**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)*

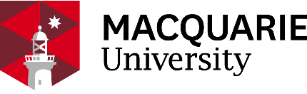
**KEY PARTNERS**

****

**INDIA IMPLEMENTATION PARTNERS**

****

**GLOBAL PARTNERS**

****

**AI Project Logbook**

Tic Tac Toe Game

**PROJECT NAME:**

Gurukul Global Global

**SCHOOL NAME:**

2024-2025, class12th

**YEAR/CLASS:**

Ritu Debnath

**TEACHER NAME:**

[ritudebnath@gmail.com](mailto:ritudebnath@gmail.com)

**TEACHER EMAIL:**

**TEAM MEMBER NAMES AND GRADES:**

Akshan Goyal, class12th

1.

Harshil Ahuja, class12th

2.

Turvashu Verma, class12th

3.

4.

5.

6.

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

# 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.

# Team Roles

* 1. **Who is in your team and what are their roles?**

|  |  |  |
| --- | --- | --- |
| Role  Lead Developer  UI/UX Designer  Tester & Documentation | Role description  Responsible for coding the game logic, implementing AI algorithms, and debugging.  Responsible for testing game functionality, identifying bugs, and maintenance project documentation.  Focused on designing the user interface and enhancing the user experience. | Team Member Name  Turvashu Verma  Harshil Ahuja  Akshan Goyal |
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* 1. **Project plan**

