THE PORTFOLIO

2024

AN INSIGHT TO CREATIVE COMPUTING PROJECTS

THE PORTFOLIO
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UTB
SCHOOL OF COMPUTING AND INFORMATICS
CREATIVE COMPUTING

SCI // CC #08 - 2024
ALL PROJECTS ARE A PRODUCT OF UTB

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Opening REMARKS

Assalamualaikum,

Bismillahir Rahmannir Raheem.

I am privileged to welcome you to another edition of UTB School of Computing and Informatics' "The Portfolio". This magazine has been published since 2017, making this the eighth edition. The creation of this magazine was brought forward by the notion that sharing the creative output of graduates from the Creative Computing programme area can spur further innovation and creativity amongst current and prospective students alike, as well as paying tribute and appreciation to their hard work and endeavours.

As you open through the pages within this portfolio, you will get a glimpse of all the projects undertook by the Creative Computing's eighth graduating intake from the BSc. (Hons) in Creative Multimedia and BSc. (Hons) in Digital Media Four-Year cohorts, the last intake of students under the four-year programme offered by School of Computing and Informatics, Creative Computing programme area.

This edition of The Portfolio will showcase 25 final-year projects from the Creative Computing programme area, primarily by the Class of 2024, categorised into the specific areas of 3D & 2D Animations, Short Films & Videos, Research Studies & Systems, Augmented & Virtual Reality, and Game Development. Each project exemplifies not just the students' great dedication and commitment to excellence, but also serves as testaments to the never-ending guidance provided by the academic supervisors. We hope that you will enjoy and appreciate the effort each graduate has put forward towards the successful completion of their bachelor's degree.

To the Creative Computing graduates of 2024, I hope your journey during these last four years have been invaluable to you as it is to us the academics. Although we will part ways, I hope each of you will continue to strive for excellence and to keep on pushing the creative industry forward.

DR. PENGIRAN AZHAN BIN PENGIRAN AHMAD
Programme Leader Creative Computing
School of Computing & Informatics
Universiti Teknologi Brunei

Foreword

I am excited to present the eighth edition of “The Portfolio: An Insight to Creative Computing Projects”. This collection showcases the final year projects of graduates from the Creative Computing programme area under the School of Computing and Informatics (SCI), Universiti Teknologi Brunei (UTB). Each year, this publication gives graduates a chance to show off their impressive skills and creative ideas. This edition features a wide variety of projects—including 3D & 2D Animations, Short Films & Videos, Research Studies & Systems, Augmented & Virtual Reality, and Game Development—each created with a unique vision and a lot of hard work, all aimed at making a positive difference.

Congratulations to the Creative Computing graduates (Intake 8). I am so proud of each one of you for your outstanding achievements and the valuable contributions you have made to the school and institution. Your success reflects your hard work, dedication, and the support we all shared during our toughest times.

Lastly, I want to sincerely thank all the lecturers and supervisors. Your constant guidance, support, and commitment have played a key role in our journey, and we will always remember your contributions.

MOHAMMAD ABDUL MUIZ BIN HAJI SAHMINAN
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Universiti Teknologi Brunei

Preface

In today's fast-evolving world of technology, generative Artificial Intelligence (AI) is transforming the concept of creativity as we know it. Today, these strong systems are able to execute activities that were previously considered to be exclusive to human beings, including designing book covers, constructing a narrative, and even coming up with an idea for a project. The possibilities of AI have evolved to the extent where it can make a tangible impact on creative work and often it is challenging to distinguish between the work created by AI and human beings.

It can be stated that the idea of generative AI has adjusted numerous sectors, such as art, healthcare, software development and others by increasing creativity, productivity, and customization. Further advancement will bring it even closer into the mainstream of activity, to help in the decision making process and increase efficiency. However, issues like plagiarism and ethical issues come from the fact that AI is capable of churning out material that can mirror original works and integrate prohibited prejudices. To address these challenges, the following steps have been proposed; Formulating ethical principles, AI plagiarism detection tools, copyright as well as attribution standards, implementing bias mitigation strategies, and ensuring transparency and accountability in AI development.

Policy developments are underway globally, with the European Union's AI Act aiming to regulate AI based on risk levels and the United States focusing on consumer protection and ethical use. These evolving policies seek to balance innovation with ethical responsibility, ensuring that the benefits of generative AI are maximized while minimizing its potential risks. Overall, addressing these challenges is crucial for harnessing AI's full potential responsibly.

This book delves into the potential and significance of AI in the creative field, and it serves as an example of AI's capabilities, with the entire design concept being generated using AI. This collaboration between humans and machines illustrates how AI can contribute to the creation of new ideas. The book invites readers to consider the evolving dynamics between creativity and artificial intelligence and the implications for the future of creative professions.

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Universiti Teknologi Brunei

Creative Computing

LECTURERS

PENGIRAN DR. HAJI AZHAN BIN PENGIRAN HAJI AHMAD

PROGRAMME LEADER, RESEARCH LEADER FOR DIGITAL & CREATIVITY RESEARCH THRUST

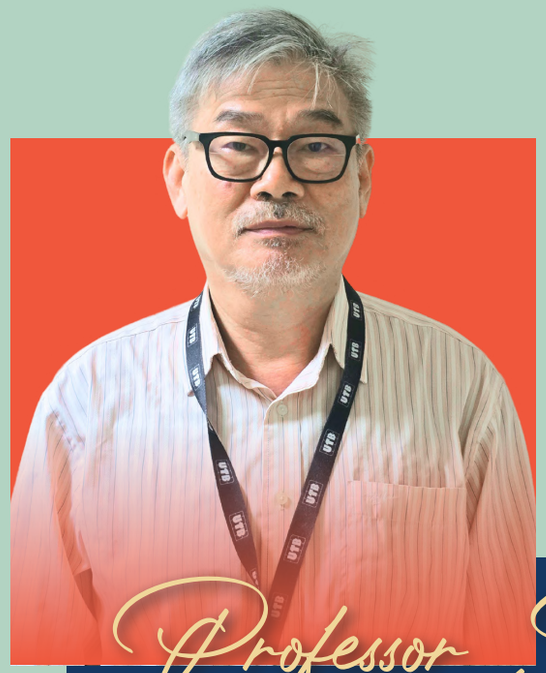
Specialized area:

- *End-User Development*
- *Technology-Enhanced Learning*
- *Serious Games*

Azhan Ahmad

https://bit.ly/AzhanAhmad

Link to Researches



PROFESSOR SOMNUK PHON-AMNUAISUK

PROFESSOR

Specialized area:

- *Artificial Intelligence*
- *Creative Computing*
- *Machine Learning & Data Mining*
- *Emergent Computing*
- *Ubiquitous Computing*
- *Cognitive Computing*
- *Pervasive Computing*

Professor Somnuk

https://bit.ly/ProfessorSomnuk

Link to Researches

DR. AHMAD M. S. ELAKLOUK

ASSISTANT PROFESSOR

Specialized area:

- *Multimedia Technology & HCI*
- *Serious Games Designs and Developments for Learning and Training*
- *Edutainment System*
- *Design Science*
- *Game-based Rehabilitation*

https://bit.ly/AhmadElaklouk

Link to Researches

Ahmad Elaklouk

AWANG HAJI IDHAM MASWADI BIN HAJI MASHUD

LECTURER

Specialized area:

- *Visual Communication*
- *Interface Design*

Idham Mashud

AWANG IBRAHIM BIN DRIS/ EDRIS

LECTURER

Specialized area:

- *Artificial Intelligence*
- *Autonomous Agents*
- *Social Intelligence*
- *Virtual and Augmented Reality*
- *Game Development*

https://bit.ly/IbrahimEdris

Link to Researches

DAYANG NOOR DEENINA BINTI HJ MOHD SALLEH

LECTURER

Specialized area:

- *Visual Experience*
- *Emotional Design*

https://bit.ly/DeeninaSalleh

Link to Researches

Project
GALLERY

Project GALLERY


BROKEN DOWN: 3D ANIMATION SHORT STORY

MOHAMMAD AL-FARIS BIN MOHAMMAD AL-SUFRI



RESTLESS: 3D ANIMATION ABOUT INSOMNIA

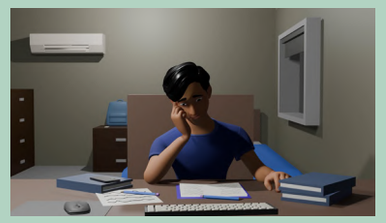
NUR SYAHIRAH BINTI HAJI FADZIL



BULLYING'S IMPACT ON DEAF YOUTH (3D ANIMATION VIDEO)

AK MD IKHSANUDIN RAHMAN BIN PG HJ NORAHALIM

Project GALLERY



SHORT 3D ANIMATION STORY: CONSEUQEUNCES OF PROCRASTINATION AS A STUDENT

ABDUL ALIM BIN MUHAMMAD YAMIN*

REDUCING ROAD RAGE THROUGH AWARENESS CAMPAIGN

MOHAMMAD HARIZ BIN HAJI ZAINUDDIN



CERITA NENEK : SHORTFILM

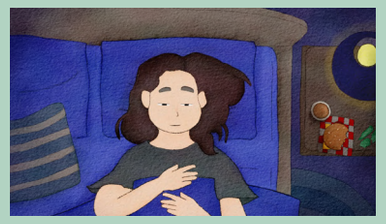
MOHAMMAD EHSAN AL-HAKEEM BIN ABDULLAH

Project GALLERY



INTERACTIVE TOUR FOR UNIVERSITI TEKNOLOGI BRUNEI

MD WA'IE SYUKRI BIN HJ ZAINIDI




THE WEIGHT OF EMOTIONS: INVESTIGATION ON HOW NARRATIVE STORYTELLING CAN INFLUENCE EMOTIONS IN OBESITY ANIMATION

AMNI MARDHIAH @ AMNI NASUHA BINTI MOHAMMAD ALLI



STUDY ON THE COMPARISON BETWEEN REAL SOUND, FOLEY AND SYNTHESIZED SOUND EFFECT

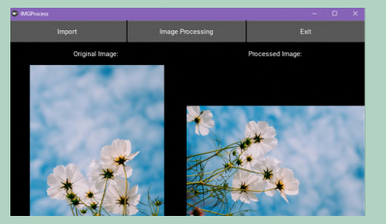
KAMARULSABREE BIN AHMAD

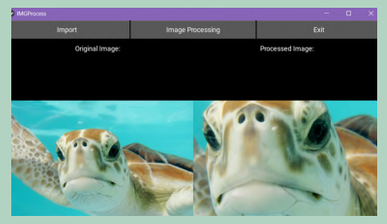
Project GALLERY

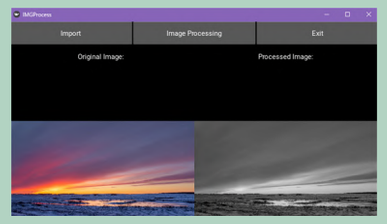


AN INVESTIGATION ON HOW COLOR CONCEPT CAN INFLUENCE EMOTIONS

NUR 'ARISYAH ZAFIRAH BINTI ROSLAN

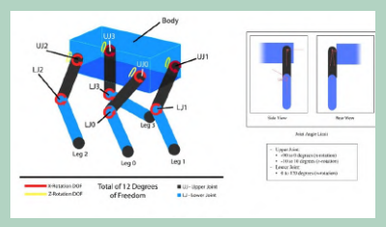


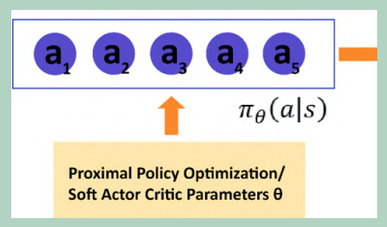


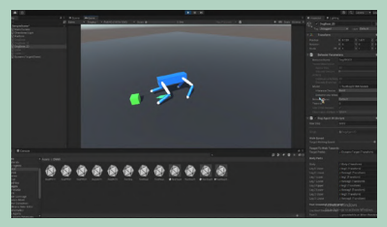


UNDERSTANDING MULTIMEDIA SIGNAL PROCESSING

SITI NUR RAKHNA BINTI MUHAMMAD HIDENY



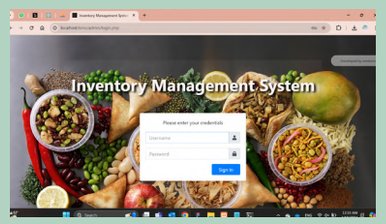


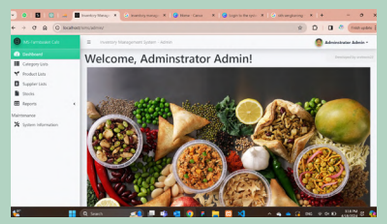


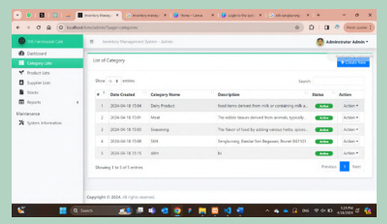
INVESTIGATING QUADRUPEDAL ROBOTICS LEARNING IN A SIMULATED ENVIRONMENT USING UNITY ML-AGENT

