AI PROJECT LOGBOOK

Resource for Students

(Adapted from "IBM EdTech Youth Challenge – Project Logbook" developed by IBM in collaboration with Macquarie University, Australia and Australian Museum)

KEY PARTNERS

INDIA IMPLEMENTATION PARTNERS

GLOBAL PARTNERS

AI Project Logbook

PROJECT NAME: Lung Cancer Detection

SCHOOL NAME: Venkateshwar International School Sec-10 Dwarka

YEAR/CLASS: 2023-24, 12th

TEACHER NAME: Ms. Meenu Kumar

TEACHER EMAIL: MEENUKUMAR@VIS10DWARKA.COM

TEAM MEMBER NAMES AND GRADES:

1. Krrish Aggarwal XII
2. Rohan Sharma XII
3. Rishit Awasthi XII

1. Introduction

This document is your **Project Logbook**, and it will be where you record your ideas, thoughts and answers as you work to solve a local problem using AI.

Make a copy of the document in your shared drive and work through it digitally with your team. You can also print a copy of the document and submit a scanned copy once you have completed the Project Logbook. Feel free to add pages and any other supporting material to this document.

Refer to the **AI Project Guide** for more details about what to do at each step of your project.

2. Team Roles

2.1 Who is in your team and what are their roles?

Role	Role description	Team Member Name
Project leader	Schedules the task among the team member, Ensures the task is completed on time, Resolves doubts (if any), and one source of contact	Krrish Aggarwal
Data expert	Decides upon the data required, type of data for training the model, collects the data, ensures the type of data, and its authenticity	Rishit Awasthi
Information researcher	Collects questions from the end users which needs to be answered, look for the answers for those questions and then prepare a report which will be passed to the project leader	Rishit Awasthi, Krrish Aggarwal & Rohan Sharma
Designer	Will create the design and the flow of how to go about making the solution for the problem statement.	Rohan Sharma
Prototype builder/coder Tester	Works to build the model, train it followed by testing the efficiency and accuracy of the model	Rohan Sharma & Krrish Aggarwal

2.2 Project plan

The following table is a guide for your project plan. You may use this or create your own version using a spreadsheet which you can paste into this section. You can expand the 'Notes' section to add reminders, things that you need to follow up on, problems that need to be fixed urgently, etc.

Phase	Task	Planned start date	Planned end date	Planned duration (hours, minutes)	Actual start date	Actual end date	Actual duration (hours, minutes)	Who is responsible	Notes/Remarks
Preparing for the project	Coursework, readings	**03/08/2023**	**Ongoing**	**10-15 Hours**	**03/08/2023**	**15/08/2023**	12.5 Hours	**Team Members**	Each member is responsible
	Set up a team folder on a shared drive	**03/08/2023**	**09/08/2023**	**15 Hours**	**03/08/2023**	**09/08/2023**	13.5 Hours	**Team Members**	
Defining the problem	Background reading	**04/08/2023**	**04/08/2023**	**1 Hours**	**04/08/2023**	**04/08/2023**	1 Hours	**Team Members**	Collaborative work
	Research issues in our community	**04/08/2023** Afternoon	**04/08/2023**	**1.5 Hours**	**04/08/2023 Afternoon**	**04/08/2023**	1.5 Hours	**Team Members**	
	Team meeting to discuss issues and select an issue for the project	**04/08/2023 Evening**	**04/08/2023**	**1.5 Hours**	**04/08/2023 Evening**	**04/08/2023**	1.5 Hours	**Team Members**	
	Complete section 3 of the Project Logbook	**05/08/2023**	**05/05/2023**	**15 Mins**	**05/08/2023**	**05/08/2023**	15 Mins	**Team Members**	
	Rate yourselves	**3/3**							
Understanding the users	Identify users	**03/08/2023**	**03/08/2023**	**30 Mins**	**03/05/2023**	**03/08/2023**	**30 Mins**	**Team Members**	**Online interactions with the end user**
	Meeting with users to observe them	**05/08/2023**	**05/02/2023**	**30 Mins**	**05/08/2023**	**05/08/2023**	**30 Mins**	**Team Members**	
	Interview with user (1)	**05/08/2023**	**05/08/2023**	**15 Mins**	**05/08/2023**	**05/08/2023**	**15 Mins**	**Team Members**	
	Interview with user (2), etc.…	**05/08/2023**	**05/08/2023**	**15 Mins**	**05/08/2023**	**05/08/2023**	**15 mins**	**Team Members**	
	Complete section 4 of the Project Logbook	**05/08/2023 Evening**	**05/08/2023**	**30 Mins**	**05/08/2023**	**05/08/2023**	**30 Mins**	**Team Members**	**Collaborative work**
	Rate yourselves	**3/3**							
Brainstorming	Team meeting to generate	**05/08/2023**	**05/08/2023**	**1.5 Hours**	**05/08/2023**	**05/08/2023**	**1.5 Hours**	**Team Members**	

