

AN INSIGHT TO CREATIVE COMPUTING PROJECTS

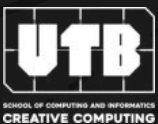
PORTFOLIO

PORTFOLIO

*The Portfolio*  
2020

PORTFOLIO

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THE PORTFOLIO  
AN INSIGHT TO CREATIVE COMPUTING PROJECTS

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Welcome to the fourth issue of The Portfolio: An Insight to Creative Computing Projects! It is my greatest honour to continue this annual creative magazine for the graduates of the fourth intake of Creative Computing Programme Area under the School of Computing & Informatics (SCI), Universiti Teknologi Brunei (UTB).

Fulfilling the nation's aspiration to be a developed country relies on its most valuable asset which is its people, hence towards achieving Wawasan 2035, UTB aspires to provide support for students to promote their knowledge, skills, and projects in this creative magazine, giving more opportunities for students to be discovered.

*Ny*

Namirah Binti Ya'akub  
Bachelor of Science (Hons) in Creative Multimedia  
Creative Computing  
School of Computing & Informatics  
Universiti Teknologi Brunei

# FOREWORD

# PREFACE

Under the School of Computing & Informatics (SCI), Creative Computing Programme Area consists of two creative courses: Bachelor of Science (Hons) in Creative Multimedia and Bachelor of Science (Hons) in Digital Media, that was introduced in 2013 and attained accreditation from the British Computer Society (BCS), the Chartered Institute for Information Technology, early of 2018. With the ever-changing and dynamic demands of the creative industries, the two courses are equipped with necessary knowledge and skills that can help the students to develop a research attitude with newly developed technologies. In addition, Universiti Teknologi Brunei (UTB) has successfully acquired the ISO 9001:2015 Quality Management System Certification after completing a two-stage mandatory certification audit by Bureau Veritas in 2019, making it the first university in the country to receive the certification.

This year, due to the global pandemic outbreak, UTB took part in fighting against the spread of the virus by abiding the gradual de-escalation of Covid-19 restrictive measures. The education system throughout the country experienced a huge learning curve and efforts were being made to comply with the safety measures from the Ministry of Health. UTB has implemented the use of various technologies to conduct online classes, assessments, as well as presentations. Furthermore, to normalize the current circumstances due to the strict travel restrictions of entry and outbound from Brunei, the upcoming international conference on Computational Intelligence in Information Systems (CIIS 2020) organized by SCI will also be hosted online.

# 05

## 3D ANIMATIONS & SHORT FILMS

### **3D Short Animation Project: A Mother**

Nurhamizah Binti Mazlan

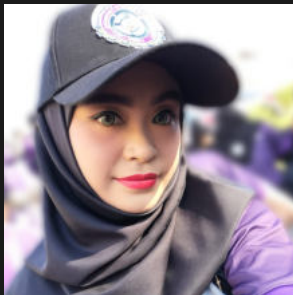
### **3D Short Animation : The Founding of Brunei**

Nurul Rina Haryantie Binti Abdullah



# HAMIZAH

**Nurhamizah Binti Mazlan**  
BSc (Hons) in Creative Multimedia



With Allah's will, I am grateful for the opportunity to create this sincere project as part of my final year experience studying at Universiti Teknologi Brunei. Without the grace and willingness of the Almighty, the "Excellent" grade definition awarded to this project might not happen and therefore absolutely praise be to Allah.

All you have to do is to instinctively scrutinize on when to work and spark that "right side of your brain" and simultaneously necessitate that creative mind of yours. If you put a thoroughly genuine intention into your work, the chance for your project to securely advance forward until the finishing line will be pretty much achievable InshAllah.

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*"It can be intriguing when perceiving different kind of creative expressions from a variety of competent individuals. Let it be through their conventional piece of works... or better at it's best is through their humble application of some stimulatingly mysterious and boundlessly unique personality on their workpiece."*

## A Short 3D Animation Project : A Mother



# A Mother

A SHORT 3D ANIMATION PROJECT

Created by  
Nurhamizah Binti Mazlan  
B20161165  
Bsc (Hons) In  
Creative Multimedia



**TARGET AUDIENCE**  
The children, the youth and basically everyone

### STORY OVERVIEW

In this 3D Short Animation, it will show a journey of a deaf mother who is trying her best on keeping her child healthy and alive. Trying to take care of another human being like an ordinary people itself is challenging enough but when it comes to having a disability while trying to do so is a whole different story

**GOAL**  
To convey a message of how we should remember the hardships that have been done for us by our guardian, father and especially our mother- By doing so it can be a reminder on us to always respect them sincerely

**DEVELOPING TOOLS**  
AutoDesk Maya  
Adobe Illustrator  
Adobe After Effects  
MediBang Paint

### PROJECT OVERVIEW

To get the audience's attention by conveying the character's heartfelt and respectful message through some social-emotional development on an attractive 3D animation generated video

**OBJECTIVE**  
To convey a heart feeling message to the audience on how the people should be reminded of all the sacrifices that a mother had gone through to raise her child



**THE PROBLEM**  
The cases of children and parents being neglected can be seen surfacing these days. This type of attitude should be made as attention towards the younger generations as the culture of respect is thinning nowadays.