ABDUL WAFI BIN NORFADILAH

Project GALLERY

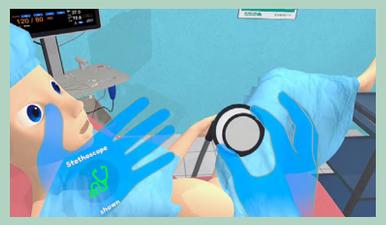


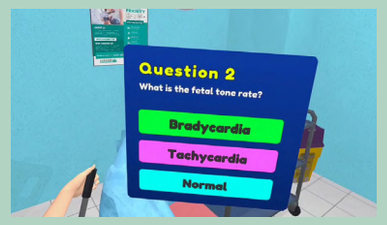




FARMBASKET CAFÉ INVENTORY MANAGEMENT SYSTEM

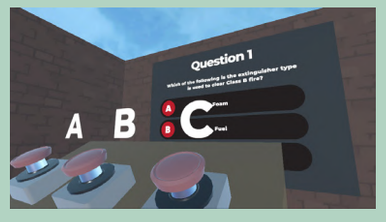
AMALINA BINTI SABLI

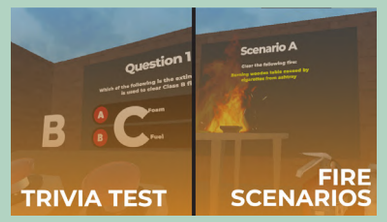


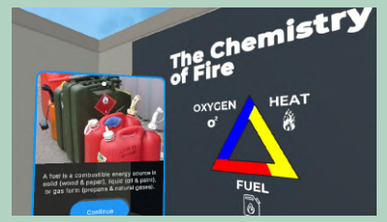


BIRTHPRO VR: LOW-RISK BIRTH VR SIMULATION

MOHAMMAD ABDUL MUIZ BIN HAJI SAHMINAN



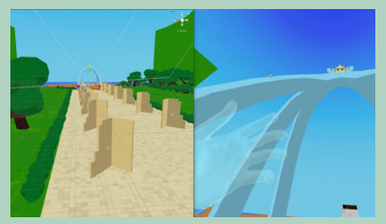




FIRE MARSHALL TRAINING IN VR

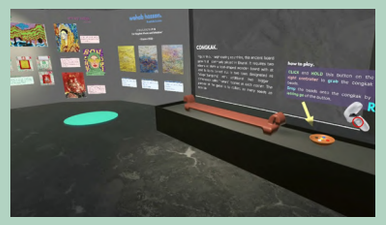
MUHAMMAD DASUQI HARMAWI BIN HAJI ABDUL GHANI

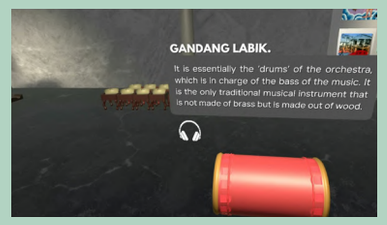
Project GALLERY



TOURING BRUNEI'S LANDMARK THROUGH VIRTUAL REALITY

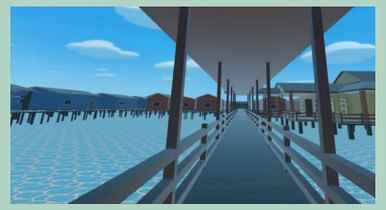
MUHAMMAD AFIQ BIN HJ AFFENDY

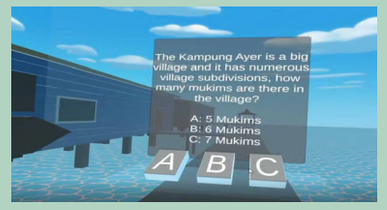




BRUNEI CULTURAL ARTS THROUGH IMMERSIVE VIRTUAL REALITY

TOO WENG THUNG





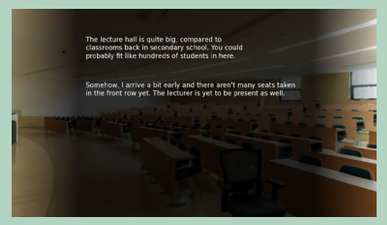
IMPACT OF NARRATIVE IN EDUCATIONAL VR GAME ABOUT HISTORY OF KAMPUNG AYER

MOHAMMAD SYAHMI HAMIZAN BIN HAJI ROSLAN

Project GALLERY

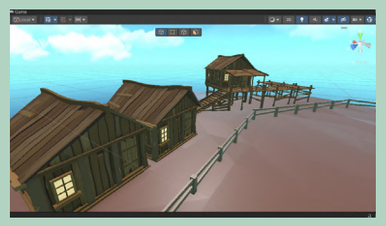
IMAGINATION AS A COPING TOOL

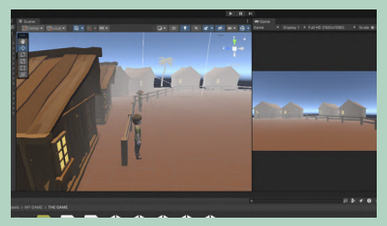
AWANGKU MUHAMMAD ADAM RAYYAN BIN PENGIRAN JUFRI

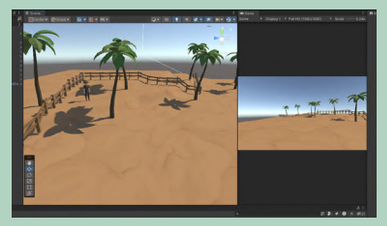


SEVERED: A SCI-FI/MYSTERY/SUPERNATURAL VISUAL NOVEL

NUR FAZRINA MAHADI







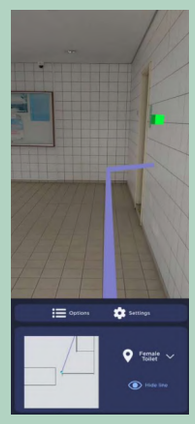
VIRTUAL WORLD FOR CULTURAL AWARENESS

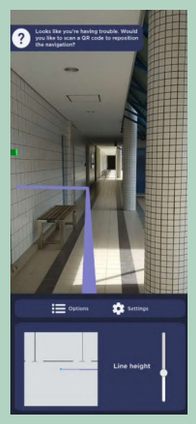
MAHDANI@ MUHAMMAD IZZAT BIN HAJI HAMDANI

Project GALLERY

MIMOX VIRTUAL FASHION SHOW: 3D ANIMATION USING CLOTH SIMULATION

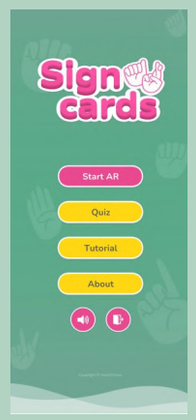
MUHAMMAD WA'IE SYAFI'IE BIN HAJI MOKSIN

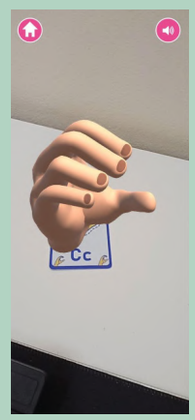


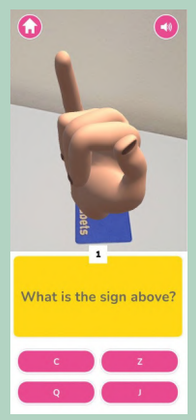


AUGMENTED REALITY INDOOR NAVIGATION (ARIN)

MUHAMMAD HAMIZAN BIN HAJI ABD. HAMID







SIGNCARDS (SIGN LANGUAGE AUGMENTED REALITY CARDS)

NADA HASNA NAZAHAH

3D & 2D ANIMATIONS

1 **BROKEN DOWN: 3D ANIMATION SHORT STORY**
MOHAMMAD AL-FARIS BIN MOHAMMAD AL-SUFRI

2 **RESTLESS: 3D ANIMATION ABOUT INSOMNIA**
NUR SYAHIRAH BINTI HAJI FADZIL

3 **BULLYING'S IMPACT ON DEAF YOUTH (3D ANIMATION VIDEO)**
AK MD IKHSANUDIN RAHMAN BIN PG HJ NORAHALIM

4 **SHORT 3D ANIMATION STORY: CONSEQUENCES OF PROCASTINATION AS A STUDENT**
ABDUL ALIM BIN MUHAMMAD YAMIN*

5 **REDUCING ROAD RAGE THROUGH AWARENESS CAMPAIGN**
MOHAMMAD HARIZ BIN HAJI ZAINUDDIN

6 **MIMOX VIRTUAL FASHION SHOW: 3D ANIMATION USING CLOTH SIMULATION**
MUHAMMAD WA'IE SYAFI'IE BIN HAJI MOKSIN

MOHAMMAD AL-FARIS BIN MOHAMMAD AL-SUFRI

Bachelor of Science (Hons) in Creative Multimedia

alfaris3800@gmail.com

behance.net/alfaris38

Before my life at UTB began, I never imagined I would become an IT student, let alone a graphic designer. When I registered for UTB, I chose Creative Multimedia as my course despite having no IT knowledge whatsoever, hoping that I could learn many new things. With the support of my parents, lecturers, and friends, my interest in the IT industry grew rapidly, and I greatly expanded my skills in the graphic design field. Now, where will my life lead me next?

BROKEN DOWN: 3D ANIMATION SHORT STORY

PROJECT SYNOPSIS

This story delves into the often-overlooked repercussions of delaying or neglecting car maintenance. Through its journey, it reveals the hidden dangers that can arise when routine vehicle care is not prioritized. As the story unfolds, viewers witness the gradual escalation of issues, from minor warning signs to safety hazards and financial burdens. Ultimately, the narrative serves as a powerful reminder of the critical importance of timely car maintenance, emphasizing safety, financial savings, and environmental responsibility.

PROJECT INSPIRATION

Bruneians love their Miri and KK journeys, but what a lot of people forget to do before driving is to inspect their cars. That inspired me to create this video to make people realize that anything could happen to their vehicle during long trips and to help people avoid spending more money on their cars than they should.

Broken Down

3D ANIMATION SHORT STORY

OVERVIEW

This story delves into the often-overlooked repercussions of delaying or neglecting car maintenance. Through the journey car owner, it reveals the hidden dangers that can arise when routine vehicle care is not prioritized. As the story unfolds, viewers witness the gradual escalation of issues, from minor warning signs to safety hazards and financial burdens. Ultimately, the narrative serves as a powerful reminder of the critical importance of timely car maintenance, emphasizing safety, financial savings, and environmental responsibility.

PROBLEM STATEMENT

June 9, 2021—A new study by Utires found that roughly 92 percent of car owners admitted to putting off a car care task longer than they should. As a result, Utires found the average American driver spends an extra $1,193 over their vehicle's life span.

PROPOSE SOLUTION

Regular maintenance is crucial for safety, savings, and environmental responsibility. Stay informed, address issues promptly, choose a trusted mechanic, track records, and spread awareness to protect yourself and your vehicle.

AIM

To empower car owners with the awareness needed to ensure the safety, longevity, and efficiency of their vehicles through proper and regular maintenance.

TARGET AUDIENCE

Novice drivers who may benefit greatly from understanding the consequences of neglecting maintenance.

OBJECTIVE

To vividly illustrate the potential hazardous and costly outcomes that can result from neglecting or postponing car maintenance, to persuade viewers to prioritize and adhere to recommended maintenance schedules, ultimately ensuring the safety, reliability, and longevity of their vehicles.

TOOLS

REFERENCE

StackPath. (2021). https://www.ratchetandwrench.com/site-placement/latest-news/article/11464213/overwhelming-majority-of-car-owners-put-off-maintenance

MOHAMMAD AL-FARIS BIN MOHAMMAD AL-SUFRI
B20200290
BSc (HonS) in CREATIVE MULTIMEDIA

NUR SYAHIRAH BINTI HAJI FADZIL

Bachelor of Science (Hons) in Creative Multimedia

nsyahirahfdzl@gmail.com

behance.net/syahirahfadzil1

I am a passionate individual who is driven by innovation and growth in the creative industry. Always seeking challenges that push me beyond my limits, I strive for excellence and aim to make meaningful impacts.

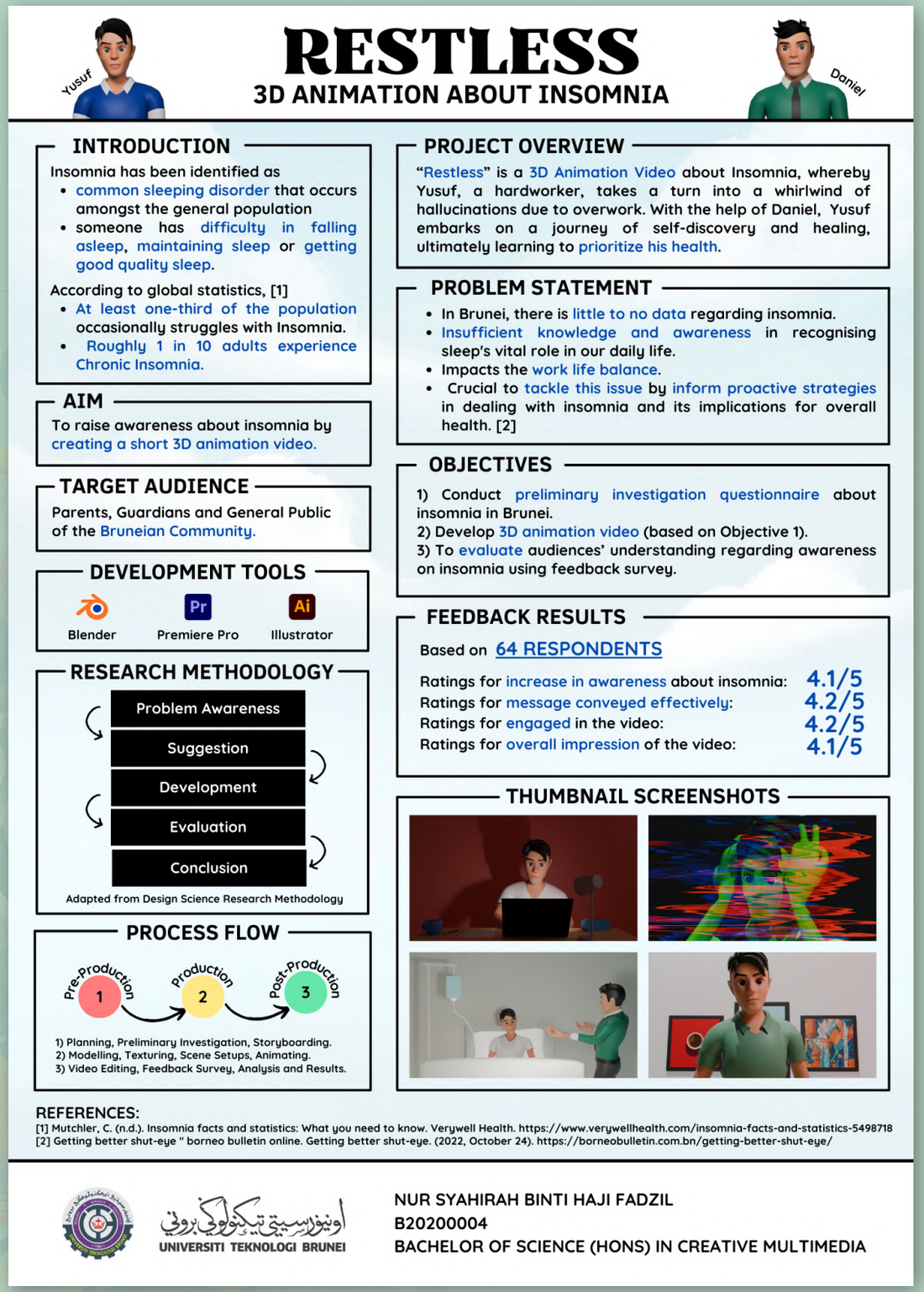
RESTLESS: 3D ANIMATION ABOUT INSOMNIA

PROJECT SYNOPSIS

"Restless" is a 3D animation video about insomnia, whereby Yusuf, a hard worker, takes a turn into a whirlwind of hallucinations due to overwork. With the help of Daniel, Yusuf embarks on a journey of self-discovery and healing, ultimately learning to prioritize his health. The video aims to raise awareness about insomnia in Brunei Darussalam.

