SKIN
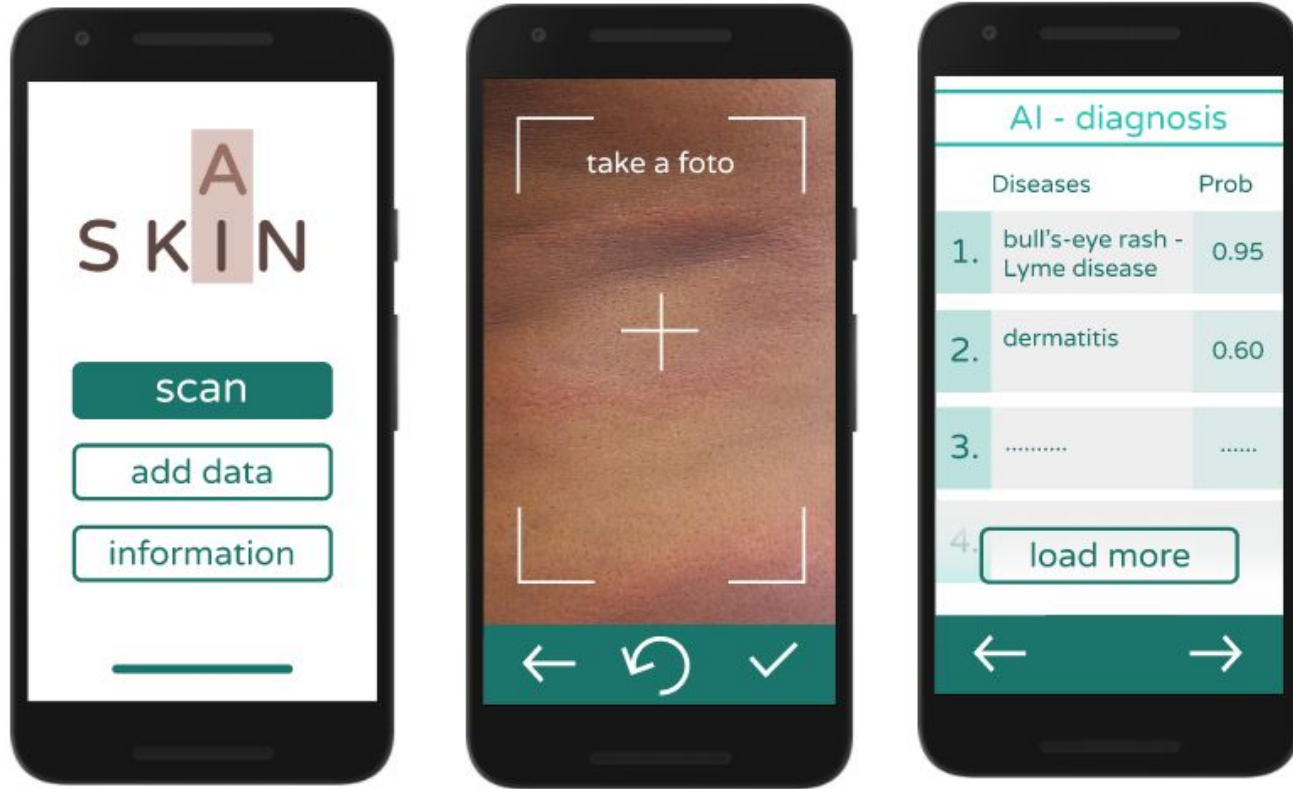
Ulrike, Philipp, Erik, Sue, Laura & Tobias
Specifically innovated for the HubIT Online-Designathon 2020