	ideas for a solution								
	Complete section 5 of the Project Logbook	**06/08/2023 Morning**	**06/08/2023**	**30 Mins**	**06/08/2023**	**06/08/2023**	**30 Mins**	**Team Members**	**Collaborative work**
	Rate yourselves	**3/3**						**Team Members**	
Designing your solution	Team meeting to design the solution	**06/08/2023 Afternoon**	**06/08/2023**	**3.5 Hours**	**06/08/2023 Afternoon**	**06/08/2023**	**3.5 Hours**	**Team Members**	
	Complete section 6 of the logbook	**06/08/2023 Morning**	**06/08/2023**	**30 mins**	**06/08/2023 Morning**	**06/08/2023**	**30 Mins**	**Team Members**	**Collaborative work**
	Rate yourselves	**3/3**							
Collecting and preparing data	Team meeting to discuss data requirements	**03/08/2023**	**03/08/2023**	**30 Mins**	**03/08/2023**	**03/08/2023**	**30 Mins**	**Team Members**	
Collecting and preparing data Prototyping	Data collection	**03/08/2023**	**03/08/2023**	**1 Hour**	**03/08/2023**	**03/08/2023**	**1 Hour**	**Rishit Awasthi**	
	Data preparation and labelling	**04/08/2023**	**04/08/2023**	**2 Hours**	**04/08/2023**	**04/08/2023**	**2 Hours**	**Team Members**	
	Complete Section 6 of the Project Logbook	**05/08/2023**	**05/08/2023**	**30 Mins**	**05/08/2023**	**05/08/2023**	**30 Mins**	**Team Members**	**Collaborative work**
	Team meeting to plan prototyping phase	**06/08/2023**	**06/08/2023**	**4 Hours**	**06/08/2023**	**06/08/2023**	**4 Hours**	**Team Members**	**Code testing**
Prototyping Testing	Train your model with input dataset	**07/08/2023**	**07/08/2023 End of the day**		**07/08/2023**	**07/08/2023**		**Team Members**	**Designing**
	Test your model and keep training with more data until you think your model is accurate	**08/08/2023**	**08/08/2023**	**30 Mins**	**08/08/2023**	**08/08/2023**	**30 Mins**	**Team Members**	**Code testing**
	Write a program to initiate actions based on the result of your model	**08/08/2023**	**08/08/2023**	**45 Mins**	**08/08/2023**	**08/08/2023**	**45 Mins**	**Team Members**	
	Complete section 8 of the Project Logbook	**08/08/2023**	**08/08/2023**	**15 Mins**	**08/08/2023**	**08/08/2023**	**15 Mins**	**Team Members**	**Collaborative work**

	Rate yourselves	**3/3**							
	Team meeting to discuss testing plan	**08/08/2023**	**08/08/2023**	**10 Mins**	**08/08/2023**	**08/08/2023**	**10 Mins**	**Team Members**	**Collaborative work**
Testing Creating the video	Invite users to test your prototype	**09/08/2023**	**09/08/2023**	**15 Mins**	**09/08/2023**	**09/08/2023**	**15 mins**	**Team Members**	
	Conduct testing with users	**09/08/2023**	**09/08/2023**	**30 Mins**	**09/08/2023**	**09/08/2023**	**30 Mins**	**Team Members**	
	Complete section 9 of the Project Logbook	**09/08/2023**	**09/08/2023**	**30 mins**	**09/08/2023**	**09/08/2023**	**10 Mins**	**Team Members**	**Collaborative work**
	Rate yourselves	**3/3**						**Team Members**	
	Team meeting to discuss video creation	**09/08/2023**	**09/08/2023**	**10 Mins**	**09/08/2023**	**09/08/2023**	**10 Mins**	**Team Members**	**Collaborative work**
	Write your script	**10/08/2023**	**10/08/2023**	**20 Mins**	**10/08/2023**	**10/08/2023**	**20 Mins**	**Team Members**	
	Film your video	**10/08/2023**	**10/08/2023**	**30 Mins**	**10/08/2023**	**10/08/2023**	**30 Mins**	**Team Members**	
	Edit your video	**10/08/2023**	**10/08/2023**	**30 Mins**	**10/08/2023**	**10/08/2023**	**30 Mins**	**Team Members**	
Completing the logbook	Reflect on the project with your team	**11/08/2023**	**11/08/2023**	**10 Mins**	**11/08/2023**	**11/08/2023**	**10 Mins**	**Team Members**	
	Complete sections 10 and 11 of the Project Logbook	**11/08/2023**	**11/08/2023**	**20 Mins**	**11/08/2023**	**11/08/2023**	**20 Mins**	**Team Members**	**Collaborative work**
	Review your Project logbook and video	**11/08/2023**	**11/08/2023**	**10 Mins**	**11/08/2023**	**11/08/2023**	**10 Mins**	**Team Members**	
Submission	Submit your entries on the IBM	**11/08/2023**	**11/08/2023**	**10 Mins**	**11/08/2023**	**11/08/2023**	**10 Mins**	**Team Members**	**Individual on google classroom**