### THE PROCESS

- |                                  |                                     |                              |                               |                             |
|----------------------------------|-------------------------------------|------------------------------|-------------------------------|-----------------------------|
| (1) Research                     | (2) Scriptwriting and Storyboarding | (3) Designing the characters | (4) 3D Modeling and Texturing | (5) Blend Shape and Rigging |
| (6) Skinning and Paint Weighting | (7) Creating Rig Controls           | (8) Keyframe Animating       | (9) Rendering and Editing     | (10) Final Product          |

**THE RESULT**  
Positive feedback received!





# RINA

**Nurul Rina Haryantie Binti Abdullah**  
BSc (Hons) in Creative Multimedia

When I decided that I will be doing 3D animation on this topic, I doubted myself in a lot of things. This includes the information that I needed to gather, the skills I have, the acceptance of the public, and so on. Despite all that, being a persistent person and passion in History, I proceeded to do as much as I can to bring this project to life. It is not as perfect but with practice, I believe I can do better. BEHOLD, this is a project that can help relive the past in 3D.

*“Never let the fear of striking out, keep you from playing the game.”*

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**3D Short Animation : The Founding of Brunei**

**3D SHORT ANIMATION:  
THE FOUNDING OF BRUNEI**

14th Century Report.

**PROJECT OVERVIEW:**  
A short 3D animation that tells the story of Awang Alak Betatar, his origin and how Brunei was built in the early days.

**PROJECT AIMS & OBJECTIVES:**

- To carry out comparative study between the research done on history of Brunei Darussalam from various sources.
- To preserve the history of Brunei Darussalam.
- To expose the history of Brunei Darussalam.
- To compare the effectiveness of using 3D animation compares to the old textbook.

**PROBLEM STATEMENT:**

- 1- Lack of exposure of Brunei History.
- 2- Lack of interest to History in the Bruneians' new generations.

**PROJECT DEVELOPMENT:**

```

    graph TD
      STORY --> VISUAL_DESIGN[VISUAL DESIGN]
      STORY --> STORYBOARD[STORYBOARD]
      VISUAL_DESIGN --> ANIMATION[ANIMATION]
      STORYBOARD --> ANIMATION
      ANIMATION --> MERGE[MERGE]
      ANIMATION --> RIGGING[RIGGING]
      ANIMATION --> ANIMATION_EFFECTS[ANIMATION EFFECTS]
      ANIMATION --> TEXTURING[TEXTURING]
      ANIMATION --> SKIN_SHADER[SKIN_SHADER]
      ANIMATION --> LIGHTING[LIGHTING]
      ANIMATION --> RENDERING[RENDERING]
      ANIMATION --> CONVERTING[CONVERTING]
      ANIMATION --> EXPORT[EXPORT]
      MERGE --> EXPORT
      RIGGING --> EXPORT
      ANIMATION_EFFECTS --> EXPORT
      TEXTURING --> EXPORT
      SKIN_SHADER --> EXPORT
      LIGHTING --> EXPORT
      RENDERING --> EXPORT
      CONVERTING --> EXPORT
      EXPORT --> FILE[FILE]
    
```

**SOFTWARE USED:**

M Ae Ai Ps

NURUL RINA HARYANTIE BINTI ABDULLAH  
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BACHELOR OF SCIENCE (HONS) CREATIVE MULTIMEDIA

# 08

## AUGMENTED REALITY & VIRTUAL REALITY

### **Virtual Reality Application - VR Animation : History of Film**

Nurkhalish Faizah Binti Haji Mansor

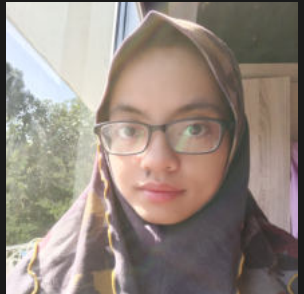
### **Virtual Reality Video : Drug-Free Family, 360° VR Video**

Rahimatul Nurin Afiqah Khairunnisa Abdul Rahim

### **Virtual Reality : VR Brunei Water Village**

Nurul Nazihah @ Fatin Binti Haji Julaihi





# KHALISH

**Nurkhalish Faizah Binti Haji Mansor**  
BSc (Hons) in Creative Multimedia

Ever wondered how movies have evolved? From the 2-second movies to the big blockbuster films we know today, the history of film is full of innovation. My VR Application brings the user to different eras of film history where the users can learn about the history and even watch the movies that were present that time.

*“Human beings have the power to change the world, they just forgot that for a bit”*

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## Virtual Reality Application - VR Animation : History of Film



# VR MUSEUM: HISTORY OF FILM

PROJECT BY:  
NURKHALISH FAIZAH  
BINTI HAJI MANSOR  
CREATIVE MULTIMEDIA  
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### INTRODUCTION

It is an educational VR application that was built using Google VR tools in Unity3D. The application is about learning the history of film with the aid of a narrator while being in an immersive environment. It is an application where the users can play and navigate different 3D scenes. The different scenes represents an era within the timeline of the film industry.

Each scene has interactive buttons where the user can tap on and progress the lesson. Each era talks about the biggest milestones during that era. In some of the eras, it has clips of movies that were released during their respective eras.

### PROBLEM STATEMENT

There is a lack of educational VR application based around the creative topics. The projects strives to diversify the subjects that are available for VR.

Brunei's film industry is quite small when compared to the neighbouring countries. To help the industry grow, we must incite interest about movies and inspire potential young film makers into getting a head start in creating films.

A way to learn about films is by knowing the history of films and to know about the history of films, it is usually presented in a form of a documentary or books. While it is a way to learn about the subject, it gets very long and it takes a lot of time which may not pose a problem for movie enthusiasts, but it may pose a problem for the younger generations or casuals

### FEATURES

- ✓ Text boxes that tells the history about film.
- ✓ Interactive buttons where the user can flip through.
- ✓ Background music for immersion.
- ✓ Lessons are narrated to the user.
- ✓ Scenes that are accurate to the timeline of the era.
- ✓ Movies that play are specific to the era.

