EE/CprE/SE 492 WEEKLY REPORT

2/6/2024 – 2/20/2024

Group Number: 45

Project Title: Skin Cancer diagnosis using Artificial Intelligence on the Cloud

Client &/Advisor: Ashraf Gaffar

Team Members: Megan Eberle, Evan Nim, Alexander Lafontine, Abigail Thompson, Bariture Ibaakee, Breann Grant

- **Weekly Summary**

  - New issues were identified within our GitLab
  - We're looking towards developing our frontend more
  - Starting to work with Figma
  - Progress towards a better model has been made, i.e. switching out our old model in favor of computer vision which allows for seamless data augmentation
  - More research into the Frontend and which developer we want to work with.=

- **Past week accomplishments**

  - figma design plan
  - 93% training accuracy and 53% validating data accuracy
  -

- **Pending Issues**
    - Deciding between Android app (Android Studio) and iOS app (Swift)
        - Trying to find a way around needing a mac for Swift

- **Individual Contributions**

NAME	Hours this week	HOURS cumulative
Megan Eberle	4	8
Evan Nim	4	9
Alexander Lafontaine	6	14
Abigail Thompson	7	11
Bariture Ibaakee	4	7
Breann Grant	5.5	9.5

- **Comments and extended discussion (Optional can take this section out)**

- **Plans for the upcoming week**
    - Try upscaling the model (again) while avoiding overfitting.

- Finish the Figma design
- Research ways to use Swift
- Update Weekly reports onto the website

● **Summary of weekly advisor meeting**

-Gaffar suggested that we look into using Swift instead of Android studio for our app due to the popularity of iphones/Apple.

- Try shuffling validation data, use generative A.I. to add more data, and other minor tweaks to the model to avoid overfitting.

(1)

Area	Description	Examples
Public health, safety, and welfare	Our project impacts any person who may have skin cancer as well as doctors by giving them a less invasive option to identify skin cancer. EDIT: Our project supplements a doctor's visual evaluation of an area of skin, it is not meant to replace a biopsy.	Reduces need for invasive procedures. EDIT: Our project will allow a more accurate result than a human.
Global, cultural, and social	People who live in regions that get more sun may be more impacted by this project.	People closer to the equator may get more sun than those who live further away.
Environmental	Our project could contribute to climate change by burning fossil fuels and increasing greenhouse gasses.	Since AI uses a lot of computing, it uses a significant amount of energy.

Economic	Our project could decrease the financial responsibility of patients and insurance providers.	Our project provides a non-invasive method of diagnosing skin cancer, which is generally less expensive.

(2)
Some ways we could potentially show the positive effects of our app is having testimonies from doctors/healthcare professionals who try the app out and can attest to how beneficial it is as a cancer detector.

(3)

Revisit the broader context considerations from 491 (Section 4.4 of your Design Document). How are you meeting or addressing these considerations now?

1. Individually review Section 4.4. Consider the following questions:
    1. Have we identified or become aware of new effects?
        i. We were told by our instructor as well as the faculty that reviewed our project last semester that it's less about reducing invasive procedures and more about supplementing the human eye/looking at the skin.
    2. How can we argue for or provide evidence of positive effects?
        i. We have accuracy/confidence levels in terms of percentage where our Ai should have a higher percentage than the human eye.
    3. How can we address or justify negative effects?
        i. Since our project is meant to supplement rather than replace anything, readings given from our project aren't the definitive answer in any case, and the doctor still has the final say. Also given that our project works off of confidence levels, it's not black or white with results and it's up to the discretion of the doctor.
2. Meet as a team and revise Section 4.4 with your new insights.
3. Meet with your client and advisor to discuss your updates.
4. Add a section to this report with any (1) updates to broader context effects, (2) plans to demonstrate evidence of positive effects, and (3) ways to address or justify negative effects based on meetings with your team, client(s), and advisor.