PROJECT INSPIRATION

This project was inspired by the struggles of insomniacs in Brunei, where there was a need to explore practical solutions to overcoming insomnia and improving overall well-being.



AK MD IKHSANUDIN RAHMAN BIN PG HJ NORAHALIM

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I have a deep passion for 3D modeling and animation, constantly driven to learn and refine my skills. Bringing my imagination to life through 3D art excites me, and I enjoy experimenting with new techniques and tools. I'm dedicated to every aspect of the creative process and committed to growing as a 3D artist.

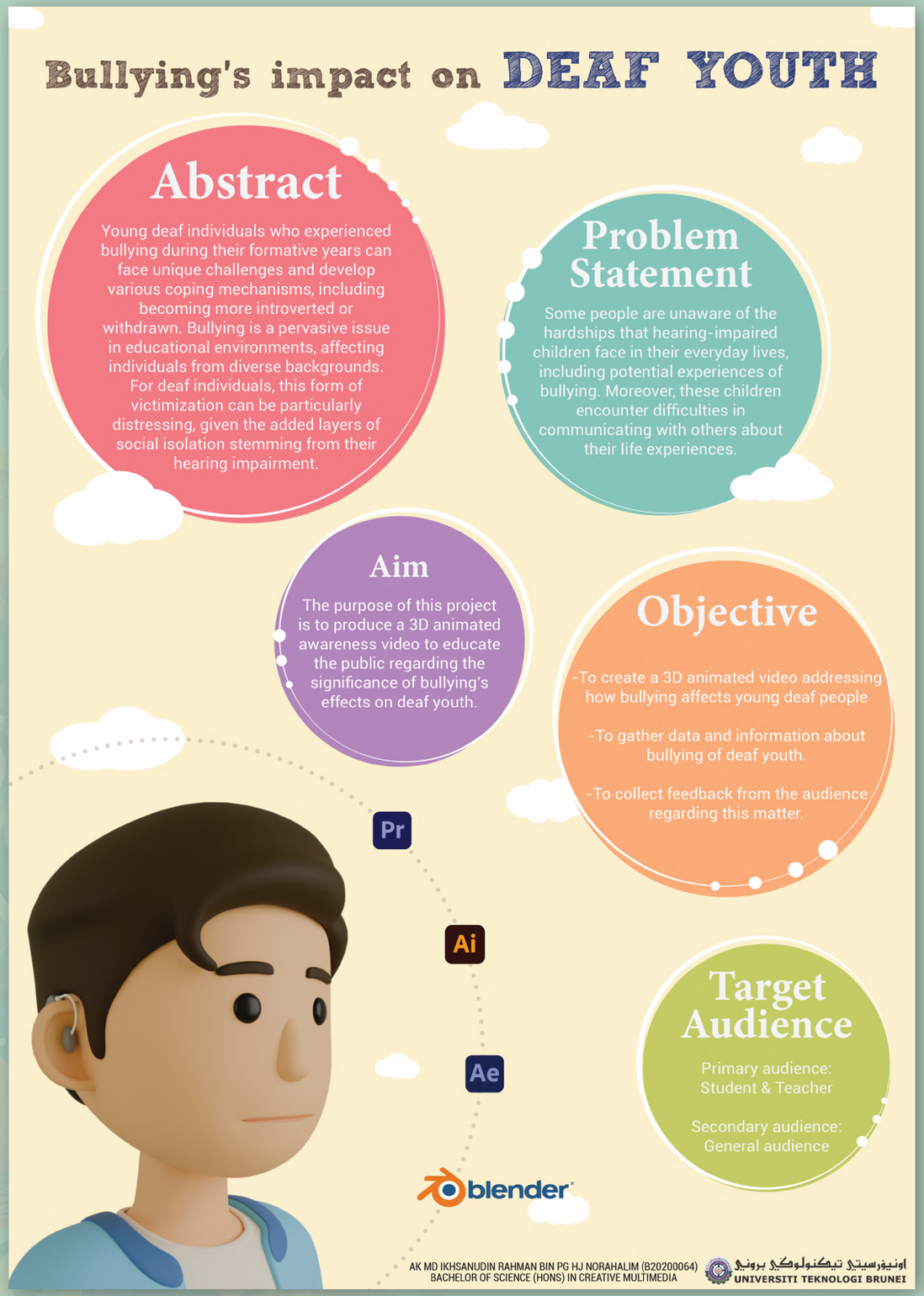
BULLYING'S IMPACT ON DEAF YOUTH (3D ANIMATION VIDEO)

PROJECT SYNOPSIS

This project aims to raise awareness about the impact of bullying on deaf youth through a 3D awareness video. The video tells the story of a young deaf student who initially enjoys school but becomes a target of bullying. Despite remaining resilient through repeated harassment, the student eventually experiences sadness and depression. Concerned, the parents search for solutions to help their child overcome the bullying.

PROJECT INSPIRATION

This project was inspired by my deaf brother's experiences with bullying during primary school. Many people are unaware of the challenges deaf children face daily. Moreover, these children often struggle to communicate their life experiences with others, making it even harder to share their hardships.



ABDUL ALIM BIN MUHAMMAD YAMIN*

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My name is Abdul Alim. My friends call me Alim, or Lim for short. I love digital drawing and graphic design.

SHORT 3D ANIMATION STORY: CONSEUQENCES OF PROCRASTINATION AS A STUDENT

PROJECT SYNOPSIS

Procrastination affects the way you manage your time and responsibilities. One of the causes of procrastination is related to your environment. An environment full of distractions will cause a person to lose focus and allow procrastination to occur. A person who procrastinates will have difficulty staying focused and will not be able to keep track of time and responsibilities properly.

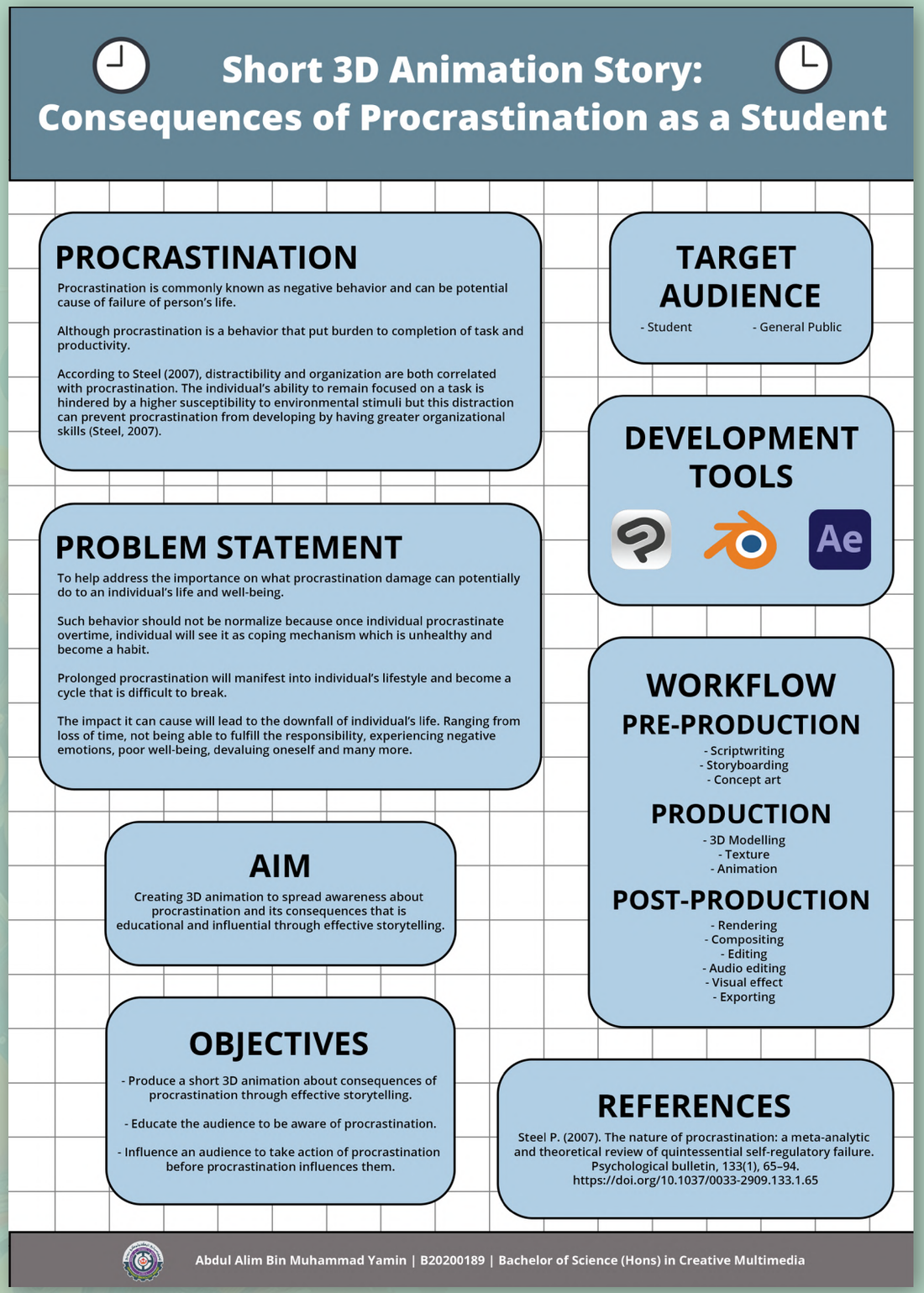
The purpose of this project is to create a 3D animation video that incorporates effective storytelling to influence the audience about procrastination. This animation will go through three major phases: pre-production, production, and lastly, post-production. The outcome of this project is to produce a 3D animation that incorporates effective storytelling to influence the audience to be aware of the consequences of procrastination.

PROJECT INSPIRATION

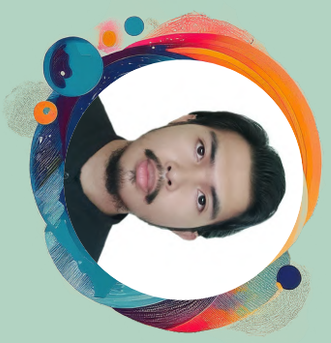
The project is inspired by the struggle of dealing with procrastination and the consequences it brings if not dealt with early.

The story scenario is a combination of distraction and poor time management, which ends up with a poor sleeping schedule because of procrastinating on all three aspects.

**Successfully passed the Final Year Project but will not be graduating in the UTB Convocation 2024.*



REDUCING ROAD RAGE THROUGH AWARENESS CAMPAIGN



MOHAMMAD HARIZ BIN HAJI ZAINUDDIN

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I am a passionate creator focused on using visual storytelling to drive positive change. With a keen interest in road safety and awareness, I developed an animated project aimed at educating drivers about the dangers of road rage and promoting safer driving practices. By leveraging engaging content and accessible resources, I strive to make complex issues relatable and easy to understand. My goal is to inspire others to make better choices on the road and contribute to a more responsible and considerate driving culture.

PROJECT SYNOPSIS

The increasing prevalence of road rage incidents poses a significant threat to road safety and the overall well-being of drivers and pedestrians. Aggressive driving behaviors, including verbal altercations and even physical confrontations, have become alarmingly common on our roads. This project aims to address the issue of road rage by designing and implementing a comprehensive awareness campaign.

PROJECT INSPIRATION

This project is inspired by the growing need to address road rage and its dangerous consequences. With the rise in aggressive driving incidents leading to accidents and conflicts, it became clear that awareness and education are key to promoting safer driving behaviors. The idea behind this project is to use engaging and accessible methods, such as animation, to capture attention and effectively communicate the importance of managing emotions while driving. By creatively conveying the risks of road rage and offering practical tips for remaining calm, this project aims to inspire drivers to be more mindful, courteous, and safe on the road.

Rage-Free Roads: Spreading Awareness for Safer Commutes

Mohamad Hariz Bin Haji Zainuddin
B20200015
BSC in Creative Computing

Introduction

The prevalence of road rage incidents poses a serious threat to road safety and public well-being. This project aims to tackle the issue by designing and implementing a comprehensive awareness campaign to educate drivers about the consequences of road rage and promote a culture of responsible and calm driving.

Aim

To foster a culture of responsible and calm driving by raising awareness among drivers about the dangers and consequences of road rage, ultimately leading to a significant reduction in road rage incidents and promoting a safer and more harmonious driving environment for all road users.

Objective

Raise awareness among drivers about the dangers and consequences of road rage.

Promote responsible driving behaviors and effective stress management techniques.

Measure the effectiveness of the awareness campaign in reducing road rage incidents.

Target Audience

General Drivers

Problem Statement

The alarming rise in road rage incidents is leading to aggressive driving behaviors, accidents, and negative road user experiences. This project seeks to address this problem by creating a proactive solution focused on raising awareness and fostering a respectful driving environment.

Methodology

Conduct a thorough literature review on road rage, its causes, and strategies for addressing it.

Collaborate with communication experts to develop engaging awareness materials, such as videos, posters, and social media content.

Distribute the materials through various channels, including social media platforms, local events, and community partnerships.

Collect data through surveys and feedback forms to measure changes in drivers' attitudes and behaviors.

Analyze the collected data to assess the campaign's impact on reducing road rage incidents.

Proposed Solution

The proposed solution focuses on proactive measures to raise awareness, educate drivers, and promote responsible driving behaviors while actively involving the community. By implementing this multifaceted approach, the project aims to reduce road rage incidents and create a lasting impact on road safety and driver behavior.

Expected Outcome

The project aims to create a significant reduction in road rage incidents by fostering a culture of respectful driving through effective awareness campaigns.

Tools

Ps Ai Pr Ae

Conclusion

By raising awareness and promoting responsible driving behaviors, this project seeks to contribute to safer roads and a more positive driving experience for all road users.

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MUHAMMAD WA'IE SYAFI'IE BIN HAJI MOKSIN

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I've been immersed in the creative field since 2008, exploring photography, videography, graphic design, motion graphics, 3D modeling and animation, and now 3D cloth simulations. Embracing the idea "A jack of all trades is a master of none, but oftentimes better than a master of one," I am eager to continue expanding my skills and exploring new creative possibilities.

