

LLOYD CASE 1818917 INDEPENDENT PROJECT RESEARCH PROPOSAL

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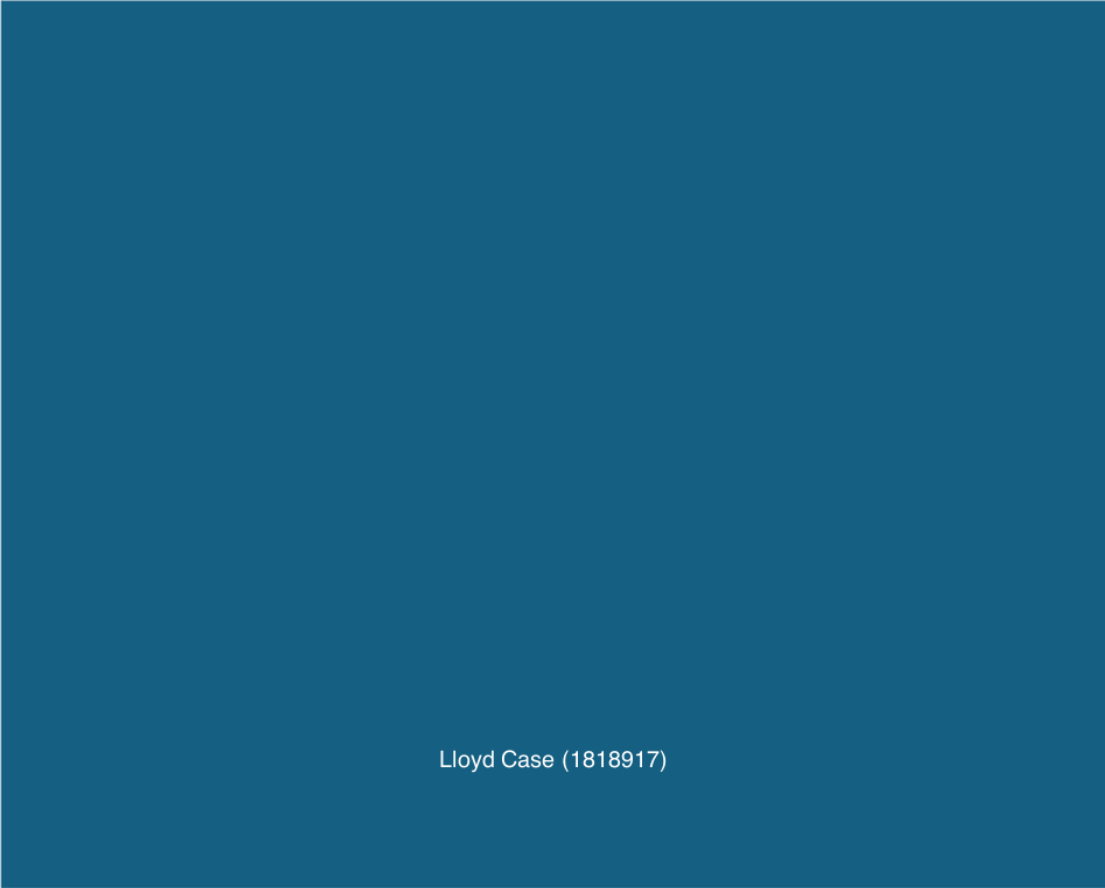
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LLOYD CASE 1818917
INDEPENDENT PROJECT
RESEARCH PROPOSAL



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Introduction

Working Title

The working title for the independent project is: Using AI in education through the use of games.

Introduction to Project Area

The project area of the independent project will be looking at AI in education as well as gaming in education. By looking at these 2 areas thoroughly it will become clear that both AI in education and gamifying education will be a big part of the education system in the future.

In the current field of education, the way technology is used is with computers, recently with ChatGPT becoming available many schools and universities are allowing the student to use ChatGPT to assist with their work[1] (H. M. Alzoubi et al.). Recently there has been an increase in the amount of people that use AI such as ChatGPT, now it would be unrealistic to assume that students will not use AI to assist with their work.

There may be a lot of differences with how the curriculum is taught today to how it will be taught in 5-10 years. AI will be great at helping people with their education, it will be possible for AI to adapt and understand using algorithms, how you as an individual best learn and what you need to be able to learn effectively[2] (L. Judijanto et al.).

In this study conducted by Da Yang Tan et al.[3], a study was conducted on 24 first year undergraduate students on an online educational game that uses AI to adapt to each student's needs. It was favourable among the students (83%) and shows that the AI educational game, would encourage the students to stay on their current course.

This project will be important because it will help with the understanding of what the future of education could look like given all the concepts of AI and educational games are implemented in a timely and correct way. The context of this project is to show that AI and gaming will be new, fun and engaging ways to assist with education.

Project Background/Statement

The background to the independent project is to help students more with their education. Whether they are struggling and need extra assistance or not, this way of education will be the most enjoyable as they will be able to learn at their own pace as well as have learning that is specific to the student by using the AI algorithms[2] that will help detect what the student needs help with most. The reason for this independent project is because AI in education as well as gamifying[4] (Stella Timotheou et al.) education with AI will be a massive help to the way people learn, the idea is for anyone to be able to adapt to this learning and thus understand that it is limitless in what it can teach you, as it will adapt to your needs, as well as it being gamified meaning that it will also be an enjoyable experience that is meant to make learning fun and increasing the overall productivity.

There are many key developments and trends that are currently being made in this field such as the AI education game being adaptive to the students using it, gamifying education is new so knowing how effective it can be for the public would be difficult as there are many different factors to consider[5]. It would take a lot of work to implement it correctly and fairly, such as if a person cannot access it at home or struggles with using computers. There are many different factors to consider when trying to make this a fair and useable product for everyone no matter how much they use technology. Technology is also important to keep up with as the times go on as technology will be and already is everywhere and used for most basic things in life, so a digitalised education[6] is very important.

