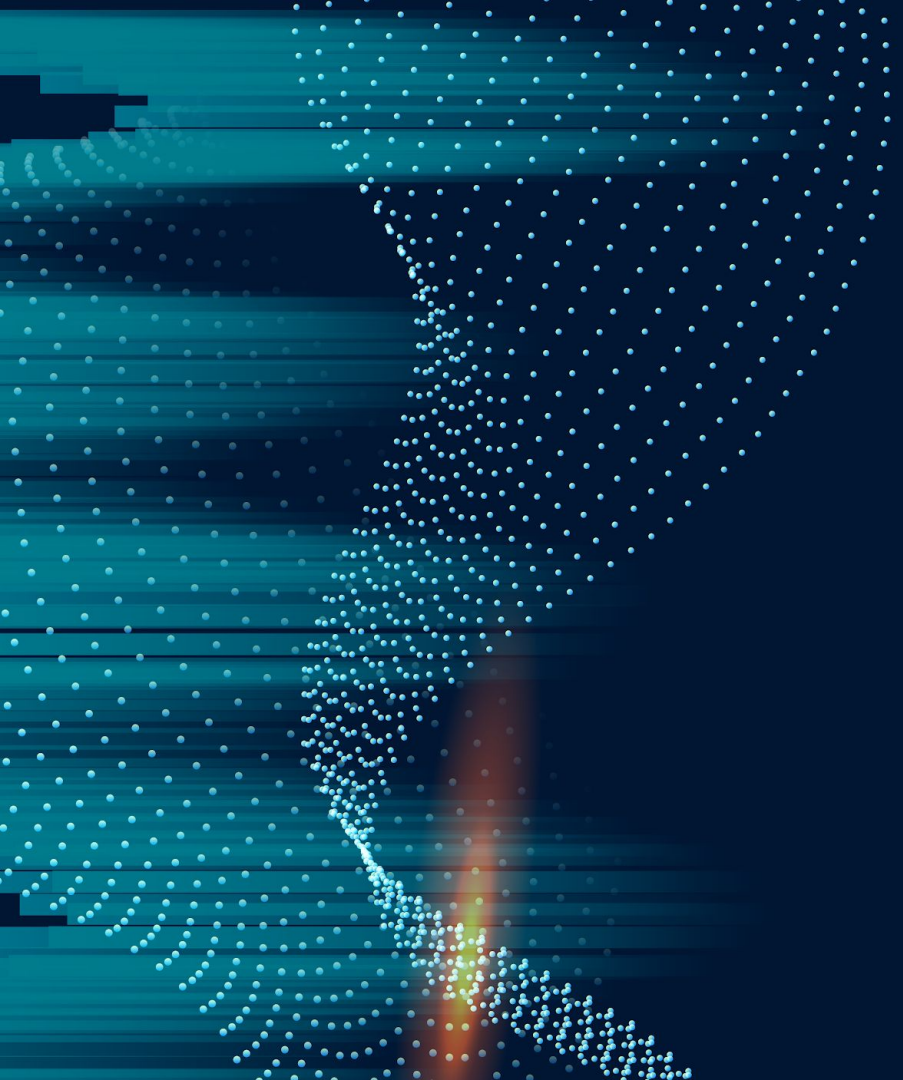


1,500,000

New cases of skin cancer in 2020

325,000

New cases of melanoma were diagnosed worldwide

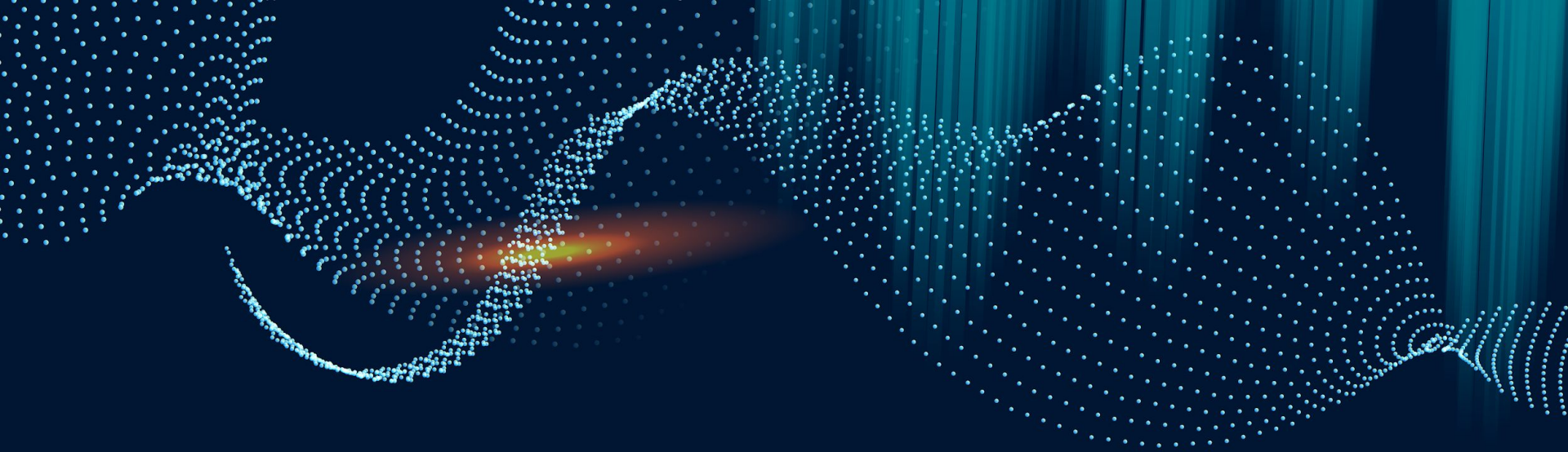
57,000

People have died due to just melanoma

Utilising AI

TO IDENTIFY SKIN CANCER CELLS

Aakarsh, Julyan, Trisha, Rayner, Kingston