Shedule observation with active players

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**  Nov 1,  2024 | **Planned end date**  Nov 2,  2024 | **Planned duration (hours,**  **minutes)**  4 hours | **Actual start date**  Nov 1,  2024 | **Actual end date**  Nov 2,  2024 | **Actual duration (hours,**  **minutes)**  4 hours  Akshan  Turvashu  Harshil  Team  Team  Team  Team  Team  Akshan  Harshil | **Who is responsible**  Team | **Notes/Remarks**  Identify resources and reading materials  Ensure shared access for all  Identify key areas of user friction  Document key decision and |
| **Preparing for**  **the project** | Coursework,  readings |  |  |  |  |  |  |  |  |
|  | Set up a team folder  on a shared drive | Nov 1,  2024 | Nov 2,  2024 | 30min | Nov 1  2024 | Nov 2,  2024 | 15min |  | Focused on game related bug sources |
| **Defining the problem** | Background  reading | Nov 3 | Nov 3 | 1hr | Nov 3 | Nov3 | 1 hr |  |  |
| Research issues in our  community | Nov 3 | Nov 3 | 1hr | Nov 3 | Nov 3 | 1hr |  |  |
| Team meeting to discuss issues and select an issue for the  project | Nov 3 | Nov3 | 1hr | Nov3 | Nov3 | 1 hr |  |  |
| Complete section 3 of the Project  Logbook | Nov3 | Nov3 | 30min | Nov3 | Nov3 | 30min |  | Completed |
| Rate  yourselves | Nov 3 | Nov3 | 5min | Nov3 | Nov3 | 5min |  | Good |
| **Understanding the users** | Identify users | Nov 4 | Nov 4 | 1hr | Nov 4 | Nov4 | 1hr |  | done |
| Meeting with users to  observe them | Nov 5 | Nov 5 | 2hr | Nov 4 | Nov5 | 2hr |  | Focus on player pain points. |
| Interview  with user (1) | Nov 5 |  |  |  |  | 1 hr |  |  |
| Interview with user (2),  etc…  Team | Nov5 | Nov 5 | 1hr |  |  | 1hr |  | Effective Ai |
| Complete section 4 of the Project  Logbook | Nov6 | Nov 6 | 2hr | Nov6 | Nov 6 | 2hr |  | Completed |
| Rate yourselves  Team | Nov 6 | Nov 6 | 10min | Nov 6 | Nov 6 | 10min |  | Good |
| **Brainstorming** | Team meeting to generate ideas for a  Capture all ideas and priorities  Team  solution | Nov 7 | Nov 7 | 1hr | Nov 7 | Nov7 | 1hr |  |  |
| Complete section 5 of the Project  Team  Logbook | Nov 8 | Nov 8 | 30min | Nov 8 | Nov8 | 30min |  | Completed |
| Rate  Team  yourselves | Nov 8 | Nov 8 | 10min | Nov 8 | Nov 8 | 5min |  | Good |
| **Designing your solution** | Team meeting to design the  Layout key Features and  Team  solution | Nov 9 | Nov 10 | 2hr | Nov 9 | Nov 10 | 2.5hr |  |  |
| Complete section 6 of  Team  the logbook | Nov 10 | Nov 10 | 1.5hr | Nov 10 | Nov 10 | 2hr |  | Completed |
| Rate  Team  yourselves | Nov 10 | Nov 10 | 10min | Nov 10 | Nov 10 | 5min |  | good |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Collecting and preparing data** | Team meeting to  Define data Sources for AI Model training  Team  discuss data requirements | Nov 10 | Nov11 | 30min | Nov 11 | Nov11 | 30min |  |  |
| **Collecting and preparing data Prototyping** | Data collection  Turvashu | Nov 11 | Nov11 | 30min | Nov 11 | Nov 11 | 30min |  | Collected |
| Data  Akshan  preparation and labelling | Nov 11 | Nov 11 | 30min | Nov 11 | Nov 11 | 30min |  | Labbeled |
| Complete Section 6 of the Project  Harshil  Logbook | Nov 12 | Nov 12 | 15min | Nov 12 | Nov 12 | 20min |  | Done |
| Team meeting to plan  Team  prototyping phase | Nov 13 | Nov 14 | 2hr | Nov 13 | Nov 14 | 2hr |  | Two solutions found |
| **Prototyping Testing** | Train your model with  Akshan  input dataset | Dec 20 | Dec 22 | 3hr | Dec 20 | Dec 22 | 3hr |  | Some bugs found |
| Test your model and keep training with more data until you think your  Harshil  model is accurate | Dec 23 | Dec 24 | 4hr | Dec 23 | Dec 24 | 4hr |  | Bugs clwared |
| Write a program to initiate actions based on the result of your  model | Dec 25 | Dec 25 | 2hr | Dec 25 | Dec 25 | 2.5hr |  | done |
| Complete section 8 of the Project  Team  Logbook | Dec 29 | Dec 29 | 30min | Dec29 | Dec 29 | 40mon |  | Done |
| Rate yourselves  Team | Dec 29 | Dec 29 | 5min | Dec 29 | Dec 29 | 5min |  | good |
| Team meeting to  Team  discuss testing plan | Dec 30 | Dec 30 | 1hr | Dec 30 | Dec 30 | 1hr |  | Plan made |
| **Testing Creating the video** | Invite users to test your  prototype | Jan 2 | Jan 2 | 3hr | Jam 2 | Jan2 | 3.10hr | Team | Done |
| Conduct  Team  testing with users | Jan 3 | Jan 3 | 1 hr | Jan 3 | Jan 3 | 1hr |  | Done |
| Complete section 9 of the Project  Team  Logbook | Jan3 | Jan3 | 30min | Jan3 | Jam3 | 30min |  | Done |
| Rate  Team  yourselves | Jan 4 | Jan 4 | 5min | Jan 4 | Jan 4 | 5min |  | done |
| Team meeting to discuss  Team  video creation | Jan 5 | Jan 5 | 5min | Jan 5 | Jan 5 | 10min |  | done |
|  | Write your  Harshil  script  Team | Jan 6 | Jan6 | 1hr | Jan6 | Jan6 | 1hr |  | done |
|  | Film your  video | Jan 7 | Jan7 | 3omin | Jan7 | Jan7 | 30min |  | Done |
|  | Edit your video  Akshan | Jan7 | Jan7 | 1hr | Jan7 | Jan7 | 1hr |  | Done |
| **Completing the logbook** | Reflect on the project  Team  with your team | Jan7 | Jan7 | 1hr | Jan7 | Jan7 | 1hr |  | done |