### AIMS

The aims of the project is to inspire young Bruneians to become more interested in film as well as share the knowledge about the history of film. In hopes these young Bruneians to make their own movies and help grow the country's film industry. It is also to diversify the subjects within the Google Play Store so that users can have more subjects to learn and give a spotlight for creative media subjects.

### WORKFLOW



### OBJECTIVES

- ✓ To conduct research on the history of film and the milestones that was reached during ever since its origins.
- ✓ To develop a VR App that showcases the timeline about the film history in an interesting manner.
- ✓ To showcase the diversity in styles and genre of films.
- ✓ To easily navigate the in between scenes so that the viewer would not get lost.
- ✓ To provide interactions for deeper engagement.
- ✓ To collect data of the viewers, experience when using the App.
- ✓ Create 3D Models and animate them to help tell the story.

### TARGET AUDIENCE

The target audience for the VR Application is for casual moviegoers and young Bruneians at the ages around 13 to 30. This will help spread the knowledge of film in general as it is neither general knowledge nor textbook knowledge as it is not available as a compulsory subject in School Systems in Brunei.

### RESULTS

Approval rating (Across 14 Respondents): (On Average) 7.6/10.  
85.7% of the respondents agreed that the application is affective in teaching the topic.

### SCREENSHOTS



# NURIN



Rahimatul Nurin Afiqah  
Khairunnisa Abdul Rahim  
BSc (Hons) in Creative Multimedia

*“Writers remember everything...especially the hurts. Strip a writer to the buff, point to the scars, and he'll tell you the story of each small one. From the big ones you get novels. A little talent is a nice thing to have if you want to be a writer, but the only real requirement is the ability to remember the story of every scar. Art consists of the persistence of memory. - Stephen King, Misery”*

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## Virtual Reality Video : Drug-Free Family, 360° VR Video

# DRUG-FREE FAMILY A VR INTERACTIVE PROJECT



**PROJECT OVERVIEW**  
Create an interactive virtual reality video to raise awareness about activities that involved drugs by producing realistic scenes involving drug abuse and the effects towards family and future as well as educating the types of drugs including other names, short-terms, as well as the long-terms effects of consuming them.


**PROBLEM STATEMENT**  
Drug is a very sensitive issue in Brunei Darussalam. There are challenges faced when delivering the information about drugs as it is a sensitive issue such that there are limited imagination and unable to visualize, which drives the curious to try drugs. By using virtual reality technology, they could see themselves in drug situation. This could also help them identify drug dealers or users and how to act.  
  
This project focuses on students of all education levels, private and government workers, foreigners, parents and the public.

**AIMS AND OBJECTIVES**  
The aim of this project is to create an interactive virtual reality video to raise awareness about illegal drugs and the consequences of consuming, selling or buying, possessing, smuggling and every activity that involved drugs.  
To achieve this, the following objectives must be fulfilled:  
- To develop a storyline based on realistic scenes.  
- To make viewers experience real-life perspective when engaging with drug activities e.g being approached by a drug dealer and what they should do when they are in the situation.  
- To include different types of drugs that are widely used and other relevant information as an education tool.



**PRODUCTION STAGES**  
Pre-Development - Brainstorming, Storyboarding, Scripting, Drafting UI Menu  
Development - Filming & Editing Raw Footage, Creating Skybox and Interactive Menu and UI on Unity  
Post-Development - User Testing and Feedback

**DEVELOPING TOOLS**  
Maz360, Pr, unity

 RAHIMATUL NURIN AFIQAH KHAIRUNNISA ABDUL RAHIM  
B201C1008  
BSC (HONS) IN CREATIVE MULTIMEDIA



## Virtual Reality : VR Brunei Water Village

# VR Brunei Water Village

## Project Overview

- > Virtual Reality (VR) Brunei Water village is about showing the viewers different types of houses created in the early 1940s to 1950s.
- > This application required viewers to use Google Cardboard to achieve the feeling of immersive.

## Aims

- > Provide a good view and learn about the types of houses in Brunei water village.

## Objective

- > To give the viewer the experience on how the houses looked in 1940s.
- > To improve learning by developing realistic or visual images.
- > To allow users to interact and teleport various locations.

## Tools



## Results

- > Survey was conducted through questionnaire that was published in 17th April until 20th April 2020 and about 60 respondents.
- > In summary, respondents first reaction with overall of 41 gave high rate and overall of 51 gave high rate for this projects. About 98.4% of respondents agrees on it is effective to learn and know using VR.

## Conclusion

- > The use of virtual reality technology, can increase the attention, creativity, excitement and experiences for all sort of age.

## Links to APK



NURUL NAZIHAH HAJI JULAIHI  
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BACHELOR OF SCIENCE (HONS) IN DIGITAL MEDIA



# ZIHAH

**Nurul Nazihah @ Fatin Binti Haji Julaihi**  
BSc (Hons) in Digital Media

During my Final Year Project, it felt like torture but I'm glad I did it . Anyway my project on Virtual Reality (VR) Brunei Water village is about showing the viewers the different types of houses built in the water village in the late 1940s to 1950s.