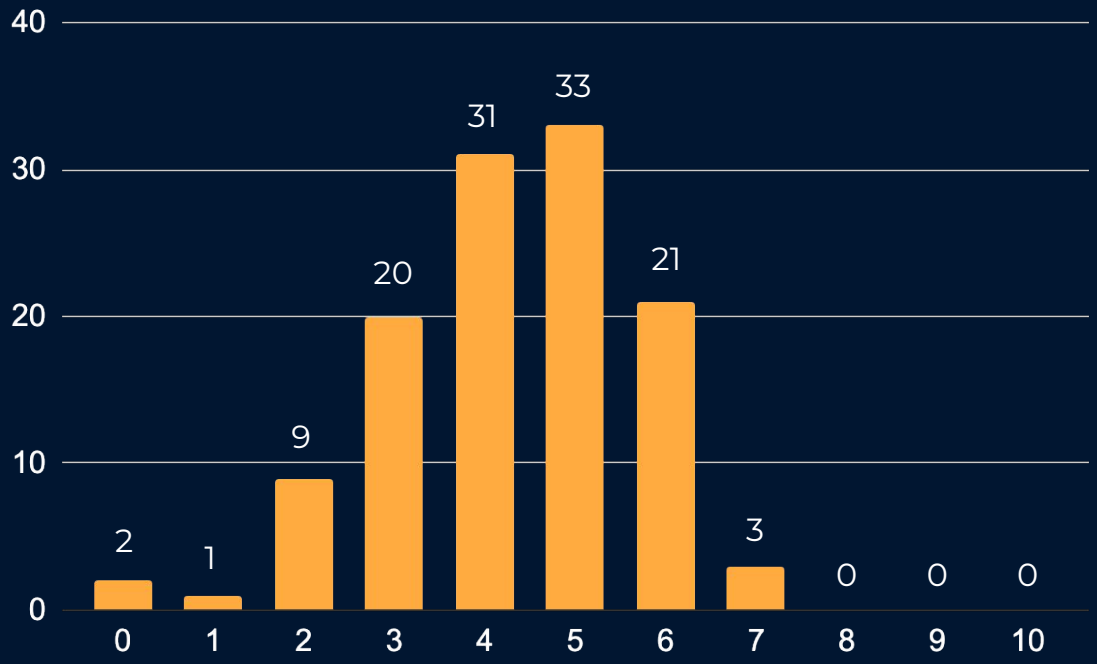


01 THE PROBLEM

PROBLEM: IDENTIFICATION OF SKIN CANCER

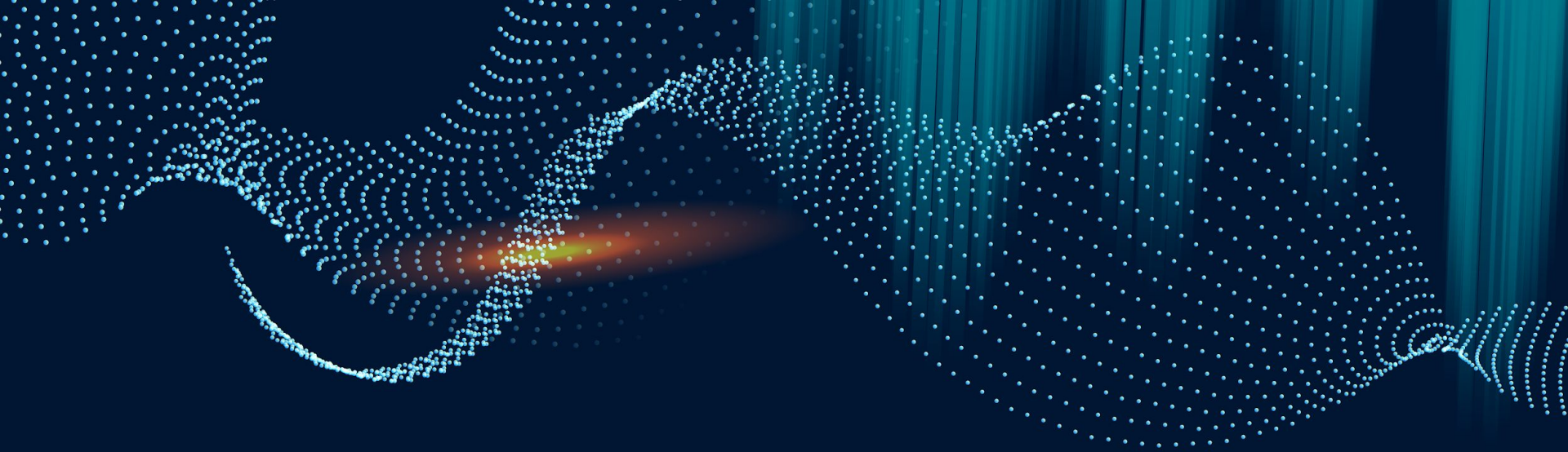
- ➔ Platform used: Google Form
- ➔ Survey done by **120** respondents aged 14 to 46
- ➔ Had to identify which of 10 skin samples included were **benign** and **malignant**

RESULTS



Number of questions respondents got correct

