

A thick dark blue vertical bar is positioned on the left side of the page. A blue arrow-shaped banner points to the right from this bar, containing the date. Below the banner, several thin, curved lines in dark blue and light grey sweep upwards from the bottom left corner.

10/13/2021

Lung Cancer Project Proposal

AI - Semester 4

Michael Ebowusim - 4050630

Table of Contents

Domain understanding	2
Impact assessment.....	3
Stakeholders: Have you considered all stakeholders?.....	4
Privacy: Are you considering the privacy & personal data of the users of your technology?.....	5
Data: Is data in your technology properly used?	6
Transparency: Are you transparent about how your technology works?	6
Inclusivity: Is your technology fair for everyone?	7
Hateful and criminal actors: What can bad actors do with your technology?.....	7
Human values How does the technology affect your human values?	8
Modelling	8
Evaluation	9
Deployment	9
Final Conclusion	9

Domain understanding

Project description

I have chosen to work on a project towards helping patients mainly unaware and older people to identify lung cancer at an early stage.

(WCRF, 2021), Lung cancer is the third most common cancer worldwide. About 1.8 million new cases of lung cancer were recorded globally in 2012, accounting for 13 per cent of all new cases of cancer.

Cigarette smoking is the number one risk factor for lung cancer. In the United States, cigarette smoking is linked to about 80% to 90% of lung cancer deaths. Using other tobacco products such as cigars or pipes also increases the risk for lung cancer. Tobacco smoke is a toxic mix of more than 7,000 chemicals. There are other factors which lead to this

The main aim of this project is to reduce variability in nodule classification improve decision making and ultimately reduce the number of benign nodules that are needlessly followed or worked-up.

AI Features

This AI will be according to the data from clinicians about their patients showing some symptoms, intake of some substances (e.g Alcohol, Tobacco) which will be helpful to predict if the patient does have lung cancer or not and at an early stage.

Impact Assessment

What problem does this technology aim to solve:

This technology will help where people get more acquainted/aware of their physical anatomy and try to work on it at an early stage before it becomes like a terminal illness like cancer. This technology aims to do that alongside helping to make decisions earlier.

In what way is this technology contributing to a world you want to live in:

It will be really good to live in a world where people get more acquainted/aware of their physical anatomy and try to work on it at an early stage before it becomes like a terminal illness like cancer. This technology aims to do that alongside helping to make decisions earlier.

Stakeholders

What are the main users or stakeholders for this technology?

This technology is meant for clinicians mainly targeting to help their patients.

Stakeholders Involved:

- Michael Ebowusim (Developer & Internal Stakeholder)
- Nick Welman (Semester coach)
- Konings Hans (Semester coach)

How is this stakeholder affected?

All Stakeholders listed to produce this technology require its functionality . Effort has been given

by stakeholders to make sure the project is known and perceived.

Did you consult the stakeholder?

Yes, all stakeholder regarding the work on this project have been spoken to.

Are you going to take this stakeholder into account?

Yes, every stakeholder opinion about the project will be taken into consideration.

Did you really consider all stakeholders, even the ones that might not be a user?

I have made sure to consider individuals which might not be users of this product e.g other students.

Privacy: Are you considering the privacy & personal data of the users of your technology?

Does this technology register personal data? If yes, what personal data?

No personal data of users is utilized in the development of this project.

Do you think this technology invades someone's privacy? If yes, in what way?

No, users and is not being invaded with the use and development of the project.

Do you think this technology is compliant with prevailing privacy and data protection law and can you motivate why?

The privacy laws do not apply to this project because no personal data of the public and user is being used .

In which way can you imagine a future impact of the collection of personal data?

This does not apply to it because the project is not dealing with personal data of users and the general public .

Data: Is data in your technology properly used?

Are you aware of the limitations and subjectivity of data and is this reflected in this technology?

Yes, I am aware of the limitations of the data. The subjectivity of data can be seen in this project being that for creating the model I would have to use data about the patients symptoms and their intake.

Transparency: Are you transparent about how your technology works?

(How) is explained to the users how a technology works and how the business model works?

In the document/notebook, every function will be aided with an explanation.

Is it possible to file a complaint or ask questions/get answers about this technology? I will always be open to ask more questions regarding this project.

Is the technology (company) clear about possible negative consequences or shortcomings of this technology?

Shortcomings will be known if there is any.

Inclusivity: Is your technology fair for everyone?

Will everyone have access to this technology?

Yes, everyone else will have the opportunity to use/ work with the technology even if they aren't part of the main target.

Does this technology have a built-in bias?

It is fair to everyone

Does this technology make automatic decisions and how do you account for them?

Automatic decisions made mainly because of the trained data which will be used.

Is everyone benefitting from this technology or only a small group? Do you see this as a problem? Why/why not?

This technology is mainly for the targeted user but has benefits for people outside it, so yes it will be benefitting to everyone.

Hateful and criminal actors: What can bad actors do with your technology?

In which way can this technology be used to break the law or avoid the consequences of breaking the law?

It will not be relevant to bad actors currently mainly because this is to predict information using from the past.

Human values How does the technology affect your human values?

How does your technology affect the identity of the user(s)?

This technology does not affect the user's identity in any way.

How does the technology influence the user(s) autonomy?

This technology will have effect on the user's decision making , it make decisions depending on its trained data.

What is the effect of the technology on the health and/or wellbeing of the user(s)? This technology assists the user to know in making decisions early which can reduce tension e.t.c

Modelling: What choice of model and should several models be compared?

Currently, I have been thinking about **Logistic Regression** but I will not be able to answer these questions accurately now.

Evaluation

Is there a plan for domain knowledge verification? Who can say whether the model works well or not?

My plan is to show this document to my semester coaches to verify if it is good enough.

Deployment

- What are acceptable evaluation results? (Think about accuracy, precision, recall, falsepositives/negatives etc.)
- Will the model be deployed? If so, how?
- Is there a feasibility deduction?

I will not be able to answer these questions accurately now.