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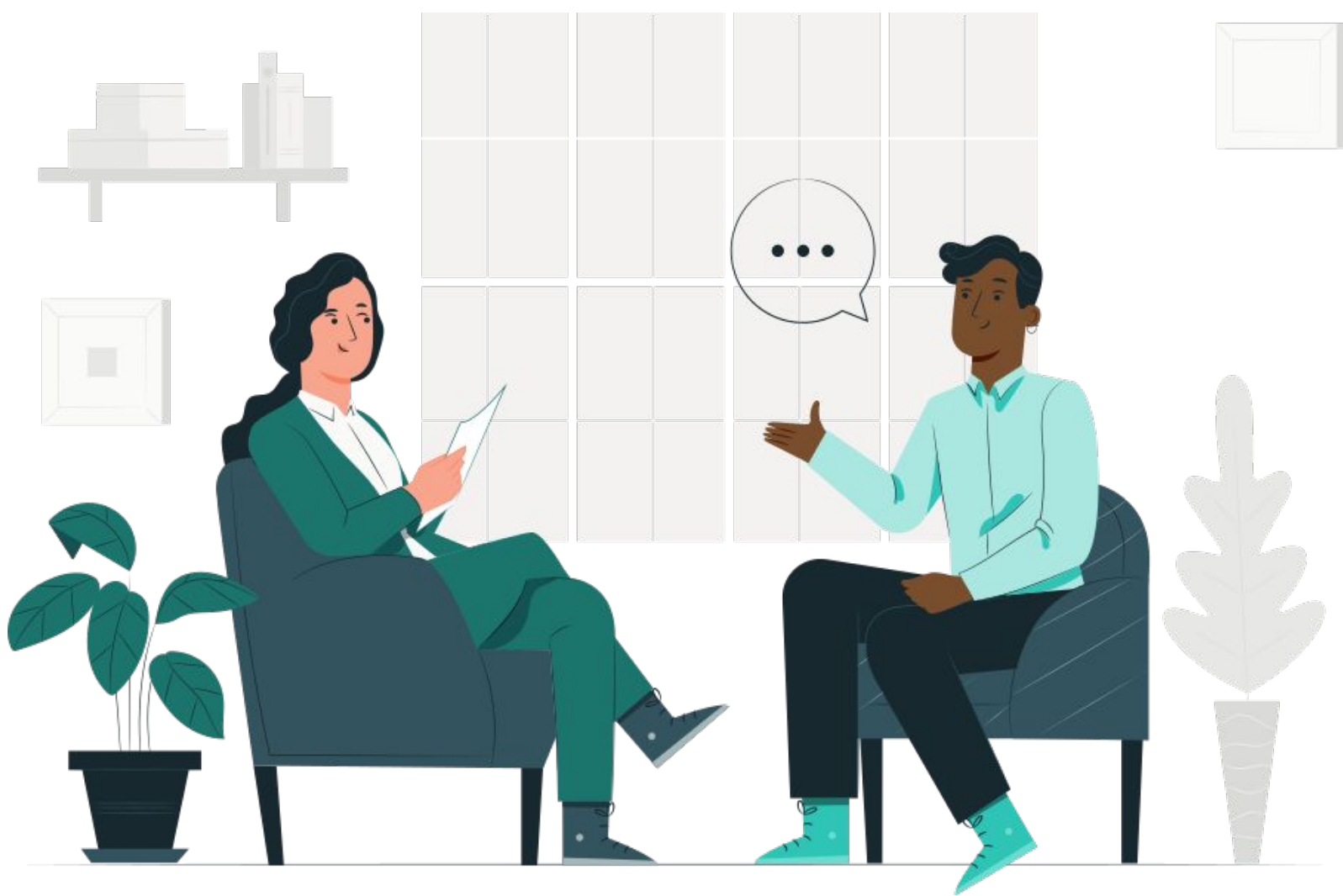
EMMA

Demographics
- Age: 31
- Interests: self education, yoga, volleyball, book club
- Life style: urban, unmarried

Work Experience & education
- Dermatologist
- Degree & Doctor of Medicine
- 4 years practical experiences

Motivation / Goal
- Helping all people equally
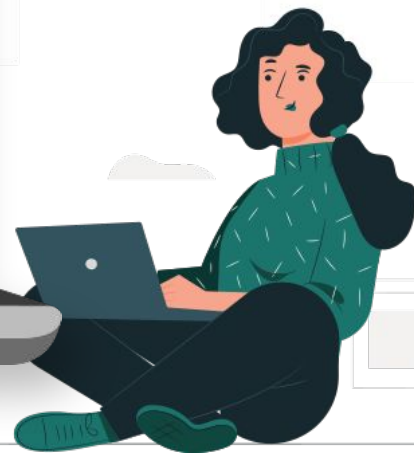- Detecting diseases early on
- Improving the health system

Dermatology Has a Problem With Skin Color

Common conditions often manifest differently on dark skin. Yet physicians are trained mostly to diagnose them on white skin.

"Pattern recognition is central to dermatology, and a lot of the pattern recognition is training your eye to recognize certain colors that trigger you to think of certain diseases," said Dr. Jenna Lester, director of the skin of color program at the University of California, San Francisco.