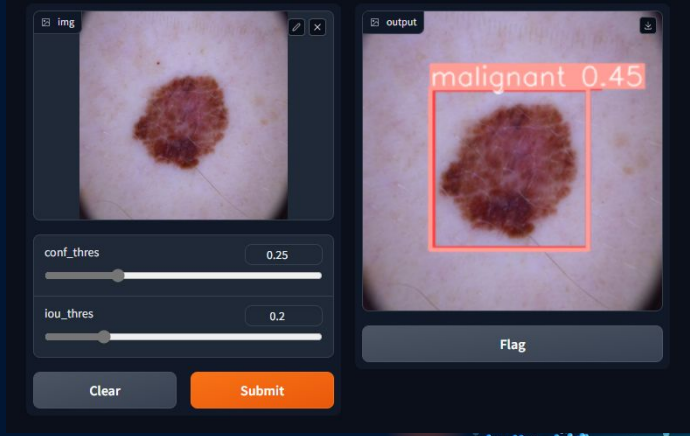
Average score: 4.29



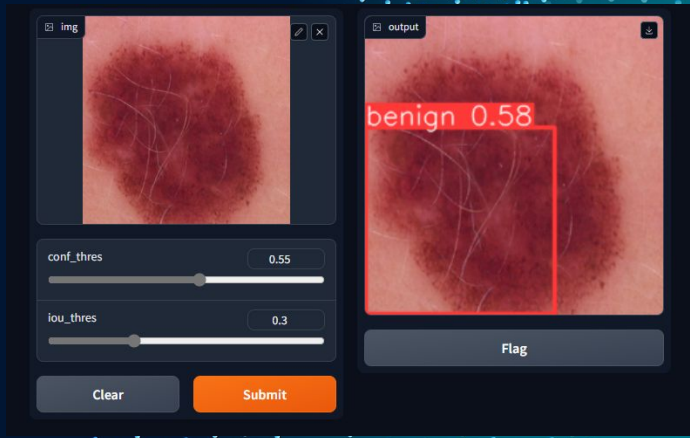
02 USE OF AI

CONCEPT OF AI

- ➔ Binary classification of images of **skin pigmentation**:
  - ◆ Malignant
  - ◆ Benign
- ➔ User inputs a photo for evaluation
  - ◆ Able to adjust confidence and IoU thresholds



