

# Testing

# Unit Testing

- We will create tests using python that will test all the different functions within the code
- We will create test cases for all of the main major keras functions that will be called
- Also we will test units within our UI such as the API calls

# Interface Testing

- We will test the interface between the user interface and the AI model to confirm that images are successfully sent and the UI receives the result from the AI model

## Examples of Interface Testing:

- Check if:
  - the interface is in line with the actions it's made to do
  - the interface is usable to anyone at first glance

# Integration Testing

- Critical Integration paths include the path between the UI interface and our dataset.
- The UI will need to be able to accurately and efficiently and pull the data from our trained model/dataset. We will test this by testing the UI and making sure that it accurately predicts cancer images.
- Our model will be stored on the cloud.
- We are considering using applications such as Selenium and Puppeteer to test the UI

# System Testing

- We will use challenges and test images to confirm whether or not the A.I. is behaving accordingly.
- We will check whether the images from the website are being transmitted properly to the server

# Examples of System Tests (If needed to make time)

- Check if A.I.
  - is identifying cancer images 75% of the time
  - is not identifying cancer images as cancer images
  - is identifying a group of cancer images and not others
  - is identifying images with peculiar characteristics instead of cancer images
  - can identify cancer images outside of the training images

# Interface testing

- Check if
  - the interface is in line with the actions it's made to do
  - the interface is usable to anyone at first glance
  - UI is able to communicate effectively what each thing should be doing

# Integration testing

- Check if
  - the combination of functions and modules work in conjunction with each other
  - the system is reliable, functional, and performs well
  - each module of parts of the systems functionality is working correctly



# Regression Testing

- In order to ensure that new additions do not break our old functionality, we will make the new branches in github for each addition.
  - This makes sure that if anything goes wrong we have the previous code to lean on
- Once we ensure that the additional code is correct we can merge the branch to the main branch.
- Overall we need to make sure that the functionality of the A.I. does not break when we are adding new implementations.

# Acceptance Testing

- We will demonstrate that the design requirements, both functional and non-functional, are met by thorough testing.
- We will have videos that walk through our design and also show the functionality and that it is functional.
- With our client, we will have them test out the functionality of our application to ensure that it is working properly and that it has all of the implementations needed.

# Security Testing

- We will test that the website is only accessible by an authorized user.
- We will use Selenium IDE to automate UI tests related to login and registering