Turvashu

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Complete sections 10 and 11 of the Project  Team  Logbook |  |  |  |  |  |  |  |  |
|  | Review your Project logbook and  Team  video | Nov 10,  2024 | Nov 10,  2024 |  | Nov 10  2024 |  |  |  |  |
| **Submission** | Submit your entries on  Akshan  Nov 10,  2024  1 hour  1 hour  the IBM |  |  |  |  |  |  |  |  |

**-> We will use Google Drive and Zoom/Google Meet for communication and collaboration.**

* 1. **Communications plan**

**-> We will meet primarily online with occasional face-to-face meetings.**

**-> We will meet once a week,with ad-hoc meetings as needed.**

Will you meet face-to-face, online or a mixture of each to communicate? How often will you come together to share your progress?

Who will set up online documents and ensure that everyone is contributing? What tools will you use for communication?

* 1. **Team meeting minutes (create one for each meeting held)**

**-> Akshan will setup online documents and ensure team contributions.**

**None**

**To discuss the current state of the Tic Tac Toe project, identify issues, and set goals for the upcoming development cycle.**

**Akshan,turvashu,harshil**

**November 5, 2024**

Game bugs and Functionality. AI improvements.

Multiplayer Feature.

Fix game Bugs. Test AI Difficulty.

Start multiplayer Development.

Date of meeting:

Who attended:

Who wasn’t able to attend: Purpose of meeting:

Items discussed:

1.

2.

3.

Things to do (what, by whom, by when) 1.

2.

3.

# Problem Definition

Local Problem: Create an engaging Tic Tac Toe game using Al that can challenge players and provide an enjoyable gaming experience.

Problem Statement: How can we develop a Tic Tac Toe game that uses Al to provide challenging, strategic moves so that players can have a competitive and fun

* 1. **List important local issues faced by your school or community**
  2. **Which issues matter to you and why?**
  3. **Which issue will you focus on?**

Our focus will be on \*\*smoothing the functionality\*\* of the game and ensuring there are \*\*no bugs\*\* for a seamless and enjoyable experience.

* 1. **Write your team’s problem statement in the format below.**

play seamlessly

without interruptions or issues, improving overall user satisfaction?

enjoy a smooth and bug-free gaming experience

Tic tac toe players

How can we help [ a specific user or group of users] find a way to [do what] so that they can [ do something not done before that can be measured].

**Rate yourself 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.

# The Users

* 1. **Who are the users and how are they affected by the problem?**
  2. **What have you actually observed about the users and how the problem affects them?**

Users: Players interested in strategy-based games, including both casual players and those seeking to challenge an Al opponent.

User Observations: Users enjoy games that offer a mix of challenge and engagement; predictable Al can reduce interest.

* 1. **Record your interview questions here as well as responses from users.**

Interview Questions:

1. How would you describe your experience with Tic Tac Toe so far?

2. What features would make the game more engaging for you?

3. How easy is it to understand the rules of the game?

4. Have you played Tic Tac Toe on other platforms (mobile, web, etc.)? How does this version compare?

5. What is your preferred mode of play? (e.g., single-player, multiplayer, against AI)

6. Are there any difficulties you encounter while playing the game?

7. What do you think of the game’s user interface and design?

8. Is there anything that frustrates you when playing Tic Tac Toe?

9. Would you like to see additional customization options, such as themes or difficulty levels?

10. How likely would you be to recommend this version of Tic Tac Toe to others?

11. What could be improved to make the game more fun or challenging?

12. What’s your opinion on the AI difficulty level? Is it too easy, too hard, or just right?

Example User Responses:

User 1: "It's fun, but I would love some different game modes, like time-limited moves or challenges."

* 1. **Empathy Map**

**Excited, challenged, sometimes frustrated when losing.**

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

|  |  |
| --- | --- |
| **What our users are saying**  **“I want to beat the AI!”** | **What our users thinking**  **“How can i outsmart this AI?”** |
| **What our users are doing**  **Analyse moves, strategise during** | **How our users feel** |

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

Launching the Game: Users open the Tic Tac Toe game on their device, initiating the gameplay environment.

Navigating the Interface: Users may encounter difficulties if the interface is not intuitive, leading to a slow start confusion about controls.