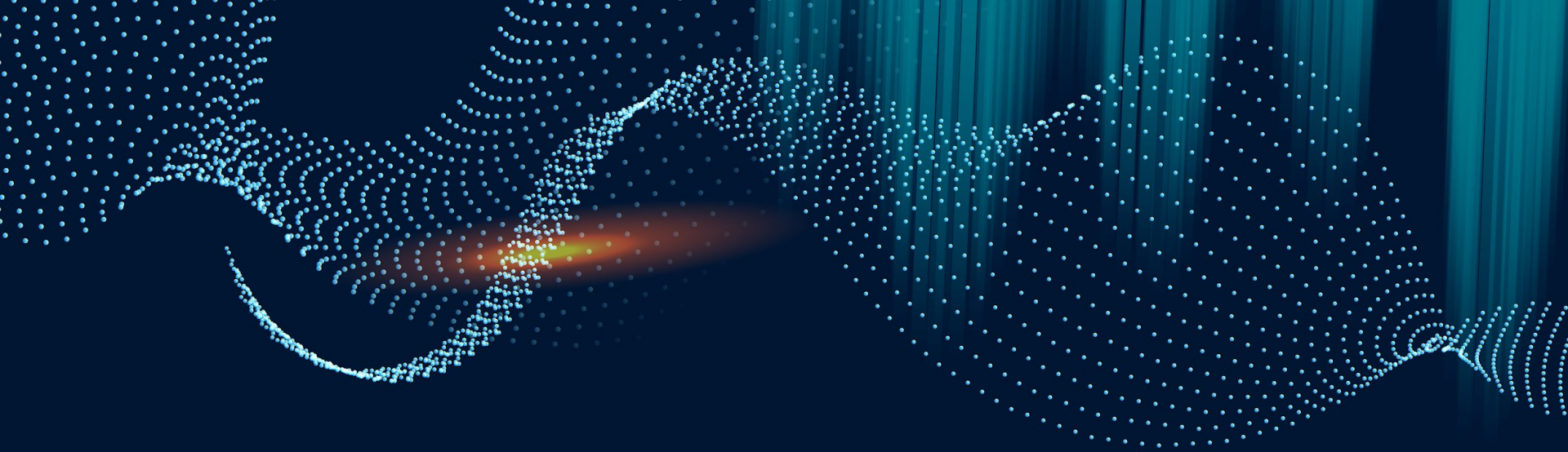
Malignant sample



Benign sample

GOOGLE COLAB of our AI Model

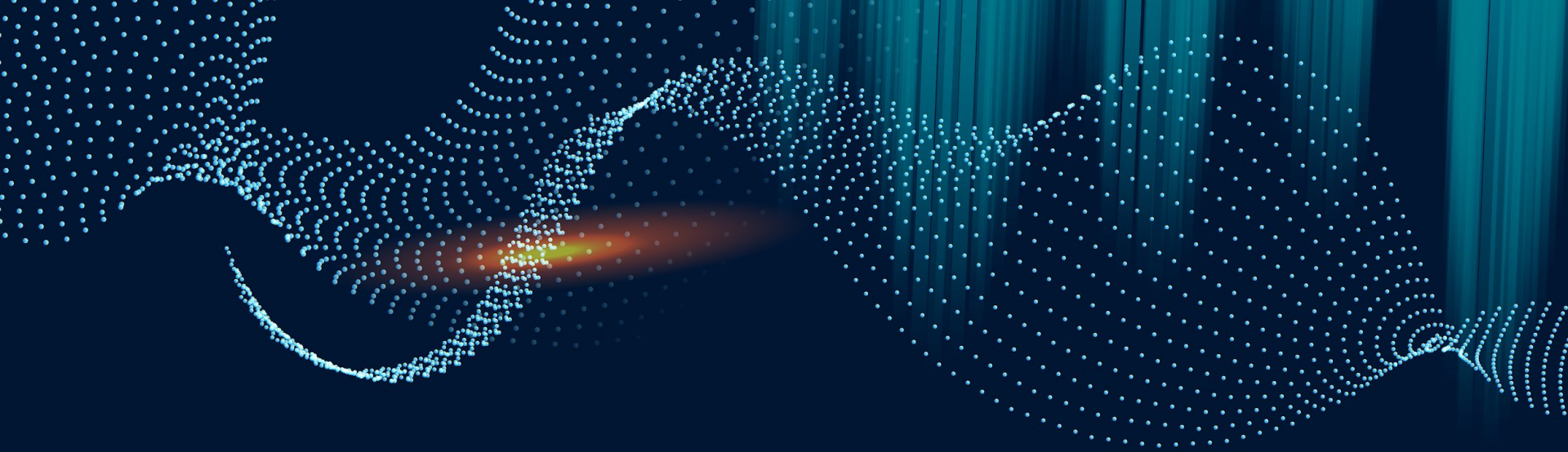
AI Model



03 IMPACTS

IMPACTS

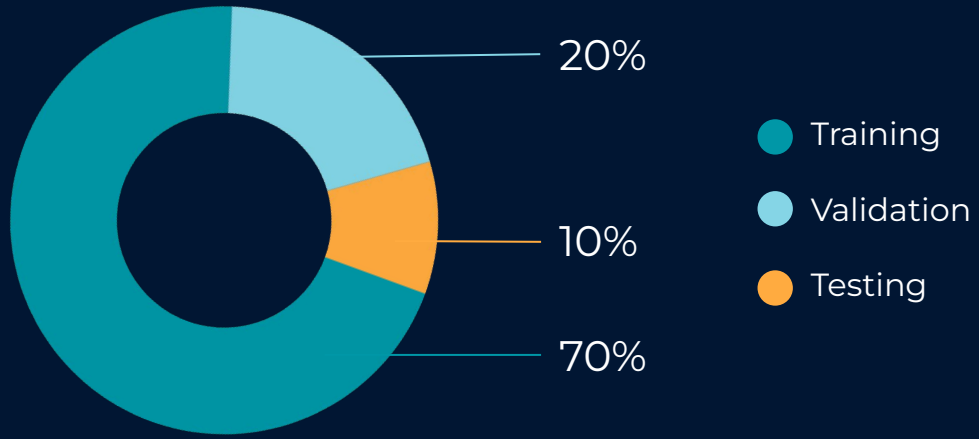
- ➔ Individuals are able to quickly determine whether they should go for a checkup
- ➔ No usage limit