The project statement is to make an educational game using AI that can adapt to the needs of any student and in many different subject areas. While this is already being explored it is limited to small surveys of people and not anything widespread or big enough to see reasonable impact.

Aim & Objectives

Aim

The overall aim of this independent project is to create an AI educational game with the goal to make it easier for everyone to learn better as well as learn more effectively due to the algorithmic AI that changes based on your preferences and performances.

Objectives

Objective 1

One of the objectives will be to explore how customization will work in terms of the education that the AI educational game gives. This will explore the algorithms and how they work to make sure that it is working correctly and effectively for everyone using, making sure that it

is up to date. This will take some time to trial as the AI will need to collect data from different types of people to see what the differences are and to see if the AI can implement these different types of differences. The data collection will need to be a small amount so it will be completable in 6 months.

Objective 2

Another objective will be to make sure it is still an effective method of teaching/learning as other traditional methods that are used today. This will again need to be tested for teachers and students to see if performance is any different between using traditional or AI educational game. This will also take about 6 months as more data collection will be needed.

Objective 3

The last objective will be to make sure it is available to use for everyone no matter their understanding of computers or games. This means that the game must be accessible to everyone, this will be difficult to implement, however there are many ways to make the AI educational game as accessible as possible. There will need to be a lot of data collection from different groups of people, and for their feedback to be heard, so that it can be implemented.

Expected Outcome

The expected outcome will be a game that will be a proof of concept that has AI implemented, as well as other design choices gathered from feedback. This proof of concept will demonstrate the different types of educational content that will be on offer and to show that it can be used to learn at your own pace.

Project Design

Outline

The outline for the independent project will be to do research and see what researchers have discovered and try and implement those into the AI educational game. Creating the AI educational game will be challenging, as the feedback must be implemented so that the best-case scenario product can be made with minimal discrepancies.

Data Collection Methods

The data collection methods used will be all research based. Case studies will be used to see if there are any major or minor differences between students that use an AI educational game and students that don't. Comparing the data will be extremely useful in determining what changes will need to be made to make AI learning through games more effective. Using this method for all objectives will be crucial because the practical feedback will be difficult to obtain due to not having students to teach or a project to give. Research feedback will shape the independent project, these will however be researched very deeply to see what connecting factors there are to use when creating the AI educational game.

Credit will be given to the researchers whenever any of their research is used is applicable. The statistical analysis methods used will be a varying amount, regression analysis to see if there are any correlations between specific things, independent sample tests which will put students who use AI educational game against the students who don't.

Resource & Planning

Resources Required

The resources that are required for this independent project are: a computer, visual studio, c++, unreal engine, unreal blueprints, access to online journals, literature review.

Gantt Chart



References

[1] H. M. Alzoubi. H. M. Alzoubi. Factors affecting ChatGPT use in education employing TAM: A jordanian universities' perspective. Factors affecting ChatGPT use in education employing TAM: A jordanian universities' perspective. *International Journal of Data and Network Science International Journal of Data and Network Science* 88(3), pp. 1599–1606. 2024. .

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GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

57 / 100

Intro / A&O (400 words)		
Project title; Identification of a specific problem to be investigated; Well-defined aims and SMART objectives; Explaining why this project is worth doing; Discussion of what the project needs to do in order to be a success; Description any deliverables that will be produced at the end of the project The working title could be expanded a little to show the intended outcome for the project rather than only the use. Introduction gives a good idea of context to the subject area and introduces the topic reasonably. Clear aim given. This could have been more succinct with better intent. Objectives appear a little vague and could be more SMART. Deliverables given and a section showing expected outcome included is good. Project statement section that considers scope is good. Maybe a little more 'how' would have been advantageous.	20	14

Background to the Project / Literature Review (400 words)		
Description of how the work to be done by in the project relates to the work identified in the literature review; Discussion of any ethical issues raised by the project Identifying what has already been done within the field; Topic familiarity; Brief literature review using appropriate sources – 6-8 journal papers and book chapters rather than just websites; Selection of relevant models & concepts Limited amount of sources for bibliography, however, used well to back up points made and show learning from literature. Reasonable consideration of the needs for the project, and the gaps existing currently. More detail in this discussion would have been beneficial though. Limited literature review would have benefited from more research and discussion around the use of gamification and AI currently and how it could be implemented in this situation, and would have brought the word count up.	20	13
Project Design (500 words)		
Clear statement of which development methods are to be used and why they are appropriate; Clear statement of which tools are to be used and why they are appropriate; Clear description of how data collected will be analysed	30	11

Outline could be less vague with more assertion and a clear hypothesis / theory. More consideration to data collection and analysis would have been desirable, and consideration beyond case study research. No real methodology shown as to how the project will be developed.		
Resources / Planning (200 words)		
List of any deliverables; Clear diagram showing both timing and resource use; Completed ethics form; Limited and relevant appendices Good consideration given to resources, although this would have benefited from more detail. Gantt chart is lacking detail and a bit more thought could have been given to timelines. This section would have benefited from figures to demonstrate deliverables. Overall, a good concept but more thought could have been given to the why, how and what.	15	8
Document Presentation		
Correct spelling, grammar and punctuation; Flow of narrative/fluency;	15	11

Coherence; Word processed ; Correct use of referencing with bibliography; Strict word limit Well laid out report, nice cover with title, name and module. Good logical flow to the main report made it fluid. Well referenced with IEEE numbering, although no need for the authors and date in the text itself. A conclusion would have been beneficial to pull a summary together and help with the narrative of the report.		
TOTAL	100	57

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