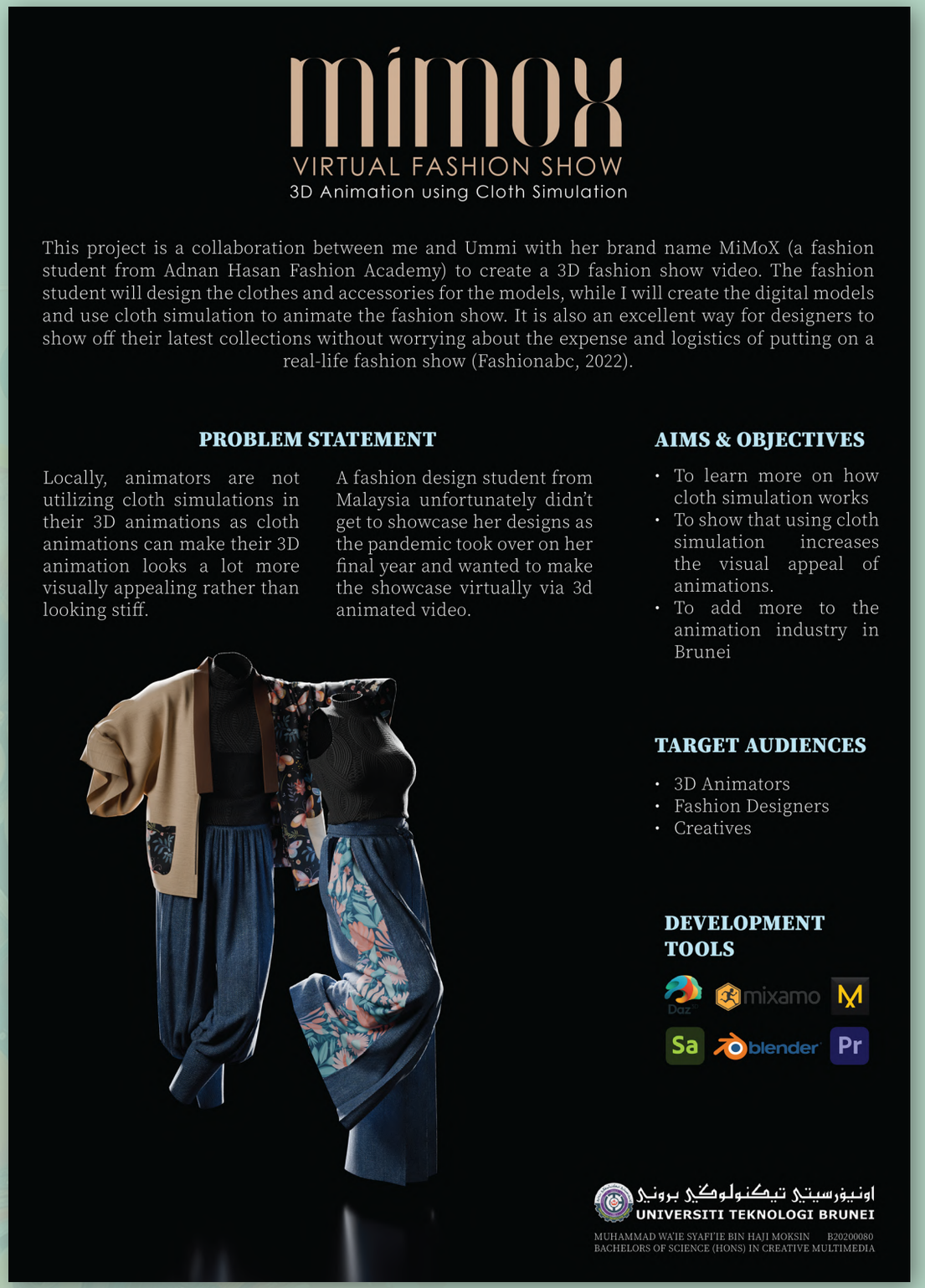
MIMOX VIRTUAL FASHION SHOW: 3D ANIMATION USING CLOTH SIMULATION

PROJECT SYNOPSIS

This project is a collaboration between Ummi, a fashion student from Adnan Hasan Fashion Academy, and myself, focusing on her brand MiMoX. Ummi designed the clothing, and I handled the creation of digital models and animation using cloth simulation to bring the 3D fashion show video to life.

PROJECT INSPIRATION

This project was inspired by the desire to merge innovative technology with the artistry of fashion design. We wanted to explore how digital tools can enhance the presentation of fashion, making it accessible in new and exciting ways. By combining Ummi's creative vision with 3D modeling and animation techniques, we aimed to push the boundaries of traditional fashion shows and offer a fresh, immersive experience that showcases the potential of virtual fashion presentations.



SHORT FILMS & VIDEOS

1 **CERITA NENEK : SHORTFILM**
MOHAMMAD EHSAN AL-HAKEEM BIN ABDULLAH

2 **INTERACTIVE TOUR FOR UNIVERSITI TEKNOLOGI BRUNEI**
MD WA'IE SYUKRI BIN HJ ZAINIDI

MOHAMMAD EHSAN AL-HAKEEM BIN ABDULLAH

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I may not be book-smart, but I have street smarts, a passion for filmmaking, and a love for new adventures. I thrive on real-world experiences and creativity, always eager to explore and capture the world from a unique perspective.

CERITA NENEK
SHORTFILM

PROJECT SYNOPSIS

Creating a short film to inspire the local youth to want to learn about the traditional arts and handicrafts of Brunei.

PROJECT INSPIRATION

What inspired me to tackle this problem through filmmaking was because it's simply more enjoyable and easier to absorb that way.

MD WA'IE SYUKRI BIN HJ ZAINIDI

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I am a Creative Multimedia student with a deep passion for arts and design. My calm demeanor helps me thrive under pressure, allowing me to approach challenges thoughtfully and composedly. I find joy in exploring the intersections of creativity and technology, constantly seeking new ways to express my artistic vision while managing tight deadlines and high-stakes projects.

INTERACTIVE TOUR VIDEO FOR UNIVERSITI TEKNOLOGI BRUNEI

PROJECT SYNOPSIS

This project aims to create an interactive tour video of the University Technology Brunei campus. The video will feature a tour guide who provides options for viewers throughout the video. This interactive approach allows students to navigate the tour at their own pace and choose the areas of interest they want to explore.

PROJECT INSPIRATION

To be honest, I am not very familiar with the campus facilities. I am probably not the only one in this situation.

RESEARCH STUDIES & SYSTEMS

1 **THE WEIGHT OF EMOTIONS: INVESTIGATION ON HOW NARRATIVE STORYTELLING CAN INFLUENCE EMOTIONS IN OBESITY ANIMATION**
AMNI MARDHIAH @ AMNI NASUHA BINTI MOHAMMAD ALLI

2 **STUDY ON THE COMPARISON BETWEEN REAL SOUND, FOLEY AND SYNTHESIZED SOUND EFFECT**
KAMARULSABREE BIN AHMAD

3 **RESEARCH STUDY ON FACILITATING THE VISUALLY IMPAIRED COLOUR PRECEPTION WITH AMBIENT SOUND AND NARRATIVE**
MUHAMMAD FARHAN@KHAIRUL HAZWAN BIN MOHAMAD HAMRI

4 **AN INVESTIGATION ON HOW COLOR CONCEPT CAN INFLUENCE EMOTIONS**
NUR 'ARISYAH ZAFIRAH BINTI ROSLAN

5 **UNDERSTANDING MULTIMEDIA SIGNAL PROCESSING**
SITI NUR RAKHNA BINTI MUHAMMAD HIDENY

6 **INVESTIGATING QUADRUPEDAL ROBOTICS LEARNING IN A SIMULATED ENVIRONMENT USING UNITY ML-AGENT**
ABDUL WAFI BIN NORFADILAH

7 **FARMBASKET CAFÉ INVENTORY MANAGEMENT SYSTEM**
AMALINA BINTI SABLI

AMNI MARDHIAH @ AMNI NASUHA BINTI MOHAMMAD ALLI

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A creative enthusiast deeply passionate about the arts! I find joy in creative films and transforming ideas into illustrations. In my day, the creative process is both a source of healing and a driving force for me. Looking ahead, I'm excited to refine, explore, and broaden my horizons. In Shaa Allah.

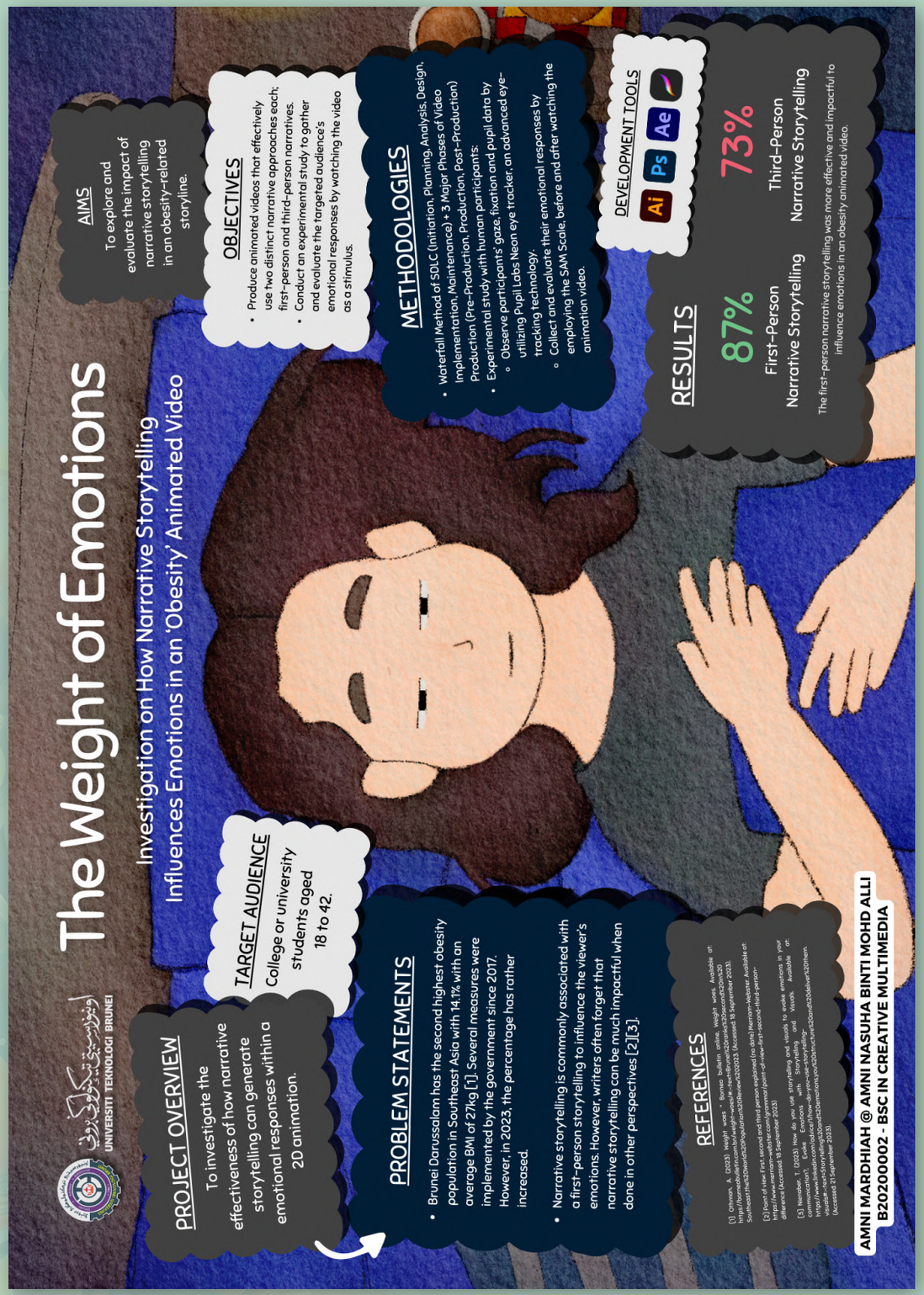
THE WEIGHT OF EMOTIONS: INVESTIGATION ON HOW NARRATIVE STORYTELLING CAN INFLUENCE EMOTIONS IN OBESITY ANIMATION

PROJECT SYNOPSIS

This research examines the relationship between narrative storytelling and emotional impact in animation, focusing on obesity. It explores the influence of first-person versus third-person storytelling. The goal is to understand how narrative storytelling can generate empathetic responses and deepen the understanding of obesity, a major health issue in Brunei Darussalam. Participants view two animation videos—one with a first-person perspective and one with a third-person perspective—while their emotional responses are tracked using eye-tracking technology, measuring their pupil diameters, blinks, gaze, and fixations.

PROJECT INSPIRATION

The connection to obesity became apparent when I discovered that Brunei Darussalam had banned unhealthy food and beverage images on billboards and in public advertisements to address the increasing obesity rates. This prompted me to create a promotional video and gather emotional data from the public, using it as a stimulus. Inspired by Michael Relth's approach, I developed a somber, melancholic theme featuring a despondent character. The narrative commenced on a sorrowful note and progressed toward a joyous conclusion to illustrate that every hardship brings a reward.



KAMARULSABREE BIN AHMAD

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behance.net/sabreeahmad

Hello! My name is Kamarulsabree bin Ahmad. I enjoy creating digital content such as animations, designs, and videos that tell stories and capture emotions. I am currently studying Creative Multimedia and am always exploring new ways to bring ideas to life. When I am not working on a project, you will find me pursuing hobbies such as playing the guitar and gaming. My strengths lie more in photography and video production, as animation is not my primary focus. I am passionate about what I do and am excited to see where my creative journey takes me next.

STUDY ON THE COMPARISON BETWEEN REAL SOUND, FOLEY AND SYNTHESIZED SOUND EFFECT

PROJECT SYNOPSIS

The purpose of this project was to conduct a research study comparing real sound, foley sound, and synthesized sound effects. The aim of this project was to analyze and evaluate the auditory immersion and effectiveness of three different types of sound sources: real sounds, foley sounds, and free synthesized effects. However, problems arise, such as: how do the technical limitations and considerations surrounding the use of foley sounds, real sounds, and free synthesized sound effects in audio production for films impact their suitability, accessibility, and quality? What role does this play in the democratization of audio production, especially for independent and low-budget filmmakers, as well as the overall effectiveness of audience perception of hearing in film? A short film was produced to compare the three sound sources and determine their effectiveness.