"But the color in question is impacted by the surrounding color," she said. "It can look different in darker skin. If you're only trained to look at something in one color, you won't recognize it in another color."
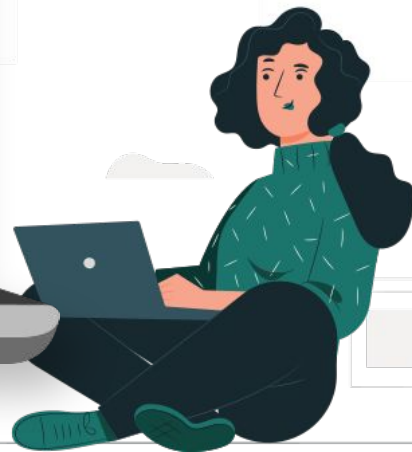
More than just a handbook.

It was not long after my arrival at medical school that I became acutely aware of the lack of clinical teaching provided about conditions as they appear on patients of darker skin. As a black man I found it perplexing that I was being shown images of clinical signs exclusively on Caucasian patients and wondered how I would identify these signs on my own skin as well as any non-white patients I would be treating in the future.

The medical care you receive should never be compromised due to the colour of your skin; the premise upon which **BlackandBrownSkin** has been created. This platform has been devised to showcase clinical signs of diseases on black and brown skin. My vision is to see the impact of this educational platform result in earlier and more accurate diagnosis, increased patient satisfaction and greater confidence amongst healthcare professionals when treating people of colour.

More recently we have seen patients from a BAME Background were 4times more likely to be affected by the COVID-19 pandemic.* Illustrating some of the current disparities that exist in healthcare today. This further highlights the need for 'Mind The Gap' which goes hand in hand with this platform as resources for all to access for education on the presentation of clinical signs in darker skin tones.

It's more than just a handbook. It's a movement for change.

MALONE MUKWENDE
FOUNDER
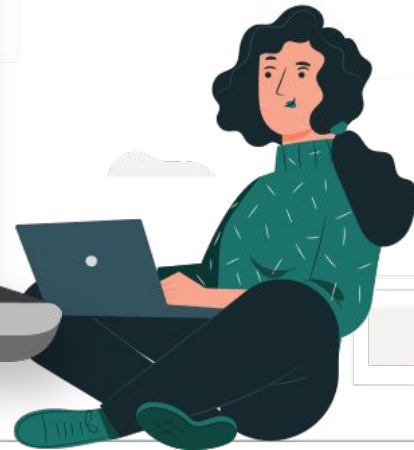
DR. JOHNSON

Demographics
- Age: 56
- Interests: fishing
- Life style: big city, married with children

Work Experience & education
- Dermatologist
- Degree & Doctor of Medicine
- 30+ years practical experiences

Motivation / Goal
- Efficient work structure
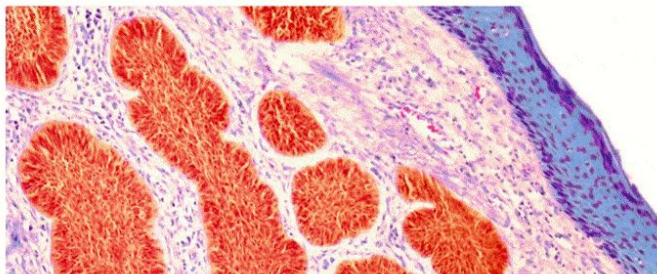- Reliable employees
- Good helping rates

AI?!

The Atlantic

HEALTH

AI-Driven Dermatology Could Leave Dark-Skinned Patients Behind

Machine learning has the potential to save thousands of people from skin cancer each year—while putting others at greater risk.

ANGELA LASHBROOK AUGUST 16, 2018

RECOMMENDED READING

Being Black in America Can Be Hazardous to Your Health

OLGA KHAZAN

Facial-Recognition Software Might Have a Racial Bias Problem

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Artificial Intelligence Applications in Dermatology: Where Do We Stand?