*"Imagine a year from now when you look back and say, "Can't believe I did this.""* - @Em.x.thoughts

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# 12

## CREATIVE & INNOVATIVE TOOLS

### **An Application Prototype : Investigative Study of using Emotional Design in a Tajwid-learning Application as Teaching Support**

Awang Muhammad Muizzuddin Asyur Bin Awang Mat Japar

### **An Interactive Projection : Collaborative Environmental Diorama**

Mohamad Haziq Wa'ie Bin Husaini

### **Interactive Table : Under The Sea**

Namirah Ya'akub

### **3D Navigation system : UTB 3D Campus Map**

Md. Rafie' Matassan

### **Augmented Reality : Interactive Tourism Advertisement Using Kinect**

Nur E'zzati Hasyimah Roslan



**An Application Prototype : Investigative Study of using Emotional Design in a Tajwid-learning Application as Teaching Support**



**TAJWIT**  
*"Investigative study of using Emotional Design in a Tajwid-learning application as teaching support"*

His Royal Highness Prince Haji Al-Muhtadee Billah ibni His Majesty Sultan Haji Hassanal Bolkiah Mu'izzaddin Waddaulah, the Crown Prince underscored the importance of giving the people more convenient and broader access to Al-Quran learning and reading through concerted efforts, gives its wide availability in different languages in print and digital forms (Doraeo Bulletin Online, 2018).

**PROBLEM STATEMENT**  
 "Attention selects relevant information by focusing on it and deletes information that is considered irrelevant by simply ignoring it." (Van Gorp and Adams, 2012) & "Average attention span in 2015 is 8.25 seconds" (Desk, 2018) Memory retention in learning has been an ongoing issue.

**BACKGROUND STUDY**  
 "Emotionally charged events persist much longer in our memories and are recalled with greater accuracy than neutral memories." (Medina, 2014)

**OBJECTIVES**

- To investigate the emotional design components to use for the Tajwid-learning application
- To find out if memory retention is better when using the application compared to using traditional method of learning
- To study the effectiveness of the application

**TOOLS**

- Adobe Illustrator
- Apple Keynote
- Adobe Premiere Pro

**RESULTS ACHIEVED**  
 All proposed components of emotional design in learning are deemed appropriate to implement in the Tajwid-learning prototype.

**METHOD**

- 2 Groups of participants
- Short Quiz
- Testing for Prototype & Traditional Method
- Post-Testing Questionnaire

**Tajwit: Application Prototype**

**Tajwid: Traditional Method**

AWANG MUHAMMAD MUIZZUDDIN ASYUR BIN AWANG MAT JAPAR | B20161010 | BSC (HONS) IN CREATIVE MULTIMEDIA

# ASYUR

**Awang Muhammad Muizzuddin  
 Asyur Bin Awang Mat Japar**  
 BSc (Hons) in Creative Multimedia

This project is borne as a response to the government's call to providing wider access to Al-Quran learning, Tajwit is proposed to be the platform for Tajwid-learning with the implementation of emotional design components to improve engagement and memory retention in learning.

*"The best of you are those who learn the Quran and teach it." - Prophet Muhammad SAW*

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## An Interactive Projection : Collaborative Environmental Diorama

Mohamad Haziq Wa'ie bin Husaini | B20161076

## COLLABORATIVE ENVIRONMENTAL DIORAMA

An Interactive Projection

**1.0 Project Description**  
It is a surface-display setup which operates through the method of 'Interactive Projection'. The project is visualized to be in a form of an **interactive public exhibition piece** meant to be used by students 15-40 years old.

The setup of the project consists of:  
 Personal Computer  
 Kinect  
 Screen

The project aims to inspire and teach its users to take care of the natural environment in a gentle and fun way. It does this by allowing the user to provide motion input in seeing a digitally projected natural environment clean, or any environmental pollutants.

**2.0 Problem & Solution**  
The project is created to help address the common problem of **environmental pollution** which exists in most parts of the country whether small or large in scale.

In an attempt to reduce this problem, the project has been programmed to display a virtual representation of the natural environment that demands input from pollution in terms of **land pollution, water pollution and air pollution**.

**3.0 Project Objectives**  
The project is developed with these goals in mind:  
 1. To **generate awareness** among individuals towards the causes and effects of environmental pollution.  
 2. To **instill a positive behaviour** and a shared sense of responsibility between individuals in taking care of the environment.

**4.0 Project Features**  
The project features:  
 • **Motion Controls**: The user can interact with ingame objects using their hand.  
 • **Multiple Fixed-Camera Angle Views**: The digital environment can be viewed in different angles.  
 • **3D Environmental Pollution**: Causes & effects of environmental pollution is simulated.  
 • **Situational Environmental Adaptation**: The digital environment can react to the level of environmental pollution.  
 • **Real-time Progress**: The progress of game progress is displayed.  
 • **Points, Achievements & Rewards**: Supplementary tool to enhance the play experience.

**5.0 Development Methodology**  
The project is developed using the **ABILE Methodology**. This allows the development to be split into stages known as 'prints' to achieve a certain outcome of the project.

There were 6 'prints' altogether in the project:  
 • 'Preliminary Investigation'  
 • 'Programming The Basic Functions'  
 • 'Implementing Land Pollution'  
 • 'Implementing Water Pollution'  
 • 'Implementing Air Pollution'  
 • 'Marketing The Project'

**6.0 Systems Requirements**  
The project primarily requires:  
 KINECT  
 unity

**7.0 Screenshots**  
You can have a look of how the projects visually look like!  
 On the left is an air pollution entering the scene. On the right is the game view when the program is started. The project simulates the causes and effects of environmental pollution.