2.3 Communications plan

Will you meet face-to-face, online or a mixture of each to communicate?

Mixture Of Each

How often will you come together to share your progress?

Once a day for an hour meeting and, sometimes twice a day for an hour meeting.

Who will set up online documents and ensure that everyone is contributing?

We have created a shared folder on cloud and we all are contributing to that

What tools will you use for communication?

Google Meet for Online Meetings,
Google Drive and Google Docs for collaborative documentation and work.

2.4 Team meeting minutes (create one for each meeting held)

Date of meeting: 4-08-23 (Morning)
Who attended: Rohan Sharma, Rishit Awasthi, Krrish Aggarwal
Who wasn't able to attend: Nil

Purpose of meeting: Preparing for the Project and Set up a team folder on a shared drive

Items discussed:
1. Describing the problem
2. Understanding the users to identify their issues/problems regarding severe health treatments and their Expenses (for e.g. Cancer, immune diseases)

Things to do (what, by whom, by when)
1. Need to understand what all problems patients faces during their health treatments and the procedures they undergo especially when the disease is severe for e.g. Lung Cancer
2. Each member has to think various aspects of the treatment and procedures especially the beginning stage
3. Come up with the ideas by same day afternoon.

Date of meeting: 4-08-23 (evening)
Who attended: Rohan Sharma, Rishit Awasthi, Krrish Aggarwal
Who wasn't able to attend: Nil

Purpose of meeting: To discuss about the issue and select an issue for the project

Items discussed:
1. Researched on the issues in our health sector
2. Discussion on the issues to decide about the topic/ area which will be taken care
3. Decided on the topic

Things to do (what, by whom, by when)
1. Research done by everyone
2. Everyone participated on certain issues and had a common issue
3. The common issue has been selected for the project

Date of meeting: 5-08-23
Who attended: Rohan Sharma, Rishit Awasthi, Krrish Aggarwal
Who wasn't able to attend: Nil

Purpose of meeting: Online interaction with end users (parents, students)

Items discussed:
1. What information are they looking for?
2. Important points/ factors they would like to consider during the medical procedure

Things to do (what, by whom, by when)
1. Setup call, collect information which will be helpful while designing the solution
2. Each team member
3. Same day

Date of meeting: 6-08-23
Who attended: Rohan Sharma, Rishit Awasthi, Krrish Aggarwal
Who wasn't able to attend: Nil

Purpose of meeting: Team meeting to generate the ideas for a solution

Items discussed:
1. Discussion on what should be done in order to make the health treatment of user Economical feasible and much faster.
2. Discussed and then decided upon the solution of making a website for Lung Cancer Detection

Things to do (what, by whom, by when)
1. Collecting CT scan images, designing website, & coding for detection using CV and CNN (Convolutional Neural Network)
2. Each team member will do the task according to the roles assigned.
3. Same time.

Date of meeting: 7-08-23
Who attended: Rohan Sharma, Rishit Awasthi, Krrish Aggarwal
Who wasn't able to attend: Nil

Purpose of meeting: Team meeting to train the dataset according to the inputs

Items discussed:
1. No. of images required to train the dataset
2. Classifying the dataset into Cancerous, Non- Cancerous and Malignant

Things to do (what, by whom, by when)
1. Training the dataset and putting the dataset into the code and connect it with drive
2. Each team member will do the work according to their roles assigned.
3. Same Day.