PROJECT INSPIRATION

The inspiration for this project stems from my background in audio recording, as I used to record music. I am also inspired by movies that skillfully employ Foley sound and incorporate horror elements, such as A Quiet Place and Don't Breathe. I am captivated by how emotion is conveyed in scenes without dialogue, and it inspires me to create similar moments in my work.

STUDY ON THE COMPARISON BETWEEN REAL SOUND, FOLEY AND SYNTHESIZED SOUND EFFECT

PROJECT OVERVIEW

The purpose of this project is to make a research study on the comparison between real sound, foley sound or synthesized sound effect. Real sound is the sound made from the actual tool or action within the film. Foley is the replication of everyday sound effects that are added to films to make them more realistic (*Sound Design and Foley: The sounds behind filmmaking, 2022*). Synthesized sound effects are created without the use of microphones

PROBLEM STATEMENT

The problem lies in trying to find out which of these three sound sources provide the best immersiveness and evoke emotions to the viewers

AIM

The aim of this project is to analyze and evaluate the auditory quality and effectiveness of three distinct sound sources in audio production: real sounds, foley sounds, and synthesized sound effects.

OBJECTIVES

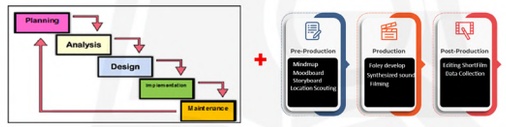
- To research, analyze and make a proper evaluation between real sound, foley sound and synthesized sound effects.
- To research, analyze and make a proper evaluation between real sound, foley sound and synthesized sound effects.
- To develop own foley sounds using suitable materials.
- To film a short film and incorporating the three sound sources into it for comparison purpose.
- To figure out and relate the viewer's emotion after they watched the short film by reviewing their feedback.
- To analyze via recorded footage and measuring their heart rate using heart rate monitoring devices.

TARGET AUDIENCE

The target audiences for this project are adult college students (18 and above) as this project involves elements of sounds that might come as harmful for patients with serious health condition and pregnant women.

METHODOLOGY

The methodology for the project is the combination of tradional 5 phases of Waterfall Model and 3 Major Video Production Phase.



SOFTWARE USED

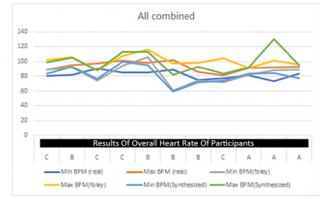
Audacity
Production Of Foley

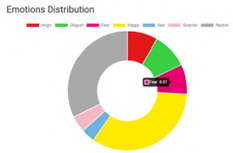
Adobe Premiere Pro
Editing Of Short Film

Morphcast
Analyse facial expression

EQUIPMENT USED

RESULTS





CONCLUSION

The three sound sources has an observable impact on heart rate.Majority of participants data from facial expression analysis via Morphcast displayed two overwhelming emotions of happiness and angriness.

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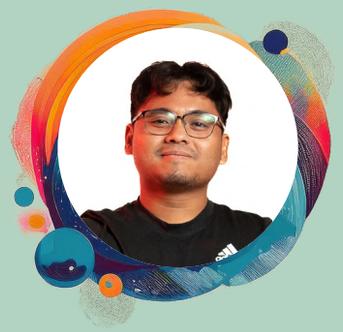

MUHAMMAD FARHAN@KHAIRUL HAZWAN BIN MOHAMAD HAMRI

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I'm Hans, wuzgut~ One thing about me is that my heart truly thrives at the intersection of creativity and curiosity. I'm constantly invigorated by the chance to refine my passions and explore new interests. I see every obstacle as a doorway to innovation and every mistake as a valuable lesson. I eagerly embrace these moments as opportunities for growth and transformation.

RESEARCH STUDY ON FACILITATING THE VISUALLY IMPAIRED COLOUR PRECEPTION AND WITH AMBIENT SOUND AND NARRATIVE

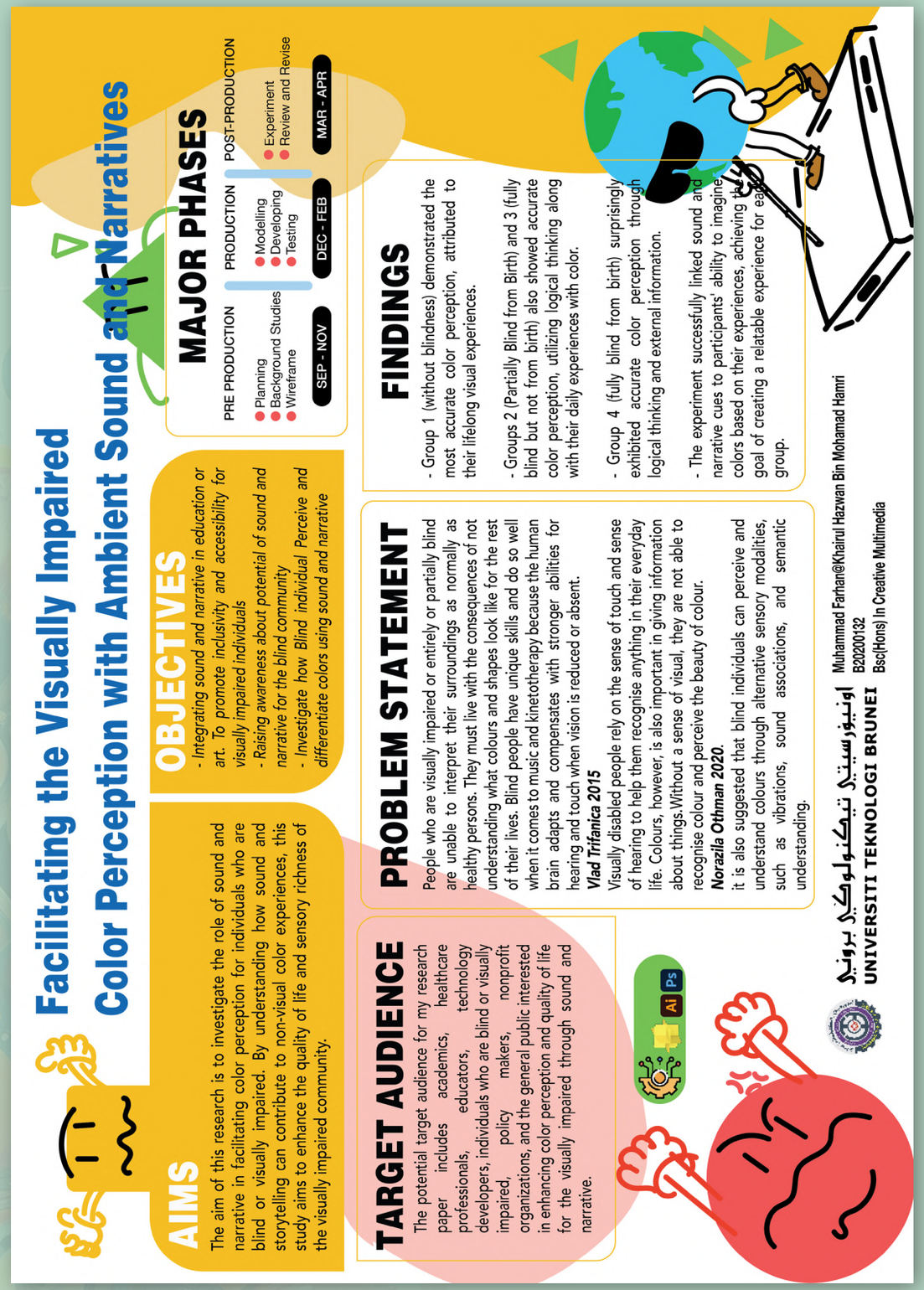
PROJECT SYNOPSIS

This study examines how colors can enhance creativity, particularly for visually impaired individuals. It explores how these individuals can comprehend colors through sounds and narratives rather than relying solely on sight. The research investigates the challenges they encounter and endeavors to establish guidelines for creating non-visual color experiences. Employing a step-by-step project methodology, the study incorporates a review of existing research, methodologies, and structured tasks. The objective is to empower visually impaired individuals to become more creative and provide valuable insights for developers.

PROJECT INSPIRATION

Colors weave a tapestry of emotions, perceptions, and interactions—from the vibrant hues of a sunset to the nuanced shades of grayscale. Yet, for those who experience colorblindness, the world of colors remains an elusive mystery. Imagine a world where educational video games become a bridge to unlocking the spectrum of colors, transforming how these individuals engage with and understand them. Think of the powerful influence that color photography, as seen in the iconic pages of Life magazine, has had on shaping art and culture.

This project is inspired by the vision of making color perception accessible to everyone. By exploring how sounds and storytelling can paint a vivid picture for the visually impaired, we aim to pioneer new ways for them to experience colors. Through our research, we seek to illuminate the path toward richer sensory experiences, enabling a deeper connection with the vibrant world that colors create—one where every individual, regardless of sight, can feel and appreciate the beauty of color.



NUR ‘ARISYAH ZAFIRAH BINTI ROSLAN

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When something catches my eye, I feel a strong urge to delve deeper, especially when it involves the arts. This curiosity has fueled my passion for creative fields such as graphic design, animation, and digital art. Before enrolling in the Creative Multimedia course, I had no formal background in art, but being immersed in the creative industry has significantly broadened my skill set and creativity. I’m determined not to stop here; I’m committed to continuing my learning journey, gaining more experience, and further refining my abilities.

AN INVESTIGATION ON HOW COLOR CONCEPT CAN INFLUENCE EMOTIONS

PROJECT SYNOPSIS

This investigation explores how color concepts can influence emotions by examining the impact of colors associated with the six basic emotions: happiness, sadness, fear, surprise, disgust, and anger. The study involves implementing appropriate color concepts and symbolism into a 2D animation and comparing the emotional responses elicited by a colored version versus a black-and-white version. To achieve this, user testing was conducted through offline experiments using Pupil Labs’ Eye Tracker, analyzing participants’ pupillary and emotional responses to determine the effectiveness of color in evoking these emotions.

PROJECT INSPIRATION

Inspired by the movie Inside Out, I became intrigued by the powerful way colors seemed to evoke emotions. This curiosity sparked a deep desire to understand whether color truly has the ability to influence our basic emotions. Driven by this interest, I set out to explore and investigate the intricate connection between color and emotion. I wanted to uncover whether the use of specific colors could genuinely elicit these emotions and how this could be applied in creative fields like animation. This investigation led to the concept of comparing the emotional impacts and providing a unique opportunity to delve into the psychological effects of color and deepen my understanding of its role in shaping human experience.

SITI NUR RAKHNA BINTI MUHAMMAD HIDENY

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I'm a passionate and versatile creative with a diverse skill set that spans content creation, video production, and graphic design. My interests extend into various creative realms, including photography, makeup artistry, crocheting, embroidery, baking, cake decorating, and jewelry making. These pursuits fuel my creativity and enrich my professional practice, allowing me to bring a distinct, artistic flair to every project I undertake.

UNDERSTANDING MULTIMEDIA SIGNAL PROCESSING

PROJECT SYNOPSIS

This project focuses on developing a functional prototype of an interface application designed to teach fundamental image processing concepts. The application will provide interactive tools and visual demonstrations for learning key techniques, including rotation, cropping, translation, scaling, grayscale conversion, blurring, warping, noise removal, noise addition, and thresholding. By offering hands-on experience with these concepts, the prototype aims to enhance the understanding and practical skills of users in the field of image processing.

PROJECT INSPIRATION

The inspiration for this project stems from a desire to evaluate and enhance the effectiveness of the Multimedia Signal Processing (MSP) module originally taught at Universiti Teknologi Brunei (UTB) for Creative Computing (CC) students. Given that the module was offered between 2014 and 2018, it is crucial to assess whether the original learning materials remain relevant and accessible. By revisiting these materials, learning and applying them in practice, and integrating modern tools such as Python, OpenCV, and Kivy, this project aims to create a contemporary, user-friendly prototype that can facilitate a more engaging and effective learning experience for current CC students.

اونيورسيتي تيكنولوكي بروني
UNIVERSITI TEKNOLOGI BRUNEI

UNDERSTANDING MULTIMEDIA SIGNAL PROCESSING

Multimedia signal processing (MSP) involves manipulating audio, video, and image signals for tasks like compression, transmission, quality enhancement, and content analysis. It is fundamental to the development and advancement of various multimedia technologies, ranging from entertainment and communication to healthcare and education, shaping the way we create, transmit, and interact with multimedia content in the digital age. MSP was a module taught at Universiti Teknologi Brunei (UTB) for Creative Computing (CC) students from 2014 until 2018. This project aims to investigate whether learning MSP through the original learning materials is still effective and easier to understand CC Students.

PROJECT MOTIVATIONS

Multimedia signal processing (MSP) was a module taught at Universiti Teknologi Brunei (UTB) for Creative Computing (CC) students between 2014 - 2018. This project aims to investigate whether learning MSP through the original learning materials is still effective and easier to understand for CC students. To achieve this aim, I have decided to undertake the following tasks:

- Gather original learning materials from the MSP module.
- Learn, and complete the tasks given for each chapter.
- Learn about Python, OpenCV, and Kivy.
- Develop a working prototype of the interface application for learning signal processing concepts.

BACKGROUND STUDY

- MSP is relevance in today's digital landscape in data compression and transmission, including content analysis, and multimedia security due to:
  - the growing trend of multimedia content creation and consumption since the outbreak of COVID-19 in 2020.
  - the emergence of new technologies such as virtual reality (VR), augmented reality (AR), mixed reality (MR) relying on MSP for creating immersive audiovisual experiences.
- CC students with basic or no programming background may face some challenges when learning MSP such as difficulty understanding the technical jargon, complex algorithms, abstract concepts, lack of hands-on experience, limited resources, and integration with multimedia tools.

PROPOSED SOLUTION

- Develop a working prototype of the interface application for learning the following image processing concepts:
  - Rotation, cropping, translation, scaling, grayscale, blurring, warping, noise removal, noise addition and thresholding.

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I am Abdul Wafi, a Digital Media student from Intake 8. I prefer programming over designing, but I still enjoy trying to come up with designs for coursework, even though they may not be the best. For my Final Year Project, I ended up doing data analysis instead, but it was still worth it as my final project managed to earn me a First Class against all odds.