**8.0 Audience's Response (Excerpt)**  
Do you think the project could make an impact towards influencing individuals to take care of the natural environment?  
 Yes (83.9%)  
 No (6.1%)

Project's website!

**3.0 This is how the setup is imagined!**

**An example of environmental pollution (Land Pollution)**

**Bachelor of Science (Hons) in Creative Multimedia | Intake 4**

HAZIQ



Mohamad Haziq Wa'ie Bin Husaini  
BSc (Hons) in Creative Multimedia

At last, the work is done! Ladies and gentlemen, let me introduce to you my final-year project, the Collaborative Environmental Diorama!

My project works on the concept of 'Interactive Projection'. This is where a user is able to interact with digitally projected images which in this case, objects within a virtual representation of a natural environment under threat of environmental pollution. Also, motion controls!

My project aims to emotionally affect its users in nurturing a sense of responsibility in taking care of their surroundings especially in terms of keeping it clean. Topping all of this, the project was developed in mind with the aims of increasing awareness towards the causes and effects of environmental pollution, through a 'hands-on' experience offered for the general public.

Developing this project was surely a rollercoaster ride for me but nonetheless, all is good! Thank you!

**"Keep moving forward! But never forget to sometimes look back yea?"**

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# NAMIRAH

**Namirah Binti Ya'akub**  
BSc (Hons) in Creative Multimedia

An interactive table surface which acts as display medium for users to unfold information about life under the sea. Similar to Augmented Reality, unique marker is used to reveal the corresponding content. User can control in what order they desire to view the information. Each fiducial markers stored various kinds of data; information facts, images, videos. This kind of interaction can create an immersive experience.

*"The Office, S07E19, 14:45"*

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## Interactive Table : Under The Sea

**Interactive Table:  
UNDER THE SEA**

Namirah Bte Ya'akub / Bsc06188  
BSC (HONS) IN CREATIVE MULTIMEDIA


**ABSTRACT**

An interactive table surface which acts as display medium for users to unfold information about life under the sea. Similar to Augmented Reality, unique marker is used to reveal the corresponding content. User can control in what order they desire to view the information. Each fiducial markers stored various kinds of data; information facts, images, videos. This kind of interaction can create an immersive experience

**OBJECTIVES**

- To develop and design the project for survey -
- To develop an educational and entertaining project -
- To help raise awareness about the ocean -



**SYSTEM ARCHITECTURE**





**TARGET AUDIENCE**

The project can be experienced by the general public. Nevertheless, with the ambition of spreading the knowledge about the life under the sea, the specific target audience for the project is children and the younger generation.

**DEVELOPMENT TOOLS**



**UNIVERSITI TEKNOLOGI BRUNEI**





# RAFIE

**Md. Rafie' Matassan**

BSc (Hons) in Creative Multimedia

The creation of this 3D Campus Map basically aims to assist the public and the university residence to be able to navigate themselves inside the campus with the help of the 3D technologies that are getting easy to access and implemented. This Final Year Project is developed using Unity for its navigational system. Hopefully this project can be developed further to be much more refined and polished.

*“Never stop creating, its better to fail than do nothing.”*

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## 3D Navigation system : UTB 3D Campus Map

**INTERACTIVE MAP PLAN  
3D CAMPUS MAP**

MUHAMMAD RAFIE' BIN MATASSAN | BACHELOR OF SCIENCE (HONS) IN CREATIVE MULTIMEDIA | B20161073

**PROJECT OVERVIEW**  
3D CAMPUS MAP THAT ALLOWS USES TO NAVIGATE THEMSELVES AROUND THE UNIVERSITY CAMPUS TO GO TO DESIRED ROOM LOCATION ON A KIOSK PLATFORM

**PROBLEM STATEMENT**  
NO EXISTING CAMPUS NAVIGATION PROVIDED ON THE GO TO NAVIGATE USERS IN CAMPUS.  
DIFFICULT AND CONFUSION IN FINDING ROOMS AROUNDS THE CAMPUS

**PROJECT AIMS AND OBJECTIVES**  
TO PROVIDE ASSISTANCE AND DIRECTIONS TO UTB RESIDENCE AND VISITORS BY IMPLEMENTING 3D MODEL OF THE UNIVERSITY WITH A REMOTE NAVIGATION SYSTEM WITHIN CAMPUS.

**PROJECT DEVELOPMENT**

```
graph LR; PLAN --> DESIGN; DESIGN --> DEV[DEVELOPMENT & IMPLEMENTATION]; DEV --> TEST[TESTING & DEPLOYMENT]; TEST --> FINAL[FINAL OUTCOME]; TEST --> DEV; DEV --> DESIGN; DESIGN --> PLAN;
```

**SOFTWARE USED**  
M Ai unity



# Augmented Reality : Interactive Tourism Advertisement Using Kinect

## Interactive Tourism Advertisement Using Kinect (Augmented Reality)



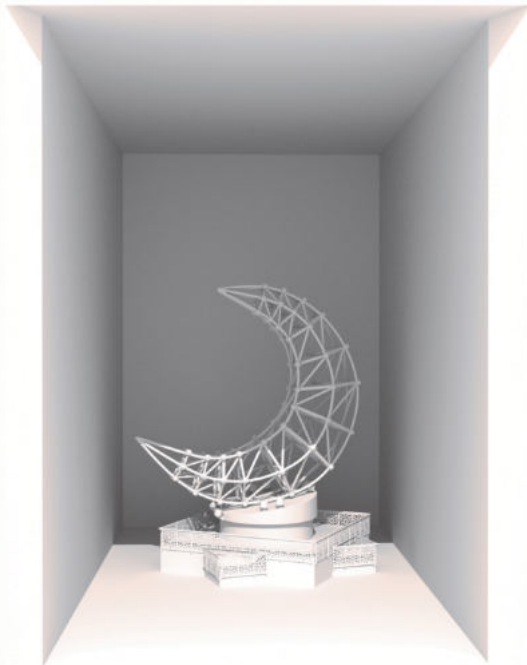
NUR E'ZZATI HASYIMAH ROSLAN B20172012  
DIGITAL MEDIA

An interactive augmented reality advertisement that react on user's head movement (perspective projection) and hand gesture.