Date of meeting: 8-08-23 (Morning)
Who attended: Rohan Sharma, Rishit Awasthi, Krrish Aggarwal
Who wasn't able to attend: Nil

Purpose of meeting: Team meeting to discuss the testing plan

Items discussed:
1. Curating all the dataset and putting it into the code and checking the accuracy level
2. Checking the results according to the dataset whether they are accurate or not
3. Plotting graphs

Things to do (what, by whom, by when)
1. Testing
2. Each team member will do the work according to their roles assigned
3. Same time.

Date of meeting: 8-08-23 (Evening)
Who attended: Rohan Sharma, Rishit Awasthi, Krrish Aggarwal
Who wasn't able to attend: Nil

Purpose of meeting: Checking the performance of the program and the website built

Items discussed:
1. Results of the CT scans.
2. Accuracy of the results and time taken to generate the report.
3. Verifying the actual result and predicted.

Things to do (what, by whom, by when)
1. Self-Reflection of the whole project
2. Each team member has to verify the tasks they have done in this project.
3. Same time.

Date of meeting: 9-08-23
Who attended: Rohan Sharma, Rishit Awasthi, Krrish Aggarwal
Who wasn't able to attend: Nil

Purpose of meeting: Inviting users for testing this program created

Items discussed:
1. Feedback taken from the users.
2. Is there any changes to be done?
3. If yes, then what all changes

Things to do (what, by whom, by when)
1. Any changes
2. By each team member
3. Same Day

3. Problem Definition

3.1 List important local issues faced by your school or community

The problem that has been addressed in our project is that the process of detection of cancerous tumors in a scanned image is done manually and there is always a scope of error due to lapses in our work whereas a machine or program can perform more efficiently and make more accurate calculations.

We have tried to work on that topic and reduce the time consumption and be efficient by making accurate calculations and detecting the tumor. This would also reduce manpower.

The issues that we have tried to correct in our project are: -

- Consumption of time
- Delayed responses
- Human efforts.
- Accurate prediction

3.2 Which issues matter to you and why?

The issue which we would like to address is that in the offline process a lot of time is being consumed and, in the meantime, patients undergo a lot of stress.

A machine can always perform faster in calculations and detecting abnormalities. Our program intends to precisely detect the cancerous tumor from the scanned image by calculating the accuracy rate and precision rate.

We tend to resolve the issue of time consumption so that the process is more efficient and timely action can be taken.

3.3 Which issue will you focus on?

This online approach will help us to make the process of detecting tumors from the image provided fully automated and save a lot of time and manpower.

The AI bot will gather basic information and calculate the accuracy and precision rate and detect the tumor in the image that has been inputted to the program.

3.4 Write your team's problem statement in the format below.

Our AI BOT that has been developed by our team will try to provide a more effective and accurate way to predict cancerous tumors which will reduce the manual process of detection and ensure a quick, efficient and smarter approach to patient's timely diagnosis.

Rate yourself 3

Problem Definition

1 point - A local problem is described
2 points - A local problem which has not been fully solved before is described.
3 points - A local problem which has not been fully solved before is explained in detail with supporting research.

4. The Users

4.1 Who are the users and how are they affected by the problem?

The users are :-
Patients
Doctors
Chemists

The users are affected in different ways the patient needs to figure out the problem.
The doctor uses the program to make accurate predictions.
The chemists further observe it and prescribe the required medicines.

4.2 What have you actually observed about the users and how the problem affects them?

Any news of a tumor causes mental stress. Late diagnosis increases this stress which is harmful for the patient. This could aggravate their condition. And causes panic among the patient which increases their blood pressure and puts them in a stressful state of mind which does not allow them to focus on things and get nervous more often. High blood pressure can also cause a lot of problems and sometimes even lead to strokes

Offline process is a very time-consuming process from the start to the end, from the scanning of the image and till the detection of the tumor by the doctor and the patient receiving the final report. The process is also very expensive as the patient has to spend a lot of money in getting the CT scan and then receiving the report

People often hear about their tumor and can get an anxiety attack due to the emotional turmoil and the suddenness of the situation when they hear about it. Since it is a very sensitive issue.

4.3 Record your interview questions here as well as responses from users.

Interviewer: Can you share your thoughts on the lung cancer detection model you've been using?