INVESTIGATING QUADRUPEDAL ROBOTICS LEARNING IN A SIMULATED ENVIRONMENT USING UNITY ML-AGENT

PROJECT SYNOPSIS

This paper focuses on training a quadrupedal robot agent by leveraging recent advancements in Deep Reinforcement Learning (DRL) and 3D physics simulation using the Unity game engine and Unity ML-Agents Toolkit. The study highlights the benefits of applying machine learning and reinforcement learning in robotics to enable intelligent, autonomous task training and execution in a virtual environment. The methodology utilizes Unity's 3D simulation environment to train a virtual quadrupedal robot with RL trainers, specifically Proximal Policy Optimization (PPO) and Soft Actor-Critic (SAC). Hyperparameter values were varied to assess their impact on training performance. The empirical results showed that a 3D quadrupedal agent was successfully trained to stand up, balance itself, and move toward a desired target position. Furthermore, the forces exerted on the joints of the quadrupedal robot were logged and analyzed. Insights from the analysis were reviewed and discussed.

PROJECT INSPIRATION

During the seventh semester, we were taught how to integrate Artificial Intelligence or Machine Learning within Unity using a toolkit. From there, I became interested in exploring the possibilities of creating an AI simulation within Unity that could be applied to real-life situations. After several discussions with my supervisor, I decided to undertake this project, which involved training a quadrupedal robot in a virtual environment.

اونيۏرسيتي تيكنولوكي بروني
UNIVERSITI TEKNOLOGI BRUNEI

EXPLORING QUADRUPEDAL ROBOTICS THROUGH UNITY'S MACHINE LEARNING: AN ANALYTICAL STUDY

1ST SUPERVISOR: PROFESSOR SOMNUK PHON-AMNUAISUK
2ND SUPERVISOR: DR. AHMAD M. S. ELAKLOUK

ABDUL WAFI BIN NORFADILAH B20200093
BACHELOR OF SCIENCE (HONS) IN DIGITAL MEDIA (CREATIVE COMPUTING)

PROJECT BACKGROUND

This project aims to dive into the robotic world with the focus of making use of machine learning to successfully train a quadrupedal robotic model, along with doing a statistical analysis on the data obtained from the training process. This statistic data may or may not include data such as the time it took to train the model, how efficient the training is, or whether was the model properly trained within the allocated time.

SIGNIFICANCE OF PROJECT

This project aims to test the capabilities of Unity's ML-Agent on how well as a free engine it can be used to train a model using different algorithms inside a virtual environment. With the success of this project, there will be a lot of potential endless possibilities that can be made using such a free engine.

OBJECTIVES

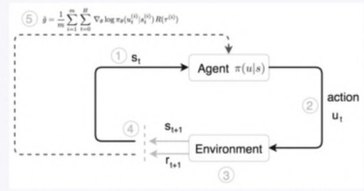
- Using Unity as a game engine to simulate a training environment.
- Integrating Crawler example from the toolkit into the robotic dog model for training
- Using different trainer algorithm to train the dog.
- Able to successfuly train the dog to balance itself properly and walk
- Adding codes to get additional data extraction from training.

TOOLS

Unity

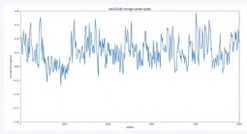
TensorBoard

FRAMEWORK



Main concept of policy gradient method in reinforcement learning

RESULTS



PPO (gamma = 0.99)	ALJ0	ALJ1	ALJ2	ALJ3
Average value	0.437	0.327	0.284	0.051
PPO (gamma = 0.99)	AUJ0	AUJ1	AUJ2	AUJ3
Average value	0.271	0.309	0.161	0.286

SCHOOL OF COMPUTING AND INFORMATICS

AMALINA BINTI SABLI

Bachelor of Science (Hons) in Creative Multimedia

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A creative individual with a passion for designing and a love for food. Happily married and a proud mother to my baby girl.

FARMBASKET CAFÉ INVENTORY MANAGEMENT SYSTEM

PROJECT SYNOPSIS

Inventory Management System is a software system for tracking inventory levels, orders, sales, and deliveries. For some restaurants to improve the management of their inventory system, it is vital to have a system where they can manage and organize items that are in and out of stock. For this project, it is mainly focuses on creating a new Inventory System for Farmbasket Café. Farmbasket Café is a restaurant in Brunei known for its fusion cuisine. Established in 2006, the café currently manages ingredient stock manually, using a paper-based system.

PROJECT INSPIRATION

The inspiration behind the Farmbasket Café Inventory Management System stems from the need to streamline and optimise the cafe's inventory processes. Recognising the challenges of managing food supplies, reducing waste and ensuring fresh ingredients are always available, this project aims to create an efficient, user-friendly system. The goal is to empower the cafe staff with real-time data, automate routine tasks and support the cafe's commitment to quality and sustainability.

Farmbasket Cafe Inventory Management System

Amalina Binti Sabli (B20200295)
Bachelor of Science (HONS) in Creative Multimedia

INTRODUCTION

Farmbasket Cafe is a restaurant in Brunei known for its fusion cuisine.
Established in 2006, the cafe currently manages ingredient stock manually, using a paper-based system

PROBLEM STATEMENT

Currently there are no system being implemented in the cafe and the inventory is done manually

Where if there were low stock, then the chef would provide a list to buy the necessary items.

There is lack of security and verification.

BACKGROUND STUDY

Farmbasket Cafe (FB) currently operates without an automated inventorysystem, relying solely on manual management of ingredient stock through a paper-based method. This approach, while functional, may have limitations interms of efficiency, accuracy, and the ability to adapt to potential growth in the future.

There is a need to evaluate and potentially implement a more streamlined and technologically advanced inventory management system to enhance operational efficiency and meet the evolving demands of its clientele.

PROPOSED SOLUTION

Implement an automated inventory management system that is integratable with the Point of Sale (POS) system of the cafe, to allow for more efficient tracking and managing of daily inventory usage.

AIM

To overcome the current challenge of manual inventory management, aiming to improve efficiency, accuracy and overall operations at Farmbasket Cafe.

SYSTEM FEATURES

- Login
- Add, Edit, Delete and View Product, Supplier, Category and Stock-In, Stock-Out and Waste Stock
- Print Report and Stock

OBJECTIVES

To digitalize and automate the inventory system.

To be able to keep track of the stock of the ingredients used everyday.

To avoid the restaurant to get shortage stock of the ingredients needed.

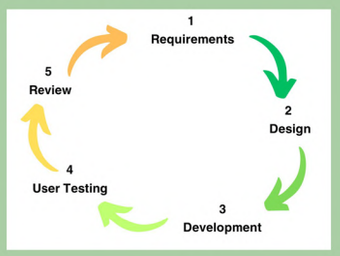
To give the staff user manual or training.

DEVELOPMENT TOOLS

Visual Studio Code
MySQL
XAMPP
phpMyAdmin
HTML, CSS, JavaScript

METHODOLOGY

Conducted an interviews to gather the data finding and used agile methodology.



TARGET AUDIENCE

Head Cheif of the restaurant

AUGMENTED & VIRTUAL REALITY

1 **AUGMENTED REALITY INDOOR NAVIGATION (ARIN)**
MUHAMMAD HAMIZAN BIN HAJI ABD. HAMID

2 **SIGNCARDS (SIGN LANGUAGE AUGMENTED REALITY CARDS)**
NADA HASNA NAZAHAH

3 **BIRTHPRO VR: LOW-RISK BIRTH VR SIMULATION**
MOHAMMAD ABDUL MUIZ BIN HAJI SAHMINAN

4 **FIRE MARSHALL TRAINING IN VR**
MUHAMMAD DASUQI HARMAWI BIN HAJI ABDUL GHANI

5 **TOURING BRUNEI'S LANDMARK THROUGH VIRTUAL REALITY**
MUHAMMAD AFIQ BIN HJ AFFENDY

6 **BRUNEI CULTURAL ARTS THROUGH IMMERSIVE VIRTUAL REALITY**
TOO WENG THUNG

7 **IMPACT OF NARRATIVE IN EDUCATIONAL VR GAME ABOUT HISTORY OF KAMPUNG AYER**
MOHAMMAD SYAHMI HAMIZAN BIN HAJI ROSLAN

MUHAMMAD HAMIZAN BIN HAJI ABD. HAMID

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As a recent Digital Media graduate, I am excited to use my wide skill set and passion for technology for a career in IT. My academic education has provided me with a solid foundation in multimedia design, developing both my creative and analytical skills. Throughout my studies, I have developed a strong interest in the convergence of technology and design, especially Augmented Reality (AR), Virtual Reality (VR), and User Experience (UX). Essentially, my degree is in Digital Media, and I have actively worked to enhance my technical knowledge and skills. I worked on an AR Indoor Navigation app for my final year and developed knowledge of user interface design and marker-based approaches.

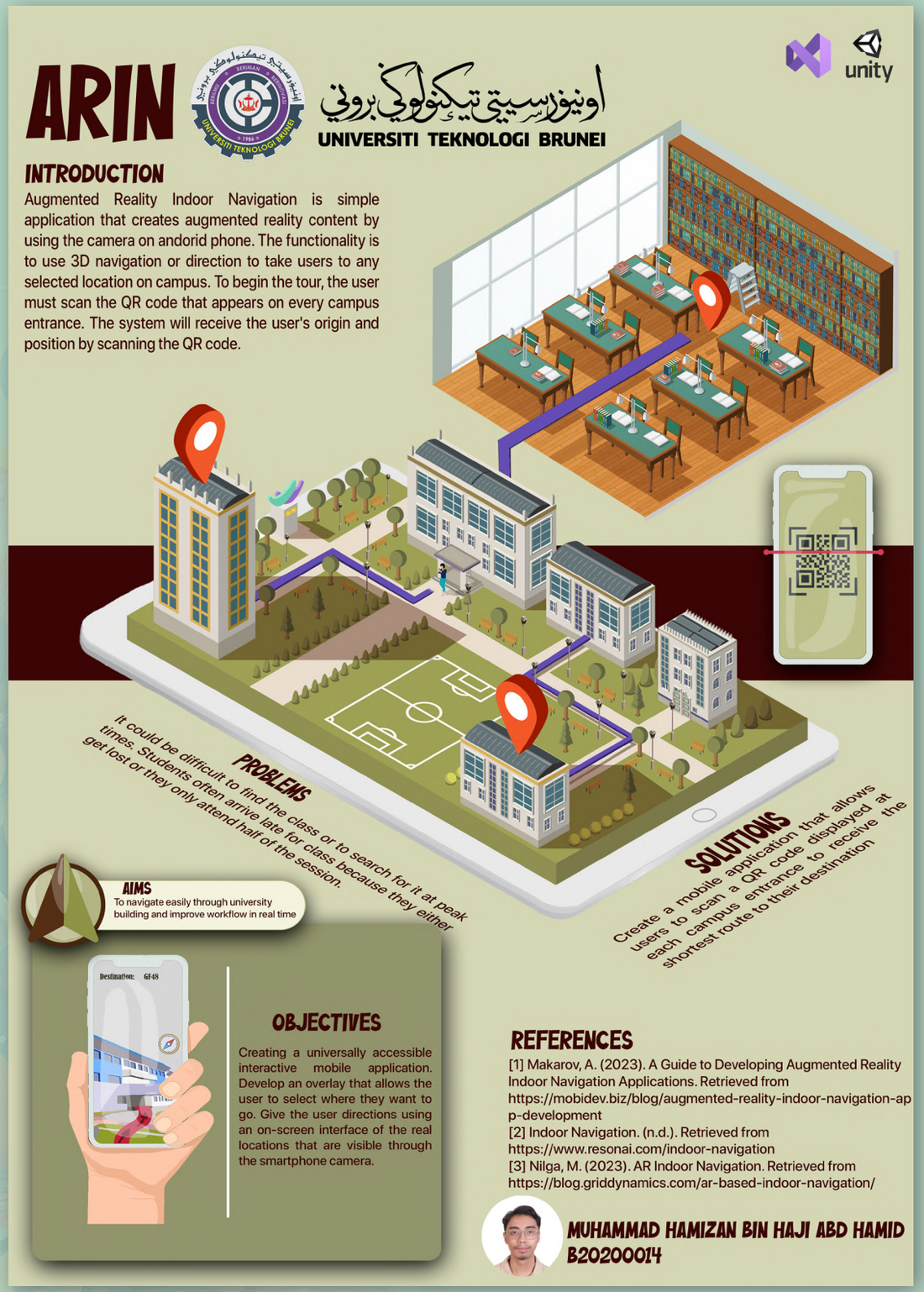
AUGMENTED REALITY INDOOR NAVIGATION (ARIN)

PROJECT SYNOPSIS

A mobile application designed to assist users in navigating to specific destinations within a system using their phone's camera. The app can scan QR codes located at every possible entrance of a university building, allowing the system to identify the user's exact location. By measuring the real environment, the app uses sensors to accurately detect the user's position and guide them to their chosen destination.

PROJECT INSPIRATION

Finding your class during peak hours can be challenging, leading to potential issues like missing lectures, feeling lost, or struggling to catch up. This highlights the growing importance and practicality of indoor navigation for educational purposes, enhancing time efficiency and aiding both students and lecturers in reaching their destinations. Whether it's students searching for a class or a lecturer's office, or visitors unfamiliar with the university facility, indoor navigation offers valuable assistance without the need to ask for directions. AR Indoor Navigation relies on three main components: sensors, mapping methods, and user interface. The system detects the environment and determines the user's location through sensors. QR codes are strategically placed at every building entrance, enabling the system to accurately identify the user's starting point and provide precise, real-time positional information. This technology has the potential to significantly improve user experience and operational efficiency across various sectors. Augmented reality (AR) is a transformative tool for indoor navigation, offering an educational overview of its technology and applications.



NADA HASNA NAZAHAH

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I am currently focused on enriching my learning experience and building a solid foundation for my professional development. I am dedicated to developing and acquiring knowledge and skills in the creative field, aiming to contribute effectively to the industry and educational advancements.

SIGNCARDS (SIGN LANGUAGE AUGMENTED REALITY CARDS)

PROJECT SYNOPSIS

Sign language is a set of languages that use manual signs, as well as non-manual components such as hand movement. Through the creation of a mobile application that facilitates the learning of sign language, incorporating advanced features of augmented reality technology, this study investigates the effectiveness of the SignCARDs application in facilitating sign language learning.

PROJECT INSPIRATION

The “Hearing the Sign Language” 3D animation about sign language by our CC senior, Naderah Nabelah (2021), and the “ARSEMBLY” mobile application for augmented reality product assembly by Adilah Izzati (2022), served as inspiration for this project. Furthermore, this aims to raise awareness of the importance of learning sign language in Brunei Darussalam, given the lack of resources, especially related to this language. So, here I propose a mobile application for augmented reality sign language.