### Development Tools



For more information regarding this project, scan this QR code.



### Aims

- 1. To promote Brunei tourism products using an interactive technology.
- 2. To help the tourism industry in tourism growth.
- 3. To reach the Wawasan 2035 goal.

### Objectives

- 1. To design and develop an interactive platform by using a Kinect device to track user's position and movement, especially user's head and joints movement and the distance from the Kinect to user using Kinect IR camera/sensor.
- 2. To improve our tourism industry by introducing a new interactive technology.
- 3. To study people's view and perspective on a new interactive technology, especially local citizens.

### Features

- 1. Holographic visuals (Perspective Projection).
- 2. Gesture recognition. Swipe to change to another scene.
- 3. Real-time sky. The sky will change according to the device's time.

# HASYI



Nur E'zzati Hasyimah Roslan  
BSc (Hons) in Digital Media

This app is developed as an initiative to advertise tourism products through augmented reality technology with a perspective projection concept. Perspective projection imitates how you view objects in real-life. This creates an illusion of a window or a portal onto another place. Some may recognize this effect as a parallax effect. In other studies, this is also called a projection in virtual reality. It's the same idea when you move to a virtual world with a VR headset. Just with this, it's in your reality.

***"People talk and express their thoughts all the time. What you must know is their intention; they might be supporting you or they really want you to fail."***

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# 18

## EDUCATIONAL VIRTUAL GAMES


### **Mobile Educational Game : Game Application for Climate Change**

Akmal Haziq Bin Haji Affandy

### **Narrative game/Game development : Conqueror of Constantinople**

Muhammad Hamizan Bin Haji Ibrahim

## Mobile Educational Game : Game Application for Climate Change



اونیورسیتی تکنولوژی برونی  
UNIVERSITI TEKNOLOGI BRUNEI

**GAME APPLICATION FOR CLIMATE CHANGE**  
A 2D MOBILE EDUTAINMENT GAME PROTOTYPE

**OVERVIEW**

'TAP TO RECYCLE' is a prototype 2D edutainment game developed and targeted towards Bruneian youths on the topics of climate change and it's method of mitigating by recycling. Climate change causes extreme weather fluctuations due to greenhouse gas emissions. One of the best and simplest way to reduce these emissions is by recycling waste which saves energy and the environment. Players are encouraged to recycle as much as they can before climate change affects the world's health while avoiding rising sea levels and expanding temperatures.

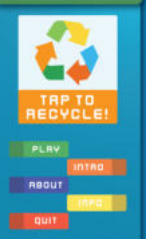
**AIMS**

1. Provide related information by teaching through playing.
2. Inform the user about climate change and the benefits of recycling.
3. Harnessing promise of educational games and interactive media to enhance climate change awareness.

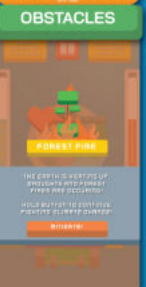
**OBJECTIVES**

1. Explore the possibility of using certain game genres and platforms as an informative way to educate climate change.
2. Educate the target audience on the topic of climate change effects and mitigation method of recycling.
3. Investigate behavioral chance on fighting climate change and recycling by using user testing methodologies and feedback analysis.


**MENU SCREEN**




**OBSTACLES**




**GAME SCREEN**



**INFO GALLERY**



**SDLC**

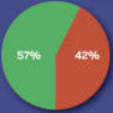


**TARGET AUDIENCE**

Evidence suggests that the concept of 3R (Recycling) is slowly taking its place in Brunei Darussalam, particularly amongst the younger generation. More youths are becoming more active and participative in various environmental initiatives.

The target audience demographic is focused at students and young adolescents.






**RESULTS**



Four out of seven youths were inspired to conduct climate change mitigation acts and recycling.

All seven youths understood the message and motive of what the application is teaching.

DEVELOPMENT TOOLS:

AKMAL HAZIQ BIN HAJI AFFANDY  
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BSC(HONS) CREATIVE MULTIMEDIA



# HAZIQ

**Akmal Haziq Bin Haji Affandy**

BSc (Hons) in Creative Multimedia

The project is simply far from perfect, and not what was initially planned or intended in the beginning, but learning from experience and others this is considered a common trait of development. The best solution is always to continue and keep progressing with alternative solutions or even ridiculous ones and far-fetched ideas or even start a new. A trait in which I've adopted when developing the project was "Ridiculous Optimism" stated by the great Jim Henson. "Do something creative because you can't NOT do it."

*"When life seems bleak, always try to look on the brighter side, face the struggles with ingenuity and creativity. If it fails, learn from it and keep continue."*

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Narrative game/Game development : Conqueror of Constantinople

# Conqueror of Constantinople

A narrative game



### OVERVIEW

As we all know, history is very important for us as we learn from the past to build a better future. However, as technologies advances, most of the people, especially the youth have have learn both history and education in Brunei Darussalam, but find no interest in them, having an unenthusiastic generation going towards 2035.