User: Absolutely, I'd be happy to. Firstly, I want to express my sincere appreciation for this incredible tool. It's truly revolutionized the way we approach early detection of lung cancer.

Interviewer: That's great to hear! What specifically stands out to you about the model?

User: The accuracy and efficiency are truly remarkable. Knowing there's a reliable system in place brings immense peace of mind. It saves time and enhances the chances of early intervention and treatment, potentially saving countless lives.

Interviewer: How do you find the user interface and presentation of results?

User: The user interface is intuitive and user-friendly, accessible to both medical professionals and patients. The transparent presentation of results and explanations instills confidence in the findings, fostering trust in the system.

Interviewer: It sounds like you're genuinely impressed with the model. Any final thoughts?

User: Absolutely. I'm genuinely grateful for the dedication and expertise that went into developing this model. It represents a significant advancement in medical technology and serves as a beacon of hope for those affected by lung cancer. Thank you for making a tangible difference in the fight against this disease and for providing a ray of hope for a brighter, healthier future.

4.4 Empathy Map

Map what the users say, think, do and feel about the problem in this table

What our users are saying	What our users thinking
● Are the tests authentic? ● Are they reliable? ● Where do I go for a timely and accurate diagnosis?	● How time consuming will it be ● How fast can I get my results ● Is the result normal or is there some abnormality ● Prescribed medications that are to be taken
What our users are doing	**How our users feel**
● Not taking timely action ● Procrastinating on the checkup ● Not consulting a specialist	● CONFUSED ● ANXIOUS ● STRESSED

4.5 What are the usual steps that users currently take related to the problem and where are the difficulties?

Usual steps that users currently take and difficulties faced have been illustrated using a hypothetical scenario.

A patient visits a doctor at a hospital

Patient: - Doctor, I need to get a checkup

Doctor: - Please get an appointment at the reception desk

Patient gets an appointment after 4 days and gets a CT-Scan

Doctor: - Mr./Mrs. Patient your test results have not come normal and we suspect a cancerous tumor may be present.

Patient: - Doctor are you sure that it's cancer how can you be certain?

Doctor: - You will have to wait for some days before we can actually come at a result till then take care of your health and have a healthy diet.

Few days go by and the patient gets eager to know the results and then contacts the doctor.

Patient: - Hello Doctor what do my reports state.

Doctor: - It is certain that there is a cancerous tumor and the abnormality can be observed in the image.

Patient: - What should I do now? What treatment should I undergo?

Doctor: - We suggest that you start with the chemotherapy as soon as possible so as to prevent further spread of the tumor.

Patient: - Okay doctor we will start with the treatment, what are the forms and other formalities that need to be taken care of.

Doctor: - Please show this note at the reception and the receptionist will provide you the required details.

4.6 Write your team's problem statement in the format below.

Our AI BOT that has been developed by our team will try to provide a more effective and accurate way to predict cancerous tumors which will reduce the manual process of detection and ensure a quick, efficient and smarter approach to patient's timely diagnosis.

Rate yourself 3

The Users

1 point - The user group is described but it is unclear how they are affected by the problem.
2 points - Understanding of the user group is evidenced by completion of most of the steps in this section.
3 points - Understanding of the user group is evidenced by completion of most of the steps in this section and thorough investigation