- ➔ Able to be used regularly to detect cases of benign tumours turning malignant

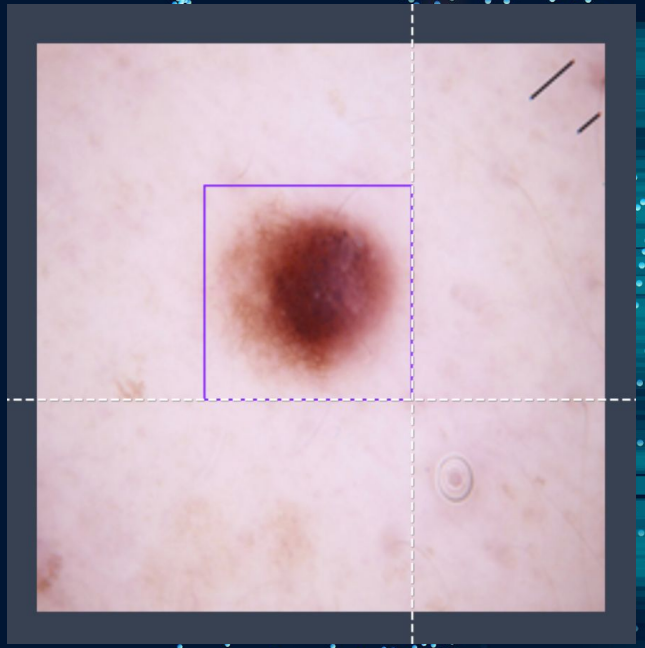


04 JOURNEY OF OUR AI

Role of Roboflow

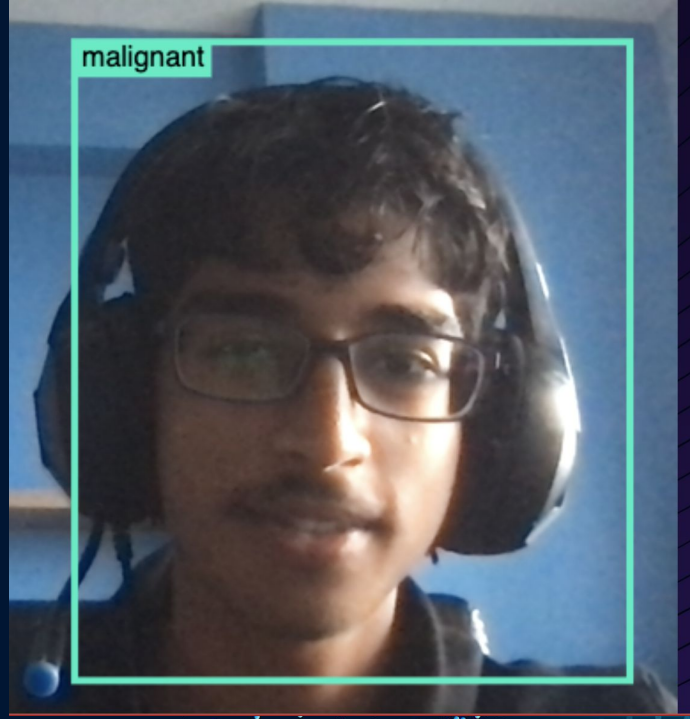
- ➔ To create our dataset
- ➔ To allocate our data for training, validation and testing in a 70:20:10 ratio





