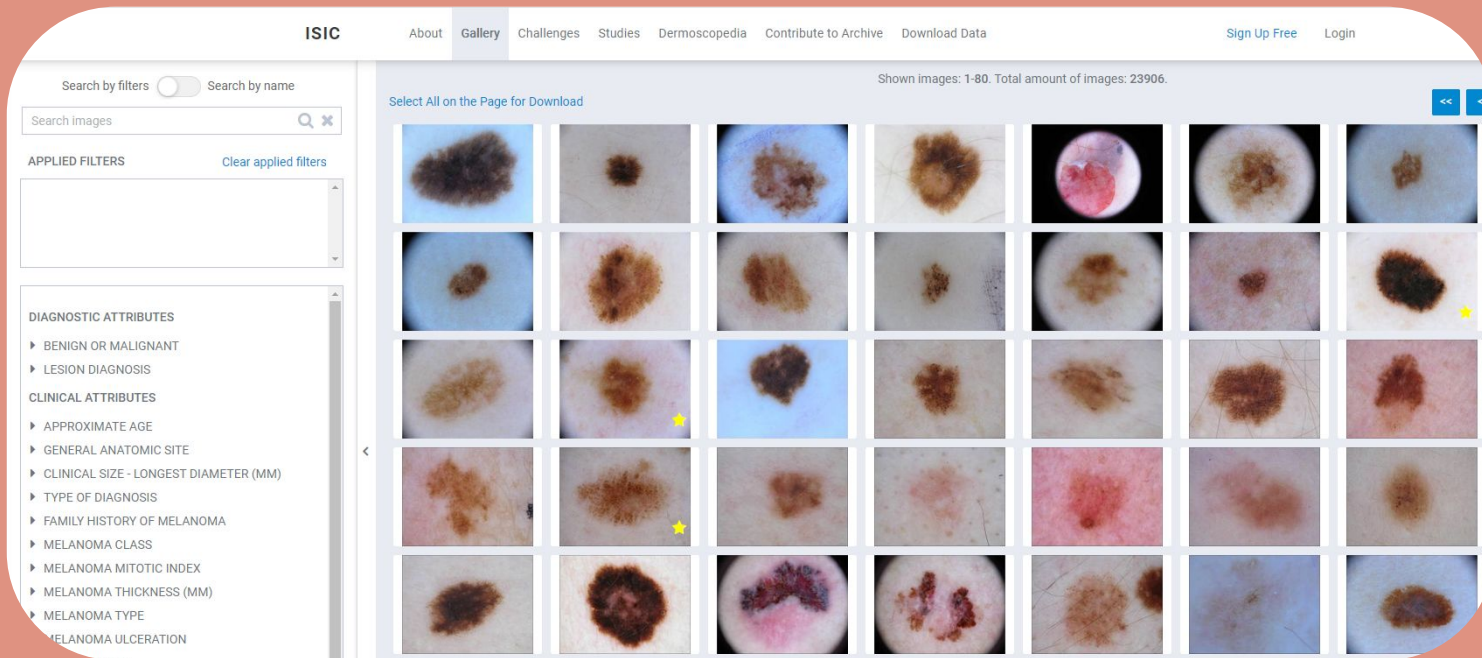
Our solution & challengers



03

The mobile app : mole scanner

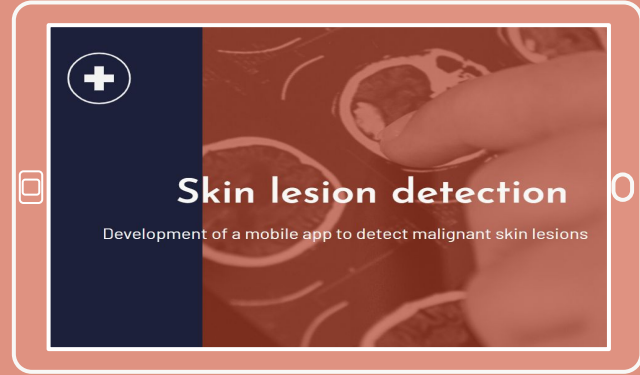
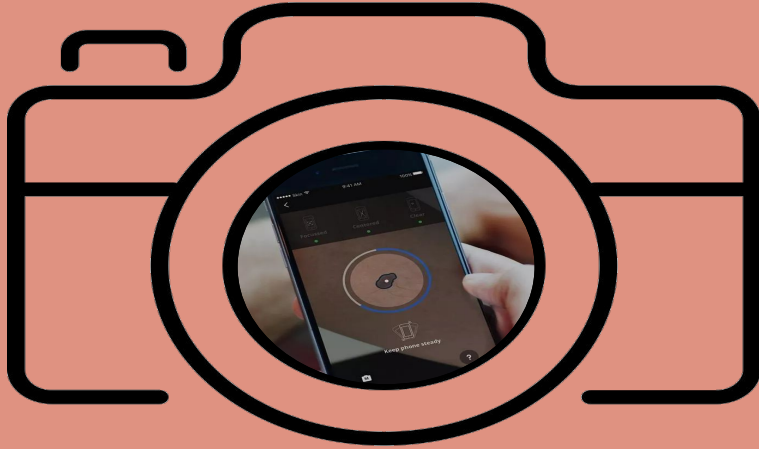
The data



The ISIC melanoma project gathers :

- 23906 pictures
- International community of dermatologists that collaborate

Our solution



This app will **detect skin lesion** and will recommend the patient to consult the nearest dermatologist if it sees **abnormal** mole.