5. Brainstorming

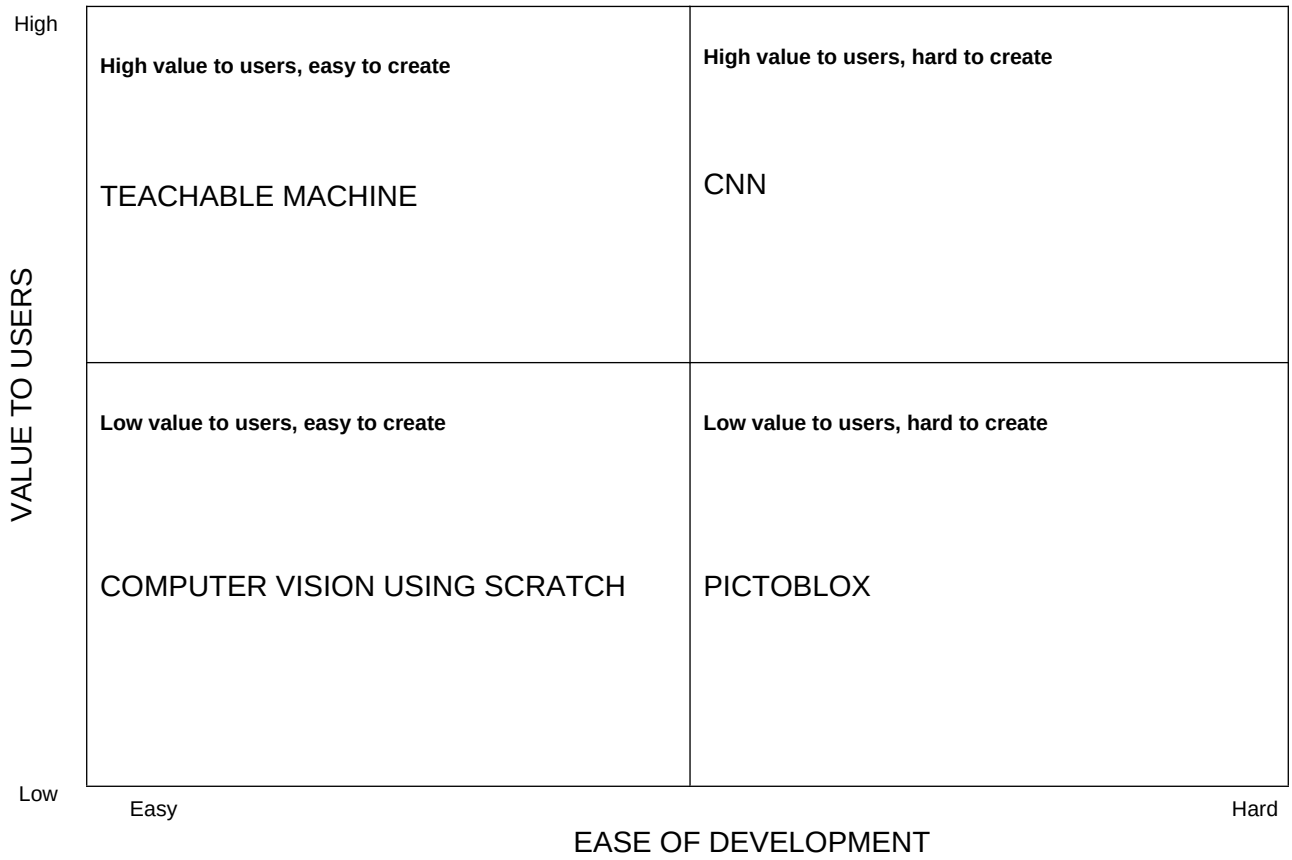
5.1 Ideas

How might you use the power of AI/machine learning to solve the users' problem by increasing their knowledge or improving their skills?

AI Idea #1	CNN (Convolutional neural network) USING PYTHON
AI Idea #2	TEACHABLE MACHINE
AI Idea #3	COMPUTER VISION USING SCRATCH
AI Idea #4	PICTOBLOX

5.2 Priority Grid

Evaluate your five AI ideas based on value to users and ease of creation and implementation.



5.3 Based on the priority grid, which AI solution is the best fit for your users and for your team to create and implement?

Briefly summarize the idea for your solution in a few sentences and be sure to identify the tool that you will use.

CNN - A Convolutional Neural Network (CNN) is a type of deep learning algorithm that is particularly well-suited for image recognition and processing tasks. It is made up of multiple layers, including convolutional layers, pooling layers, and fully connected layers. The convolutional layers are the key component of a CNN, where filters are applied to the input image to extract features such as edges, textures, and shapes. The output of the convolutional layers is then passed through pooling layers, which are used to down-sample the feature maps, reducing the spatial dimensions while retaining the most important information. The output of the pooling layers is then passed through one or more fully connected layers, which are used to make a prediction or classify the image. It really helped me to classify the CT scans into Cancerous, Non-Cancerous and Malignant. Its accuracy was up to 99.48% which is very trustable.

Rate yourself 3

Brainstorming

1 point – A brainstorming session was conducted. A solution was selected.
2 points - A brainstorming session was conducted using creative and critical thinking. A solution was selected with supporting arguments in this section
3 points - A brainstorming session was conducted using creative and critical thinking. A compelling solution was selected with supporting arguments in this section.

6. Design

6.1 What are the steps that users will now do using your AI solution to address the problem?

1.The doctor/patient seeking information will upload the image and get the results

2.The program will handle the queries of the stakeholders.

3. In case the AI-BOT is not able to provide an output it will ask the user to redo the upload phase.

4.If the query is not in the predefined data, then the user will be directed to the main page where the programmer can be contacted.