Attempts to create an AI model with Roboflow

- ➔ Pros:
  - Model was generated quickly
  - Model required no coding
- ➔ Cons:
  - Not very accurate during manual testing
  - Could not identify some skin samples



Test 1:

buildingblocs/1	84.0% mAP	80.6% precision	82.0% recall

Test 2:

buildingblocs/2	73.2% mAP	60.4% precision	78.0% recall

Why Yolov5?

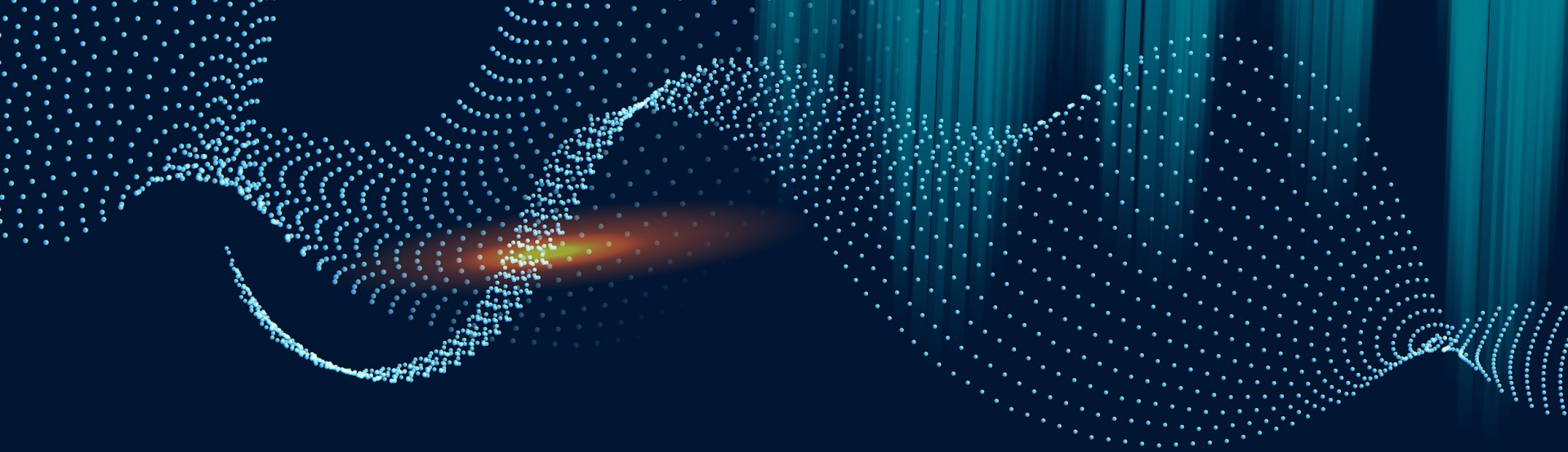
- ➔ Used to train, validate and test our datasets to create our AI model
- ➔ Speed & efficiency: uses a Convolutional Neural Network
- ➔ Easy implementation: implemented using PyTorch
- ➔ Large Object Categories: able to detect & classify wide range of object categories

Why Gradio?

- ➔ Allows our Machine Learning Model to have an interactive web UI
- ➔ Able to easily interact with Jupyter/Colab notebook, friendly web interface
- ➔ Fastest way to demo ML model

Ethics of AI

- **Bias**: It may have a higher chance of detecting Benign
- **Privacy**: It does not save any of the users' information
- **Wealth Inequality**: It is free for everyone to use



05 IMPROVEMENTS

Ideas for Improvement

- ➔ Implementations of different image augmentations
- ➔ Utilise various training, validation and testing data ratios
- ➔ Implement with the newer Yolov8

ANY QUESTIONS?

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