SignCARDs

Project Overview

Sign language is a set of languages that use manual signs, as well as non-manual components such as hand movement. Through creation of a software application that facilitates the learning of sign language, incorporating advanced features of augmented reality technology, this study investigates the effectiveness of SignCARDs application in facilitating sign language learning.

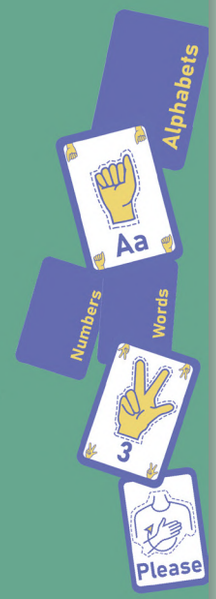
Aim & Objectives

The project's goal is to develop an innovative method for learning sign language using augmented reality (AR) technology.

To ensure the aim of the project is met, several objectives are outlined:
• Understand the framework on how to develop augmented reality applications as a learning tool using Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model.
• Perform a validity test, System Usability Scale, and perception questionnaire to ensure the application and its content are valid and usable.

Problem Statement

There are various methods for learning sign language including traditional resources such as books or paper-based materials, as well as modern resources such as online classes, video tutorials, and mobile applications. Learning through immersion and engagement, which is crucial for mastering a visual-spatial language like sign language, is often lacking in traditional learning materials like textbooks and videos (Allcoat & von Mühlenen, 2018)



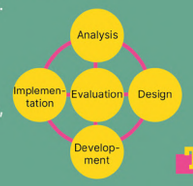
Proposed Solution

Developing an application for learning sign language, enriched with augmented reality capabilities. Applying mobile applications for learning sign language offers convenience to users by enabling interactive engagement, hence enhancing understanding (Mohd Ekhsan et al., 2022). This application aims to serve as an educational tool for those without prior knowledge of sign language, and the integration of augmented reality is anticipated to heighten the effectiveness and engagement of the learning process (Singh et al., 2023).

Methodologies

ADDIE Instructional Design and close-ended questionnaire consist of System Usability Scale, Validity Test, and Perception Questionnaire.

Involving 2 experts: media and sign language, and 30 students.



Results

Accepted level score is 67.81, System Usability Scale, Validity of the instrument, a result of 0.92 Very High Validity, The mean perception student score achieved was 81.7%.

Tools

Vuforia SDK · Adobe Illustrator · Unity · Blender · Visual Studio Code

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Bsc. (Hons) in Creative Multimedia

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MOHAMMAD ABDUL MUIZ BIN HAJI SAHMINAN

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From a young age, I've always been fascinated by technology. This early curiosity led me to wonder how games work, especially the processes behind their stunning graphics. My passion deepened as I explored game development, where I discovered the power of game engines in creating immersive experiences. To turn this passion into a profession, I pursued a Bachelor of Science (Hons) in Digital Media, focusing on Game Development. Along the way, I developed a keen interest in Graphic Design. My love for technology also sparked an interest in Mixed Reality, especially Virtual Reality (VR).

BIRTHPRO VR: LOW-RISK BIRTH VR SIMULATION

PROJECT SYNOPSIS

"BirthPro VR" is an innovative project designed to transform midwifery training through the use of Virtual Reality (VR) technology. This project focuses on creating an immersive and interactive simulation specifically for low-risk birth scenarios, providing midwifery professionals and students with a realistic platform to practice and refine their skills. The simulation allows users to engage in low-risk birth scenarios, helping to enhance their competence and confidence in handling real-life situations. A key objective of BirthPro VR is to make high-quality training accessible anytime, enabling users to improve their skills at their convenience. By bridging the gap between theoretical knowledge and practical experience, this project aims to significantly improve maternal and neonatal outcomes. It ensures that midwifery professionals are better prepared for the complexities of real-world births, ultimately contributing to safer and more effective maternity care. This combination of accessibility and realism sets BirthPro VR apart as a valuable tool in midwifery education.

PROJECT INSPIRATION

The idea for this project arises from the need for more accessible and practical training solutions in midwifery. Traditional training methods often rely on limited practice or simulations that do not fully capture the complexities of real-life births, leaving professionals and students feeling unprepared for real situations. With advancements in Virtual Reality (VR) technology, there is an opportunity to create a realistic, interactive, and repeatable training environment. This project aims to use VR to develop a cost-effective and flexible training tool, enabling midwives to practice and improve their skills in low-risk birth scenarios whenever and wherever they need.

Literature Review

Current Midwifery Training System
Midwifery services play a vital role in improving maternal care outcomes, including reducing mortality rates, enhancing psychosocial well-being, and optimizing resource utilization when provided by well-trained midwives (Paul et al., 2022. Midwifery Education and Care, 2023). Some mediums and systems were tested for midwifery training with mixed results.

Virtual Reality in Medical Training
Rowe et al (2023) showed virtual reality's cost-effectiveness in healthcare education. Virtual reality benefits surgical training, as Clarke (2021) highlighted. This technology, proven by Tawarneh et al. (2023), offers immersive training without physical restrictions or geographical barriers. In medical education, it enhances self-confidence, knowledge, and skills (Motamarri et al., 2021). A study at the Royal College of Surgeons in Ireland created the RCSI VR Medical Training Sim. Healthcare professionals using this simulator showed enhanced emergency response skills and confidence.

Conclusion

Twelve participants found the system useful, easy, and satisfying to use, giving a good rating for ease-of-use. They appreciated the traditional training method integration into VR, familiar to them. Improvement areas were noted for future enhancements, like using visual cues. Most participants were new to VR but quickly mastered the simulation. Despite one person's depth perception issue, they completed tasks with minimal help.

Tools

Unity

Screenshots

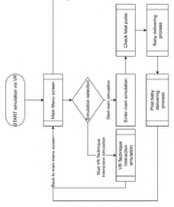
Mohammad Abdul Muiz bin Haji Sahminan
B20200126
Bachelor of Science (HONS) in Digital Media

BirthPro VR
low-risk birth VR simulation

Project Methodology

Gathering User Requirements
Primary data - Interview with JCHS and recorded demonstration of procedure using traditional training method
Secondary data - Analyzing existing data (i.e. Touch Surgery).

System Flowchart



Evaluation Procedure
Briefing and demonstration sessions will be conducted beforehand. Participants (n=12) will be given participant information sheet, consent form and pre-questionnaire survey.

During the test, participants are required to carry out 12 tasks throughout the testing session. Participants will be asked to "think aloud" while attempting to do the task given. After each task, participants will rate difficulty on a 7-point scale using the Single Ease Question (SEQ). The session will be recorded unless participants refuse.

After the test, participants filled out post-questionnaires including the SUS, a 5-point Likert scale, and NASA TLX, a 7-point scale for task load evaluation.

Problem Statement

- Manikin technology's limited engagement with midwives may reduce training realism, disrupt communication, and overwhelm low-risk birth trainees.
- In Brunei, medical schools provide midwifery training to all students, with males limited to manikin practice due to religious rules. This gender gap in training is a recognized issue (Madlala et al., 2021).
- Logistics in medical training, including simulation for low-risk birth, face challenges due to expensive equipment maintenance, limited resources for instructors, hindering cross-cultural sessions.
- Virtual reality technology is underused in medical training, particularly for low-risk births, due to limited skills and familiarity.
- Due to time constraints, modules prioritize theoretical over practical learning, as institutions often lack resources for extensive practical experiences.

Aim and Objectives

The study aims to create a virtual reality training system for low-risk birth delivery practice, offering a new approach for medical learners to enhance readiness for field training.

The objectives are:

- Provide authentic and engaging training experiences for midwives' professionals and trainees.
- Establish a risk-free training environment.
- Ability to help in improving practical training skills.
- Ability to replicate a real-life circumstance into simulation training.
- To offer a comfortable immersive experience.

Usability Study Discussion

The proposed system aimed to train medical students in nursing fields using VR. Despite some initial difficulties, participants found the system useful and easy to use, noting a sense of accomplishment. To enhance usability, visual guidance is recommended over verbal cues. Most participants showed satisfaction with the system, with some facing challenges due to lack of VR experience. Completing tasks in 12 minutes on average is a notable achievement. Consider providing different practice scenes to improve VR technique interaction. Task Workload shows acceptable results but effort needed to accomplish tasks may be reduced by utilizing game engine functionalities strategically. Careful monitoring is necessary to maintain system realism and user experience integrity.

Result of Evaluation

MUHAMMAD DASUQI HARMAWI BIN HAJI ABDUL GHANI

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Hi, you can call me Das! I have dedicated myself to the Digital Media field for seven years. My commitment lies in developing creative designs for advertisements, brand identity, social media, illustration, user interface, merchandise, digital interactivity, and education. I would like to express my gratitude to my lecturers from Digital Media, especially Awang Ibrahim Bin Dris/Edris, whose guidance and support have been invaluable. With his initiative to push Virtual Reality as a possibility for me to venture into, I am glad to present my Virtual Reality project as the culmination of my four years of study in UTB.

FIRE MARSHALL TRAINING IN VR

PROJECT SYNOPSIS

Virtual Reality (VR) technology has experienced remarkable growth and evolution in various fields and industries in 2023. My project aims to integrate a virtual reality simulation of fire marshal training for the Bruneian Rescue and Fire Department (BRFD) and further accustom them to the use of virtual reality for educational purposes.

As a result, I was able to create a foundation for a Virtual Reality (VR) application to train users in a safe digital environment for fire marshal training. The application features a Tutorial Course for users to learn the basics of fire safety and marshal training. Alongside it, users can apply what they have learned in the Scenario Course, such as Fire Scenarios and Trivia Tests. I would like to thank BFRD (Brunei Fire Rescue Department) for their assistance by providing feedback on the application in its earlier stages of development.

PROJECT INSPIRATION

This project was inspired by the release of the Meta Quest 3, which began a trend in technological development for mixed reality. At the same time, there were also major game releases available for play in the latest VR technology, such as Asgard's Wrath.

Following this trend, my interest in how simulations and video games are developed in XR grew, and I was curious to learn how VR applications are developed using Unity and Meta Quest 2, provided by UTB.

MUHAMMAD AFIQ BIN HJ AFFENDY

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I am a 3D modeling enthusiast who likes to try different techniques in designing various objects, characters, and game mechanics.

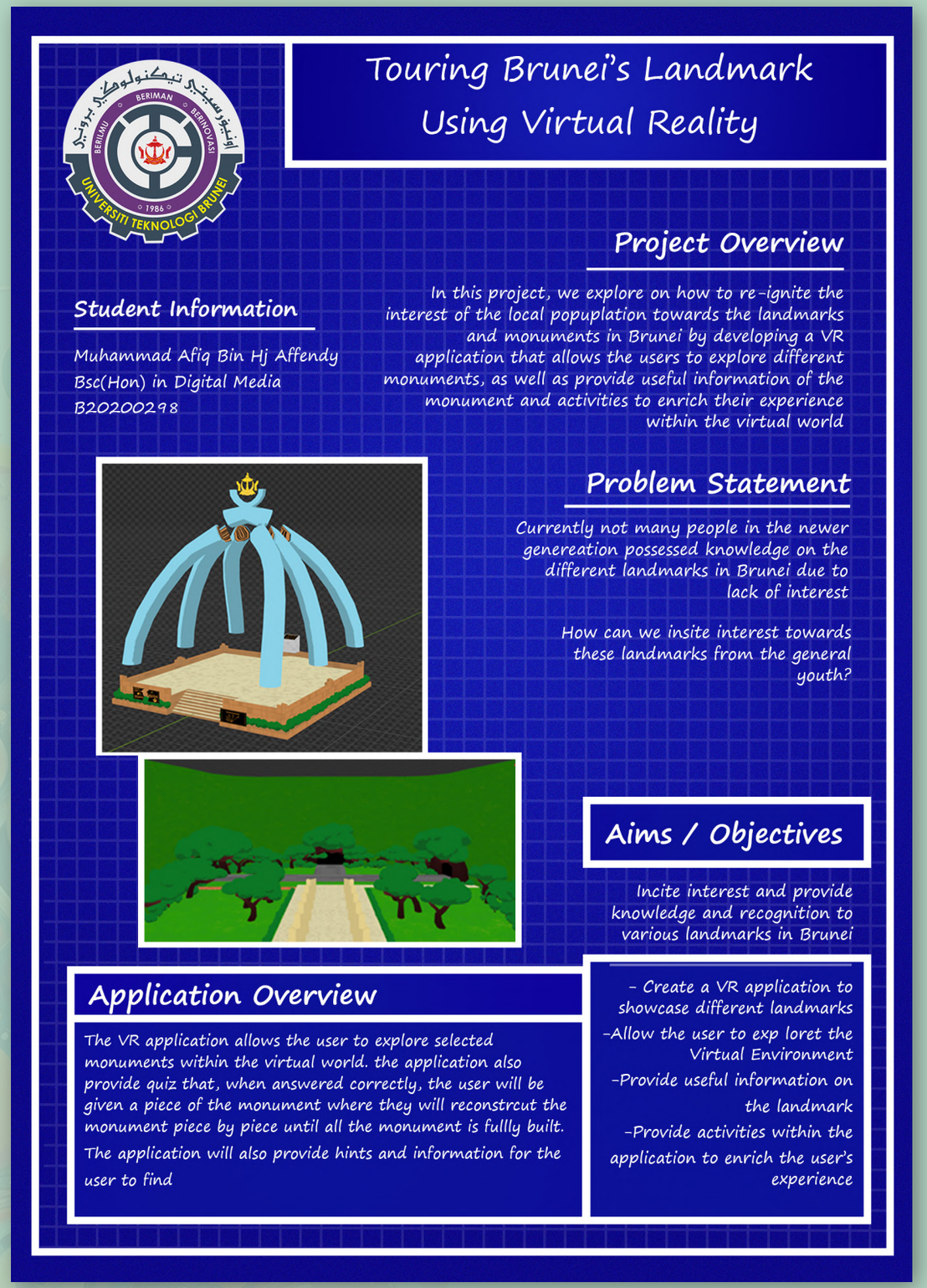
PROJECT SYNOPSIS

Landmarks and monuments are important to a country's culture and history; however, not many people are interested in visiting them nowadays. So, I have recreated the landmarks within the virtual world, allowing people to visit them more easily and adding different trivia and activities to make the experience more enjoyable.

PROJECT INSPIRATION

I usually visit monuments and parks to clear my mind; however, I notice they are usually not well maintained. Furthermore, when I tried to look into the landmarks, the information was not readily available. So after trying out different museum-based games in Virtual Reality, I decided to try to replicate the landmarks virtually and add information when exploring the monument.