Rate yourself 3

Design

1 point – The use of AI is a good fit for the solution.
2 points - The use of AI is a good fit for the solution and there is some documentation about how it meets the needs of users
3 points - The use of AI is a good fit for the solution. The new user experience is clearly documented showing how users will be better served than they are today.

7. Data

7.1 What data will you need to train your AI solution?

General abnormalities that are commonly found in most of the patients.

7.2 Where or how will you source your data?

Data needed	Where will the data come from?	Who owns the data?	Do you have permission to use the data?	Ethical considerations
Have	**Surgical centers, Previous data recordings**	**Hospitals, Dispensaries**	**Yes**	**Data should not be shared without permission**
Want/Need	**Surgical centers, Previous data recordings**	**Hospitals, Dispensaries**	**Yes**	
Nice to have	**Surgical centers, Previous data recordings**	**Hospitals, Dispensaries**	**Yes**	

Rate yourself 3

Data

1 point – Relevant data to train the AI model have been identified as well as how the data will be sourced or collected.
2 points - Relevant data to train the AI model have been identified as well as how the data will be sourced or collected. There is evidence that the dataset is balanced.
3 points - Relevant data to train the AI model have been identified as well as how the data will be sourced or collected. There is evidence that the dataset is balanced, and that safety and privacy have been considered.

8. Prototype

8.1 Which AI tool(s) will you use to build your prototype?

Python using Google Colaboratory

8.2 Which AI tool(s) will you use to build your solution?

Python using Google Colaboratory

8.3 What decisions or outputs will your tool generate and what further action needs to be taken after a decision is made?

Main pointers of the program: - 1.The patient/user will get the test result once the image has been scanned by the program and the accuracy and precision rate is calculated. 2.The program will point out the tumor in the image. 3.In case the user does not get the designated result then the user may contact the programmer.

Rate yourself 3

Prototype

1 point – A concept for a prototype shows how the AI model will work.
2 points - A prototype for the solution has been created and trained.
3 points - A prototype for the solution has been created and successfully trained to meet users' requirements.

9. Testing

9.1 Who are the users who tested the prototype?

- Team Members
- Teachers
- Students
- Admin staff
- Parents

9.2 List your observations of your users as they tested your solution.

- Team Members- Accuracy and precision rate is being calculated properly.
- Parents - The abnormality is being detected in the image.
- Student- The program works for different inputs.

9.3 Complete the user feedback grid

What works	What needs to change
The precision and accuracy rate calculations. Redirecting to the main page where the details of the programmer have been mentioned.	The data which is not present in the predefined dataset is to be added.
Questions? How much time is taken to provide the results? How accurate are the results?	Ideas Needs more X-rays to be uploaded More work required on making the predictions accurate

9.4 Refining the prototype: Based on user testing, what needs to be acted on now so that the prototype can be used?

Needs more X-rays to be uploaded

More work required on making the predictions accurate

9.5 What improvements can be made later?

Website development with server space

Rate yourself 3

Testing

1 point – A concept for a prototype shows how it will be tested.
2 points - A prototype has been tested with users and improvements have been identified to meet user requirements.
3 points - A prototype has been tested with a fair representation of users and all tasks in this section have been completed.

10. Team collaboration

10.1 How did you actively work with others in your team and with stakeholders?

- Regular online sessions with team members for brainstorming.
- Work divided between various group members.
- Regular discussions with the teacher in charge to check for errors.
- Sessions with parents to gather and work on new ideas
- Testing of the prototype carried out by each member of the group and stakeholders involved.

Rate yourself 3

Team collaboration

1 point – There is some evidence of team interactions among peers and stakeholders.
2 points - Team collaboration among peers and stakeholders is clearly documented in this section.
3 points - Effective team collaboration and communication among peers and stakeholders is clearly documented in this section.

11. Individual learning reflection

11.1. Team Reflections

A good way to identify what you have learned is to ask yourself what surprised you during the project. List the things that surprised you and any other thoughts you might have on issues in your local community.

Team member name: Krrish Aggarwal

The moments when I got really intrigued was while analyzing the data and putting all the data set into the code as image detection was so accurate that I could find all the right variations in the results which were not in my mind. Rest when the graphs were shown according to my expectation. I never thought that computer vision and CNN would be able to point out images properly and could segregate it according to the proposition we thought of.