Geolocation helps to
book the nearest
doctor

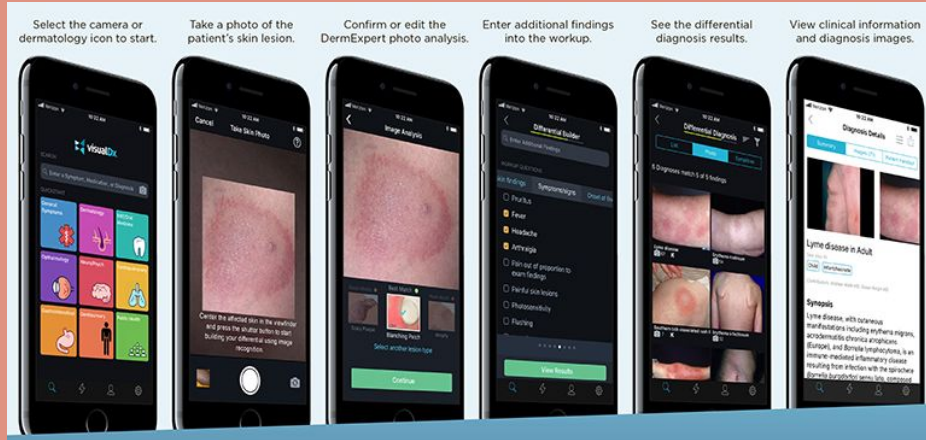


Most advanced AI
technology with high
accuracy



Arrange appointment
with a large choice of
doctors

Challenger



UMSkinCheck

The University of Michigan launched a free app that guides users through a full home skin check exam.

Mole Mapper

The Oregon Health & Science University an app that allows users to take regular photos of their moles to facilitate change tracking over time.

Challenger

MoleScope

This is a high resolution camera compatible with many different smartphones. This camera uses high magnification and special lighting to take more detailed and better quality photos than other skin cancer apps.

Skin Vision

This app helps users identify high risk moles that require further testing. The app classes each photo as either high or low risk. SkinVision also provides advice on the next steps to take.

AWS Support



04

Which technology is going to be used ?

AWS Amplify



Add AI/ML capabilities to your app powered by cloud services



Easily achieve use cases like entities recognition in image..



Amplify comes with built-in support for Amazon S3



Amazon Rekognition



Rekognition integrates directly with Amazon S3



Already train on billions of pictures and constantly improving



Easily Integrate Powerful Visual Analysis into your App using the API



AWS Toolkit directly available on PyCharm

The screenshot shows the Amazon Rekognition console. At the top is the AWS logo and a search icon. Below the navigation bar, the page title is "Amazon Rekognition" with a dropdown arrow. The main heading is "Amazon Rekognition" followed by the subtitle "Automate your image and video analysis with machine learning." Below this is an orange button that says "Get Started with Amazon Rekognition". The main content area contains a paragraph about the service's capabilities, a section for "Amazon Rekognition Custom Labels", and a "Customers" section featuring logos for the NFL, CBS, and National Geographic.

aws

Amazon Rekognition

Amazon Rekognition

Automate your image and video analysis with machine learning.

[Get Started with Amazon Rekognition](#)

Amazon Rekognition makes it easy to add image and video analysis to your applications using proven, highly scalable, deep learning technology that requires no machine learning expertise to use. With Amazon Rekognition, you can identify objects, people, text, scenes, and activities in images and videos, as well as detect any inappropriate content. Amazon Rekognition also provides highly accurate facial analysis and facial search capabilities that you can use to detect, analyze, and compare faces for a wide variety of user verification, people counting, and public safety use cases.

With **Amazon Rekognition Custom Labels**, you can identify the objects and scenes in images that are specific to your business needs. For example, you can build a model to classify specific machine parts on your assembly line or to detect unhealthy plants. Amazon Rekognition Custom Labels takes care of the heavy lifting of model development for you, so no machine learning experience is required. You simply need to supply images of objects or scenes you want to identify, and the service handles the rest.

Customers

NFL CBS NATIONAL GEOGRAPHIC

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RESOURCES

- Modelling the Mutation Rate of The Flash in Context, Scott Brown & Danny Chandla, 2015 : https://www.researchgate.net/figure/Incidence-Statistics-for-Cancers-excluding-non-melanoma-skin-cancer-in-the-UK-2009-11_fig2_273905149
- The International Skin Imaging Collaboration : <https://isic-archive.com/>
- Amazon Recognition : <https://aws.amazon.com/rekognition/>
- Amazon Amplify : <https://aws.amazon.com/amplify/>