Arieh Gomolin,[1] Elena Netchiporouk,[1] Robert Gniadecki,[2,*] and Ivan V. Litvinov[1,*]

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[J Invest Dermatol. 2020]

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[Indian J Dermatol. 2020]

The role of artificial intelligence in cosmetic dermatology-Current, upcoming, and future trends.   [J Cosmet Dermatol. 2020]

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Abstract

Go to: ⌄

Artificial intelligence (AI) has become a progressively prevalent Research Topic in medicine and is increasingly being applied to dermatology. There is a need to understand this technology's progress to help guide and shape the future for medical care providers and recipients. We reviewed the literature to evaluate the types of publications on the subject, the specific dermatological topics addressed by AI, and the most challenging barriers to its implementation. A substantial number of original articles and commentaries have been published to date and only few detailed reviews exist. Most AI applications focus on differentiating between benign and malignant skin lesions, however; others exist pertaining to ulcers, inflammatory skin diseases, allergen exposure, dermatopathology, and gene expression profiling. Applications commonly analyze and classify images, however, other tools such as risk assessment calculators are becoming increasingly available. Although many applications are technologically feasible, important implementation barriers have been identified including systematic biases, difficulty of standardization, interpretability, and acceptance by physicians and patients alike. This review provides insight into future research needs and possibilities. There is a strong need for clinical investigation in dermatology providing evidence of success overcoming the identified barriers. With these research goals in mind, an appropriate role for AI in dermatology may be achieved in not so distant future.

PROBLEM

- **BIASED DATA COLLECTION**
  Mostly light skin tone images in data basis

- **BIASED DERMATOLOGY EDUCATION**
  Examples of skin diseases are mostly of white skin

- **SYSTEMATIC BIASED AI**
  Due to missing / unbalanced data, current AI modells are not able to learn to classify darker skin tones well.

- **MISDIAGNOSIS & FATALITY**
  People of Colour are less likely diagnosed correctly and therefore have lower survival rates when having a disease.

Dermatology Has a Problem With Skin Color

Common conditions often manifest differently on dark skin. Yet physicians are trained mostly to diagnose them on white skin.

HEALTH
AI-Driven Dermatology Could Leave Dark-Skinned Patients Behind

Machine learning has the potential to save thousands of people from skin cancer each year—while putting others at greater risk.

ANGELA LASHBROOK AUGUST 16, 2018

GENERAL IDEA

SKIN A

scan

add data

information

- **COLLECT DATA**
  To create educate & train an AI

- **EXAMPLE IMAGES**
  To educate and help to diagnose

- **INCLUSIVE AI**
  Train multiple data sets of different skin colors separately

- **EASY APPLICATION**
  For dermatologists to collect data, diagnose and then help to improve future AI models

1. COLLECT DATA

Collect the data needed to train better models with enough labeled training data.

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Collect the data needed to train better models with enough labeled training data.

Incentives:

→ help their patients more fairly
→ help disadvantaged groups
→ diagnose more confidently

1. COLLECT DATA

Collect the data needed to train better models with enough labeled training data.

Incentives:

→ help correcting biased system
→ helping their future self

2. EXAMPLE IMAGES

Help doctors to give a better diagnosis on black skin to make diseases like skin cancer less deadly in the black community.

Help doctors to give a better diagnosis on black skin to make diseases like skin cancer less deadly in the black community.

3. INCLUSIVE AI

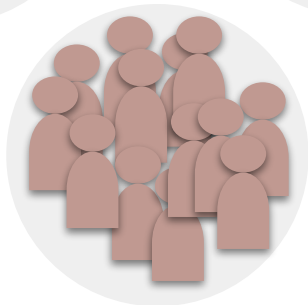**Create an AI, that handles different skin colors** accurately.
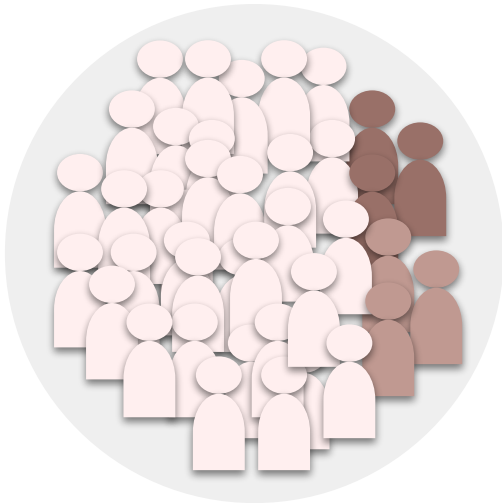
Current Situation:

→ Most data for lighter skin colours
→ underrepresented darker tones
→ AI models only work for lighter skin tones