Selecting Game Mode: Users choose between playing against Al or another player, with potential issues if difficulty levels are not well-adjusted to their preferences.

Placing the First Move: Users begin the game by placing their move as "X" or "O". New users may struggle to strategize effectively at this-stage.

AI Response: The Al makes a move based on its strategy. If the Al is predictable, users may lose interest or find the game too easy.

Planning and Strategy: Users think through their moves, aiming to create a winning combination. Complex Al behavior may challenge users beyond their skill level.

Blocking Al Moves: Users focus on preventing potential wins by the Al, a key strategic element that can become frustrating if the Al consistently outmaneuvers them.

Countering Al's Strategy: Users attempt to outsmart the Al, which may prove difficult if the Al has limited or overly aggressive strategies.

Game Conclusion: The game ends with a win, loss, or draw. A predictable outcome can reduce player engagement over time.

Reflecting on Results and Replay: Users decide whether to replay or exit. Without varied strategies or adaptive difficulty, users may become disinterested in repeated playthroughs.

1.

2.

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* 1. **Write your team’s problem statement in the format below.**

game bugs and inconsistent functionality

unoptimised code and a lack of comprehensive testing

Tic tac toe players

[a specific user or group of users]

are experiencing issues with [problem] today because of [cause]

**Rate yourself 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

# Brainstorming

* 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  Implement a basic rule-based Al. |  |
| AI Idea #2  Add adaptive Al behavior based on player performance. |  |
| AI Idea #3  Introduce difficulty levels (easy, medium, hard). |  |
| AI Idea #4  Best Solution: Use a combination of rule-based and adaptive Al to balance difficulty while maintaining player engagement. |  |
| AI Idea #5 |  |

High

VALUE TO USERS

Low

* 1. **Priority Grid**

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

Basic rule-based Al that plays using simple strategies (e.g., blocking moves, winning moves).

|  |  |
| --- | --- |
| **High value to users, easy to create** | High value to users, hard to create  Adaptive AI behaviour using the minimax algorithm with learning mechanisms that adjust based on user gameplay patterns. |
| Low value to users, easy to create  Random move generator without strategic logic, providing only basic | Low value to users, hard to create  Al that predicts and counters future player moves up to several turns ahead using |

Easy Hard

EASE OF DEVELOPMENT

* 1. **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.

Selected Al Solution: The best fit for our Tic Tac Toe game is a combination of rule- based logic and an adaptive Al behavior using the Minimax algorithm. This approach ensures that the Al opponent remains challenging while allowing for varying levels of difficulty, catering to both beginners and more advanced players.

Summary of the Solution: The Al will employ a rule-based strategy for lower difficulty levels to provide a more accessible challenge to casual players. For higher difficulty levels, it will use the Minimax algorithm to evaluate and predict optimal moves, ensuring strategic gameplay. This blend allows flexibility and engagement for users, offering competitive gameplay at all skill levels.

Tool Used: The solution will be implemented using Python, leveraging libraries such as NumPy for efficient computation and custom functions to execute the Minimax algorithm and game logic. This approach balances complexity and accessibility, providing an enjoyable experience for users while maintaining high engagement.

**Rate yourself 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.

# Design

Game ends upon win,draw, or loss.

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

Launch the game.

Choose difficulty level.

Observe AI strategies and adapt.

Play against AI, making moves alternately.

1.

2.

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10.

**Rate yourself 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.

# Data

* 1. **What data will you need to train your AI solution?**

Data Needed: Game moves and outcomes for different scenarios.

* 1. **Where or how will you source your data?**

Generated internally during game development and testing scenarios.

Real matches played by users during the testing phase.

AI simulation runs and evaluation against various strategies

No ethical concerns, as this data is self-generated and involves no sensitive information.

Ensure user consent and anonymisation of data to protect privacy.

No specific concerns, as data is generated through controlled simulations.

Yes, as it is created and controlled by the project team.

Yes,provided users consent to data collection and use for improving the game.

Yes,as it is generated through simulation conducted by the

The project team (Akshan, Harshil, Turvashu).