TOURING BRUNEI'S LANDMARK THROUGH VIRTUAL REALITY



TOO WENG THUNG

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I'm Too Weng Thung, also known as Candy, the only Chinese girl in my course. I am pursuing a Bachelor of Science (Honours) in Creative Multimedia at Universiti Teknologi Brunei. My expertise lies in graphic designing and 3D modeling, but I also work as a freelance makeup artist on the side. For my final-year project, I developed an immersive virtual reality platform that showcases Brunei's cultural heritage, utilizing Blender for 3D modeling and Unity for creating the virtual museum. I am dedicated to blending creativity with technology to produce impactful and innovative work. I love traveling and dancing as my hobbies. I am deeply passionate about my work and hobbies and aspire to inspire others through that passion.

PROJECT SYNOPSIS

My final-year project is an innovative digital platform designed to showcase Brunei's rich cultural heritage through immersive virtual reality technology. This project involved creating detailed 3D models of cultural artifacts, landmarks, and traditional musical instruments, all presented within a virtual museum environment. Users can explore these exhibits interactively, with features such as audio descriptions and intuitive navigation, providing an engaging and educational experience. The project successfully bridges the gap between modern technology and cultural preservation, making Brunei's cultural treasures accessible to a global audience from any location with an internet connection. Using Blender to develop and create the 3D artifacts, and Unity to build the virtual reality museum, I successfully developed an immersive VR environment that users can explore with any virtual reality equipment.

PROJECT INSPIRATION

The inspiration for this project came from my experience at the Van Gogh Exhibition in Singapore in April 2023. In the virtual reality section, I was captivated by how the Starry Night painting came to life, allowing me to walk through it as if I were truly immersed in the scene. This experience inspired me to create a similar immersive journey into Brunei's cultural heritage, aiming to bring its rich traditions to life through virtual reality. Additionally, my desire to share Brunei's cultural arts and heritage with the younger generation of Bruneians motivated this project. I sought to utilize virtual reality technology to create an engaging and immersive experience, allowing them to connect with their cultural roots in a modern and impactful way. This innovative approach had never been done before, and I aimed to make it a unique and meaningful experience for the younger audience.

BRUNEI CULTURAL ARTS THROUGH IMMERSIVE VIRTUAL REALITY

MOHAMMAD SYAHMI HAMIZAN BIN HAJI ROSLAN

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A tech enthusiast who likes to explore new things and make use of every discovery to better myself. During my time at UTB, I developed some interest in animation, 3D modeling, and game development. Apart from that, I also loved to disassemble devices, learn how they work, and eventually learned how to fix broken ones.

IMPACT OF NARRATIVE IN EDUCATIONAL VR GAME ABOUT HISTORY OF KAMPUNG AYER

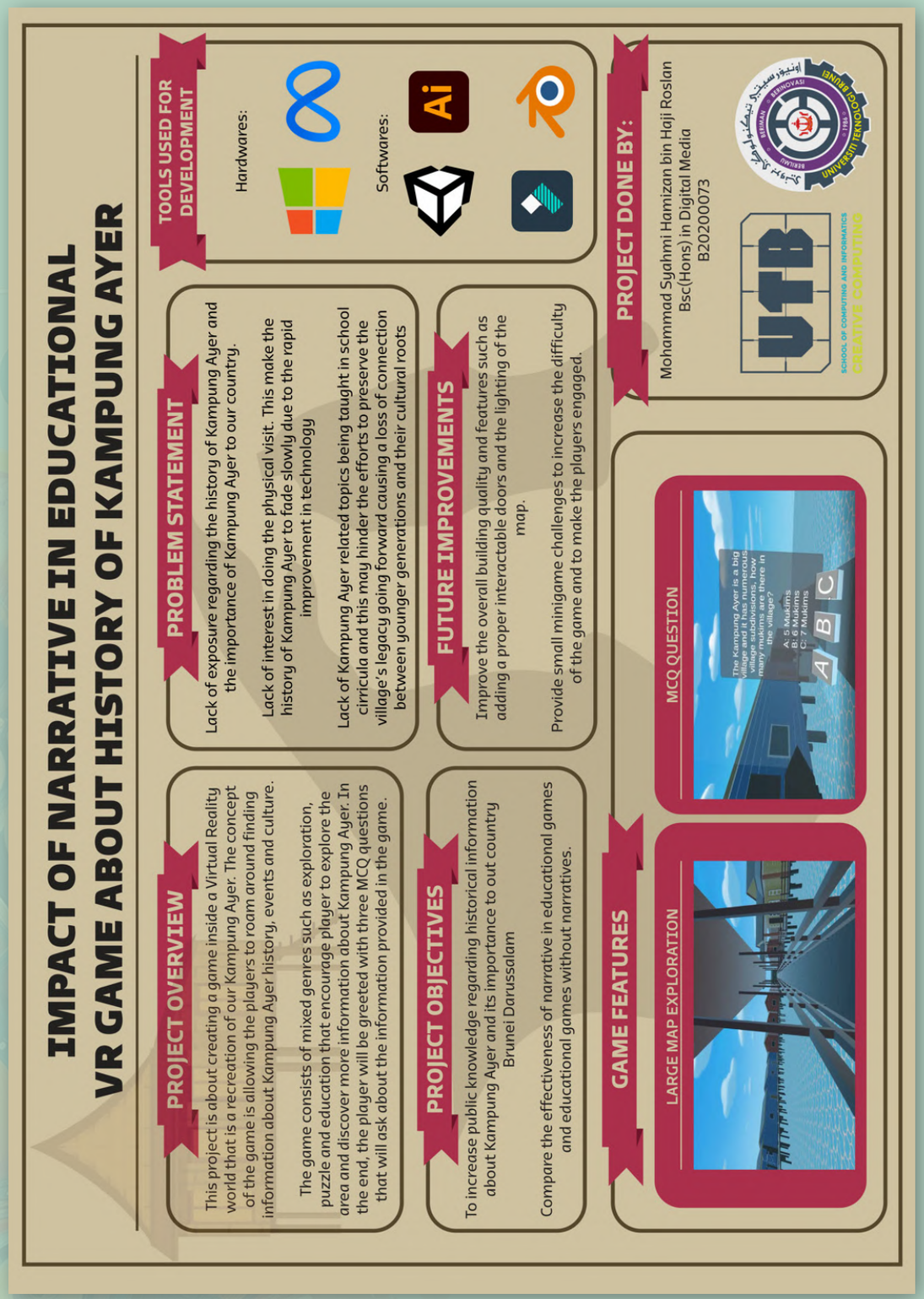
PROJECT SYNOPSIS

This project aims to investigate the effectiveness of narrative in educational VR games. The game is set in a simulation of Brunei's Kampung Ayer village, featuring key places of interest. Two different versions of the game are developed: one that includes a narrative to guide the player, and another that relies on signs for navigation. In both versions, various pieces of information will be scattered throughout the area, serving as multiple-choice questions (MCQs) that act as obstacles within the game.

PROJECT INSPIRATION

The main inspiration for this project comes from my visit to the Brunei Energy Hub, where they showcased various information in multiple unique ways that piqued my interest. The showcase gave me the idea of creating a similar project on Brunei's history, which could be particularly effective in aligning with the current trend of using media for educational purposes.

Another inspiration for this project comes from a VR game called Sushi Ben. The game focuses on narrative-driven gameplay that tells the user about the struggle of a Sushi restaurant along with their stylized world that can be explored. This concept has become the foundation of my project for finding out the effectiveness of narrative in educational games.



GAME DEVELOPMENT

1 **IMAGINATION AS A COPING TOOL**
AWANGKU MUHAMMAD ADAM RAYYAN BIN PENGIRAN JUFRI

2 **SEVERED: A SCI-FI/MYSTERY/SUPERNATURAL VISUAL NOVEL**
NUR FAZRINA MAHADI

3 **VIRTUAL WORLD FOR CULTURAL AWARENESS**
MAHDANI@ MUHAMMAD IZZAT BIN HAJI HAMDANI

AWANGKU MUHAMMAD ADAM RAYYAN BIN PENGIRAN JUFRI

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I am an aspiring game developer who wants to create games with intricate, complex stories that bring the world and characters to life while also sharing a bit of my own personal life. I occasionally write my own stories and read through other people's stories to see what they can create. Throughout my life, I have also been involved in art, graphic design, and video production.

IMAGINATION AS A COPING TOOL

PROJECT SYNOPSIS

A narrative-focused video game that highlights the use of imagination as a coping mechanism, how it can be a healthy way to deal with life's hardships, and how destructive it can be when not used properly.

PROJECT INSPIRATION

I have always loved reading stories—the different types they can come in and the different people who write them. A great deal of that is thanks to the power of imagination. Being able to visualize in my head the details of the world and characters from people's real or fictional stories has always been my favorite pastime. However, it has proven to me that it can also lead to bad habits, a narrow mind, and constant escapism. I wanted to always write a story about how our imagination can be an incredibly strong tool for our mental health, but also how it could lead us to self-destruction.

NUR FAZRINA MAHADI

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I've been a big fan of animation, storytelling, graphic design, and video game design since I was a kid. For the longest time, I've always wanted to tell stories through my work because I find that multimedia art is really cool. My works usually tend to go for a more whimsical and colorful vibe, but I hope to be able to push my boundaries and go outside of my comfort zone so that I can tell more heartfelt stories. I also aspire to enter the publication and video game industries, with a particular focus on the latter due to its relatively new presence in Brunei.

SEVERED: A SCI-FI/ MYSTERY /SUPERNATURAL VISUAL NOVEL

PROJECT SYNOPSIS

A series of serial murders caused by supernatural intervention within cyberspace has caused this small town to live in uncertainty. You play as Zim, a young man who recently moved into the neighborhood to attend the local college, only to find himself getting dragged into this mess.

PROJECT INSPIRATION

This project was inspired by video games, specifically JRPGs, adventure games, and visual novels with mystery, urban fantasy, and supernatural elements such as Persona 3, Fate/ stay night, AI: The Somnium Files, and the Ace Attorney series.

I've always been fond of video game storytelling that focuses a lot on character introspection and worldbuilding, so visual novels and adventure games, especially from the works of TYPE-MOON (Fate/stay night, the garden of sinners) and Kotaro Uchikoshi (Zero Escape series, AI: The Somnium Files) are my biggest inspirations for my writing.

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I generally prefer to engage in hands-on technical work in the IT field. I am particularly interested in web design and user interface design for applications. I am eager to explore new opportunities and gain experience and knowledge in various areas of my life.

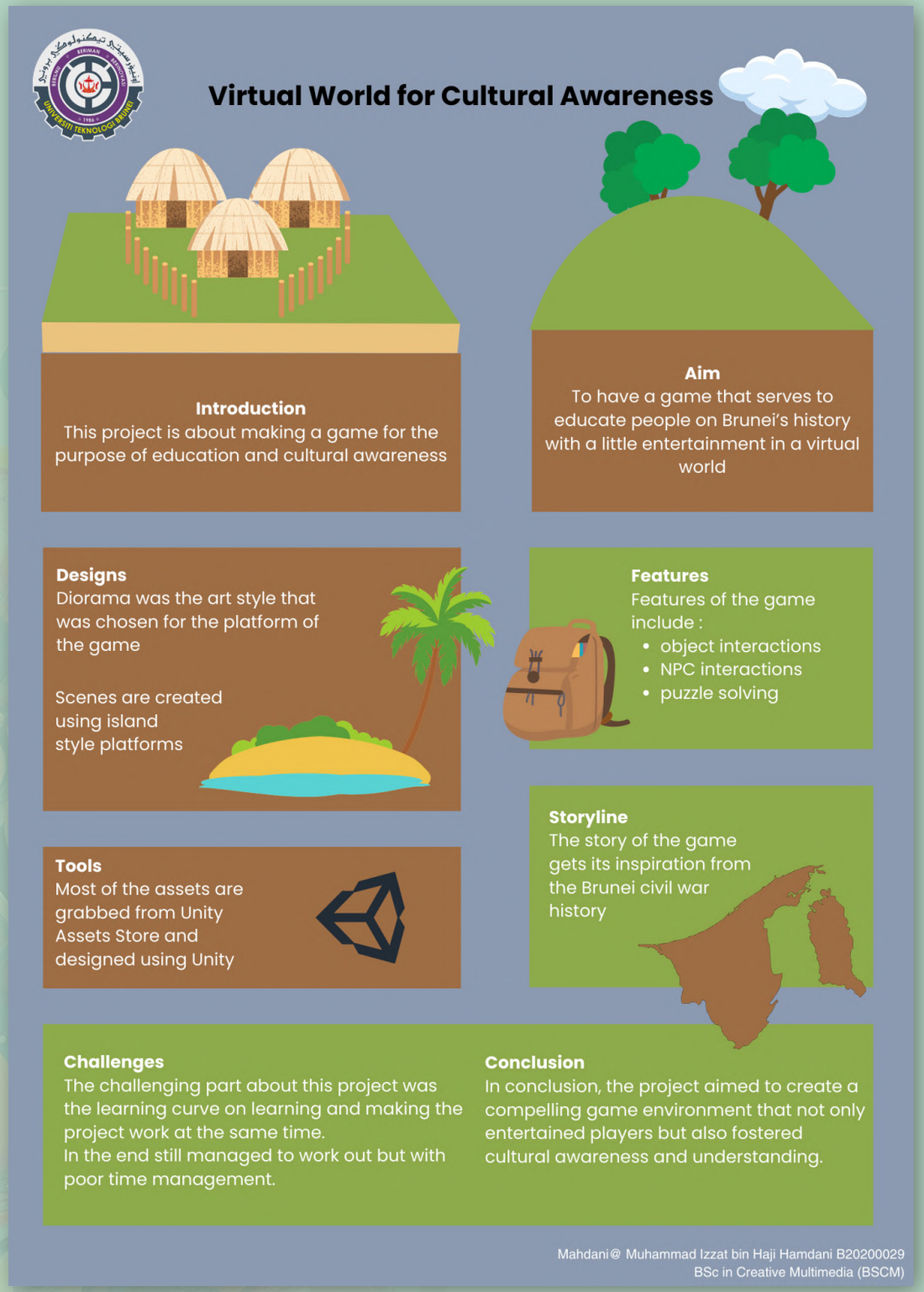
VIRTUAL WORLD FOR CULTURAL AWARENESS

PROJECT SYNOPSIS

A game developed to tell about Brunei's history with the aim of implementing some cultural awareness with it.

PROJECT INSPIRATION

The inspiration mainly comes from VR games that tells story based on history.



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