### AIMS


- To make users eager to learn history and education through playing video games

### PROBLEM STATEMENT

- Interest of people, especially youth low in regards to history and education as technology of this era is more interesting.




### OBJECTIVE


- Creating a prototype narrative game of Sultan Mehmed II
- To investigate if games can be a good medium in education and history



Muhammad Hamizan bin Haji Ibrahim  
B20161132  
Bsc (Hons) in Digital Media

### SOFTWARE REQUIRED





# MIZAN

Muhammad Hamizan Bin Haji Ibrahim  
BSc (Hons) in Digital Multimedia

My project is about Sultan Muhammad Al-Fateh and his conquest to claim Constantinople, now known as Istanbul. This would be an interesting project to develop with a small group of people with similar interests.

*"The greatest test that you will face is the test to defeat yourself."*

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# 21

## RESEARCH STUDY

### **Experimental Research - COLORSENS : Investigation on How Colours Affect Emotions in Digital Environment**

Siti Nur Musyirah Binti Jini

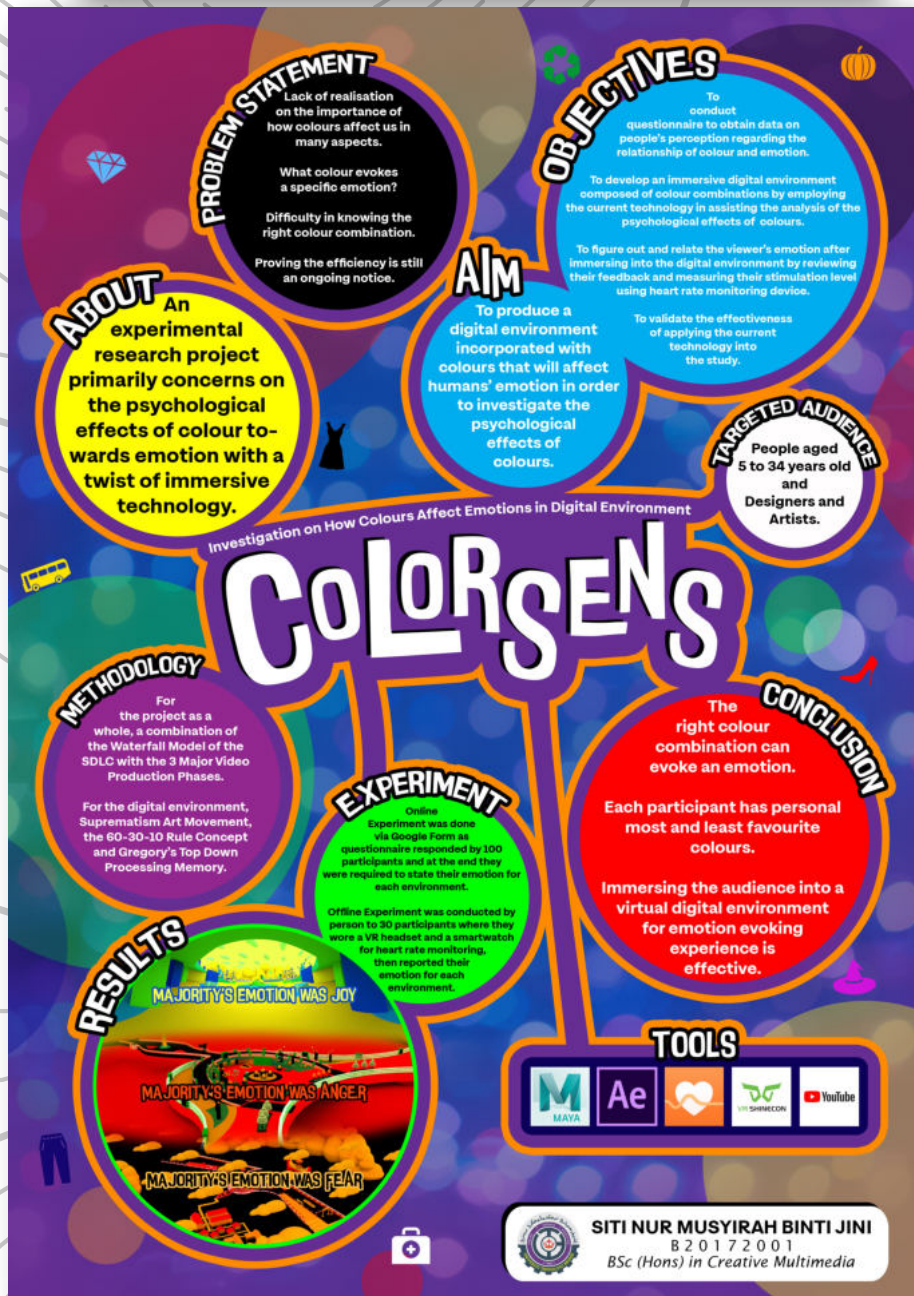
### **Research Study : Spatial Head Tracking with Computer Vision**

Abdul Muizz Haji Kasim

### **Research : Emotion Analysis**

Md Najibudin Hakiim Bin Hj Md Midun

**Experimental Research - COLORSENS : Investigation on How Colours Affect Emotions in Digital Environment**



# MUSYI



**Siti Nur Musyirah Binti Jini**  
BSc (Hons) in Creative Multimedia

Colour is an essential part of our living in this world. Imagine life without colours, even not in black and white because those two are colours too. Life without colours would not be as beautiful as it is now. Additionally, colour gives an emotional impact.