The project team (with user consent).

The project team.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data needed** | **Where will the data come from?** | **Who owns the data?** | **Do you have permission to use the data?** | **Ethical considerations** |
| **Have** |  |  |  |  |
| **Want/Need** |  |  |  |  |
| **Nice to have** |  |  |  |  |

**Rate yourself 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.

# Prototype

Al Tools Used: Python libraries for Al development (e.g., Minimax algorithm)

* 1. **Which AI tool(s) will you use to build your prototype?**
  2. **Which AI tool(s) will you use to build your solution?**
  3. **What decisions or outputs will your tool generate and what further action needs to be taken after a decision is made?**

Al Tools for Solution: Al logic built using Minimax algorithm and heuristic evaluations.

Decisions and Outputs:

• The Al makes strategic moves based on game state.

• Outputs include Al moves, game state changes, and win/loss/draw outcomes.

• Next actions include analyzing player feedback and further refining AI strategies

**Rate yourself 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.

# Testing

* 1. **Who are the users who tested the prototype?**
  2. **List your observations of your users as they tested your solution.**

Users for Testing: Game enthusiasts, strategy game players, friends, and peers.

Observations During Testing:

• Users enjoyed challenging Al but occasionally found it too predictable or too difficult.

• The interface was intuitive but could be enhanced for better user

* 1. **Complete the user feedback grid**

**Add different difficulty levels to make it more accessible to casual players.**

**Implement an AI learning mechanism for more adaptive behaviour.**

|  |  |
| --- | --- |
| What works  **AI strategy is challenging and fun; UI is clean**  **and simple.** | What needs to change |
| Questions?  **“Can the AI learn from my moves?”** | Ideas |

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

Immediate Action: Introduce easy, medium, and hard difficulty settings for AI.

* 1. **What improvements can be made later?**

Future Improvements: Develop a learning Al that adapts over time.

**Rate yourself**

**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.

# Team collaboration

* 1. **How did you actively work with others in your team and with stakeholders?**

Collaboration Summary:

• Team meetings were held regularly (face-to-face and online) to discuss progress.

• Akshan led coding and logic implementation, Harshil designed and improved UI/UX, while Turvashu focused on testing and documentation.

• Effective communication and task division ensured steady project progress.

**Rate yourself**

**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.

# 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:**

Akshan: "I learned a lot about Al algorithms, especially Minimax, and how strategic logic can impact player experience."

**Team member name:**

Turvashu: "Testing was critical in understanding user expectations and how minor bugs can impact overall gameplay.

Harshil: "Working on the Ul design helped me understand the importance of user experience in games."

**Team member name:**

**Team member name:**

**Team member name:**

**Team member name:**

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

**Rate yourself**

**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.

# Video link

**Enter the URL of your team video:**

**Enter the password (if any):**

**Appendix**

## Recommended Assessment Rubric (for Teachers)

**LOGBOOK AND VIDEO CONTENT**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Steps** | **3 points** | **2 points** | **1 point** | **Points Given** |
| [Problem](#_bookmark0) [definition](#_bookmark0) | 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 |  |
| [The Users](#_bookmark1) | 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. |  |
| [Brainstorming](#_bookmark2) | 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. |  |
| [Design](#_bookmark3) | 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. |  |
| [Data](#_bookmark4) | 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. |  |
| [Prototype](#_bookmark5) | 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 |  |
| [Testing](#_bookmark6) | 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. |  |
| [Team](#_bookmark7) [collaboration](#_bookmark7) | 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. |  |
| [Individual](#_bookmark8) [learning](#_bookmark8) | 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. |  |
| Total points | | | |  |

**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. |  |
| Illustrative | Demonstrations and/or visuals are used to illustrate examples, where appropriate. |  |
| Accurate language | The video presents accurate science and technology and uses appropriate language. |  |
| Passion | The video demonstrates passion from team members about their chosen topic/idea. |  |
| Sound and image quality | The video demonstrates good sound and image quality. |  |
| Length | The content is presented in the video within a 3-minute timeframe. |  |
| Total points | |  |