3. INCLUSIVE AI

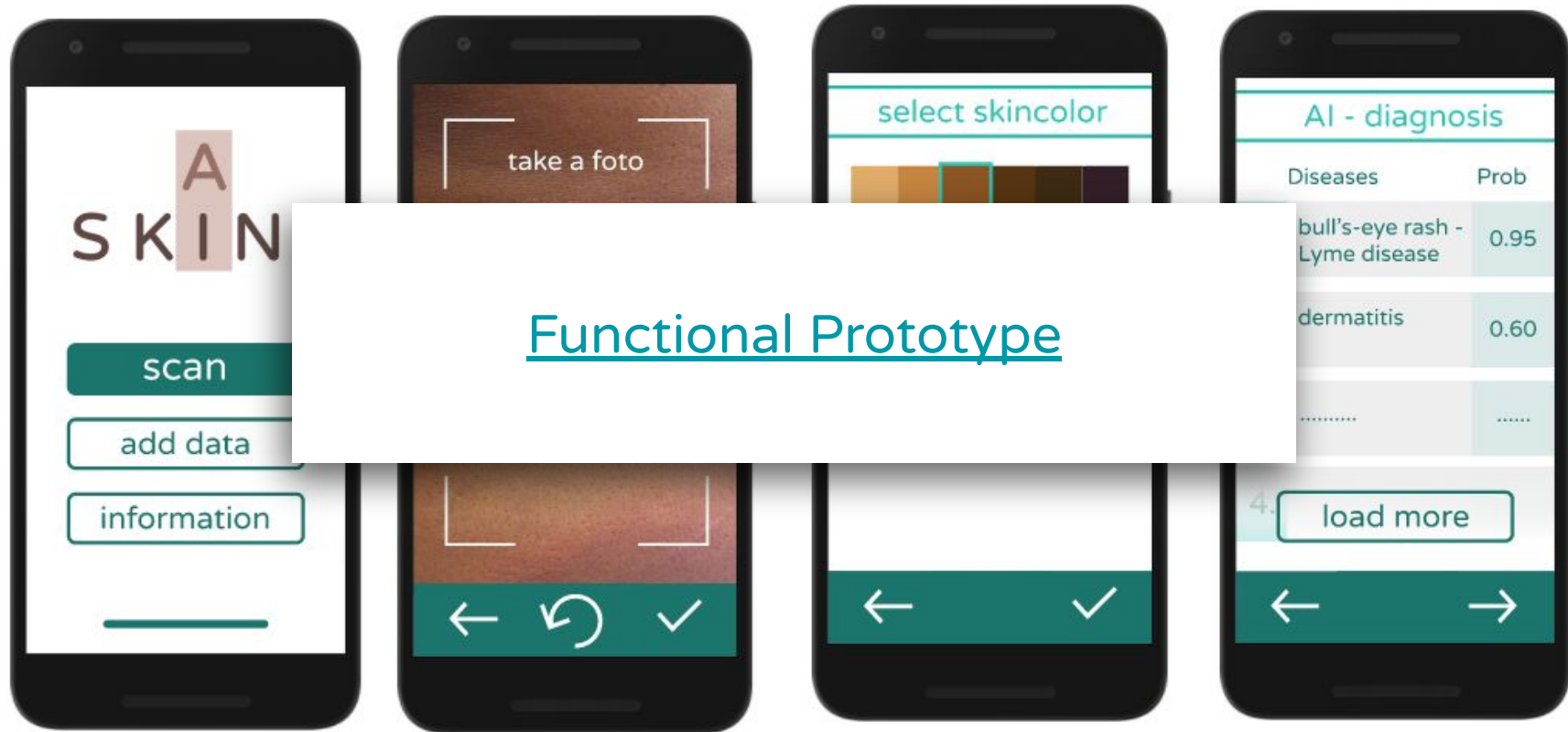**Create an AI, that handles different skin colors** accurately.

Training existing AI Models:

→ Separate data sets by colors
→ Create multiple modells

Enabling new AI research to be more inclusive:

→ New research on AI can use the new Database

4. APPLICATION

Functional Prototype

SOURCES

LITERATURE
- https://www.nytimes.com/2020/08/30/health/skin-diseases-black-hispanic.html
- https://www.blackandbrownskin.co.uk/our-vision
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7136423/
- https://www.theatlantic.com/health/archive/2018/08/machine-learning-dermatology-skin-color/567619/

IMAGES
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