Team member name: Rohan Sharma

It's been an awesome journey! While making this bot we identified the problem which is usually faced by the patients in case of expensive and severe health treatments (for e.g. Lung Cancer) and especially at the time of pandemic when doctors were not easily available so we came up with the idea of making a website and building a program using computer vision and CNN in order to predict Lung Cancer with the help of CT scans. All members put in great efforts. We had great brainstorming sessions. Making this program and especially designing the website helped me understand various AI concepts also.

Team member name: Rishit Awasthi

What actually surprised me was the part of the data collection as I was expecting only 500-600 CT scanned images would be enough for the part of data processing but during the process, I realized that the algorithm demanded more images than expected so I had to put around 2000-3000 images with proper segregation of malignant, cancerous and non-cancerous results. I also got to learn that I need to explore more websites for the authenticity of the data which taught me we could actually use AI technology for the benefit of humankind.

Note: *Add more boxes if there are more members in your team*

Rate yourself 3

Individual Learning Reflection

1 point – Some team members present an account of their learning during the project.
2 points - Each team presents an account of their learning during the project.
3 points - Each team member presents a reflective and insightful account of their learning during the project.

12. Video link

Enter the URL of your team video:

Code Link:
https://colab.research.google.com/drive/1Qywi0kWgXRLR0DpQD7XhkWr_po1KLz2J#scrollTo=gk701FEq4_h0

Video Link:
https://drive.google.com/file/d/1cXhFjMAqF3uGVLvAz3DRdJa-cRI1ByHr/view?usp=sharing

Appendix

Recommended Assessment Rubric (for Teachers)

LOGBOOK AND VIDEO CONTENT

Steps	3 points	2 points	1 point	Points Given
Problem definition	A local problem which has not been fully solved before is explained in detail with supporting research.	A local problem which has not been fully solved before is described.	A local problem is described	3
The Users	Understanding of the user group is evidenced by completion of all of the steps in *Section 4 The Users* and thorough investigation.	Understanding of the user group is evidenced by completion of most of the steps in *Section 4 The Users*.	The user group is described but it is unclear how they are affected by the problem.	3
Brainstorming	A brainstorming session was conducted using creative and critical thinking. A compelling solution was selected with supporting arguments from *Section 5 Brainstorming.*	A brainstorming session was conducted using creative and critical thinking. A solution was selected with supporting arguments in *Section 5 Brainstorming.*	A brainstorming session was conducted. A solution was selected.	3
Design	The use of AI is a good fit for the solution. The new user experience is clearly documented showing how users will be better served than they are today.	The use of AI is a good fit for the solution and there is some documentation about how it meets the needs of users.	The use of AI is a good fit for the solution.	3
Data	Relevant data to train the AI model have been identified as well as how the data will be sourced or collected. There is evidence that the dataset is balanced, and that safety and privacy have been considered.	Relevant data to train the AI model have been identified as well as how the data will be sourced or collected. There is evidence that the dataset is balanced.	Relevant data to train the AI model have been identified as well as how the data will be sourced or collected.	3
Prototype	A prototype for the solution has been created and successfully trained to meet users' requirements.	A prototype for the solution has been created and trained.	A concept for a prototype shows how the AI model will work	3
Testing	A prototype has been tested with a fair representation of users and all tasks in *Section 9 Testing* have been completed.	A prototype has been tested with users and improvements have been identified to meet user requirements.	A concept for a prototype shows how it will be tested.	3
Team collaboration	Effective team collaboration and communication among peers and stakeholders is clearly documented in *Section 10 Team collaboration*.	Team collaboration among peers and stakeholders is clearly documented in *Section 10 Team collaboration*.	There is some evidence of team interactions among peers and stakeholders.	3
Individual learning	Each team member presents a reflective and insightful account of their learning during the project.	Each team presents an account of their learning during the project.	Some team members present an account of their learning during the project.	3
Total points				27

VIDEO PRESENTATION

Criteria		Points Given 3 – excellent 2 – very good 1 – satisfactory
Communication	The video is well-paced and communicated, following a clear and logical sequence.	3
Illustrative	Demonstrations and/or visuals are used to illustrate examples, where appropriate.	3
Accurate language	The video presents accurate science and technology and uses appropriate language.	3
Passion	The video demonstrates passion from team members about their chosen topic/idea.	3
Sound and image quality	The video demonstrates good sound and image quality.	3
Length	The content is presented in the video within a 3-minute timeframe.	3
Total points		18