With regards to the things I mentioned above, I have come up with my final year project; COLORSENS. COLORSENS is an experimental research on how colours actually affect one's emotions in a digital environment. It is not just a plain theoretical research as it includes technicalities such as 3D modelling, VR technology and a device to detect emotion.

I have put my discipline to the maximum throughout working on COLORSENS in order to make it one of my best projects ever. With my analytical self, together with my deep interest in emotion engineering and abstract design, I trusted myself that I was doing the right final year project for my undergraduate programme.

*“Be passionate in what you do and have confidence in doing it. Then, you will surely succeed!”*

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- <https://www.behance.net/musyijini>
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- <https://www.instagram.com/musyij>





# MUIZZ

**Abdul Muizz Haji Kasim**  
BSc (Hons) in Digital Media

My final year project is a research work which explores the feasibility of achieving spatial head tracking of a viewer's head in the real world using computer vision solutions. 3D positional information of the head is then used to simulate a 3D viewing effect on the screen which incorporates parallax depth cue effect when the user moves his/her head in the real world.

With those two goals in mind, I developed two alternative methods of achieving spatial head tracking using commonly available peripherals such as webcams as well as making use of low-cost plugins. With the prototype completed, I then performed a series of experiments on them and documented the results in my report.

***"If your family praises your work — then it means it's terrible. If your friend praises your work — then it means it's bad. If a stranger praises your work — then it means it's only good. But if your enemy praises your work — then it means you have done something truly wonderful."***

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[https://www.behance.net/muizz\\_kasim](https://www.behance.net/muizz_kasim)

What made me choose this topic was the fact that, during my time, technologies which were capable of performing 3D head tracking, such as the Microsoft Kinect and Intel RealSense, were quite pricey and can be very difficult to come by. So then I proposed this topic in search of answers which are far more cheaper and accessible than what was currently available.

## Research Study : Spatial Head Tracking with Computer Vision



Abdul Muizz bin Haji Kasim  
B20161128  
Bsc(Hons) in Digital Media

### Spatial Head Tracking with Computer Vision

#### OVERVIEW

A research work project exploring the feasibility of spatial tracking of the user's head in a 3D world space through images captured from a single or multiple cameras.

#### PROBLEM

At the present, there exist multiple ways of handling the issue of 3D object tracking. However, many of these methods often require items which are often difficult to come by, are quite pricy, or requires artificial markers to work.

#### SCOPE

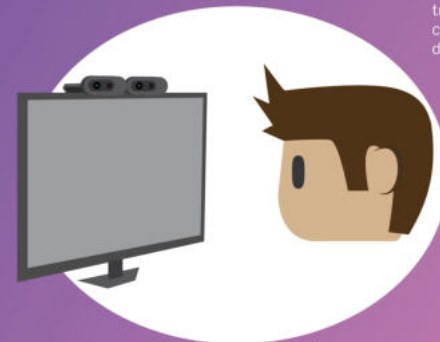
This project is limited to only to the tracking of the user's head. Other body parts and/ or bodily actions such as gestures or postures will not be included.

#### PROPOSED SOLUTIONS

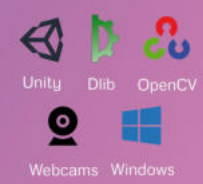
- Implement using commonly available and affordable peripherals like webcams and low-cost addons, i.e. plugins.
- Explore two approaches of implementing spatial head tracking through the single camera approach and the dual camera approach.

#### OBJECTIVES

- To develop alternative, affordable, and more accessible ways of implementing of spatial tracking of the head.
- To experiment on the capability of the proposed technique/ method in achieving spatial head tracking.

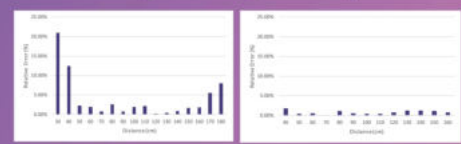


#### TECHNOLOGIES



#### ANALYSIS

Analysis of the two graph plots show that the dual camera approach produces more accurate results as compared to the single camera approach. However, it has a reduced minimum and maximum range than the single camera approach.




Single Camera Approach      Dual Camera Approach

#### RESULTS COMPARISON

	Single Camera Approach	Dual Camera Approach
Cost	Free or \$35	At least \$75
Acc.	95.94% accurate	99.16% accurate
Range	30 cm - 180 cm	40 cm - 160 cm
Sta.	89.1% stability	38.5% stability
Speed	Faster	38.5% stability




**Research : Emotion Analysis**



اينورسيٽي ٽيكنولوگي بروني  
UNIVERSITI TEKNOLOGI BRUNEI

## Emotion Analysis







Md Najibudin Hakiim bin Hj Md Midun  
B20161106  
BSc (HONS) Digital Media



Introduction

There are different methods and processes for machines on detecting emotion. Machines, if trained properly can detect emotions through speech signals, text and most relevantly, facial expressions. This project's main purpose is to detect emotion through facial expressions using computer vision and deep learning more specifically the use of neural networks.

<p style="text-align: center;"><u>Objectives</u></p> <p>Research on facial expression techniques and methods</p> <p>Attempt to develop a working prototype to detect said emotions</p>	<p style="text-align: center;"><u>Target Audience</u></p> <p>Researchers/ Scholars</p> <p>Commercial Industry</p> <p>Government Sectors</p>
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<p style="text-align: center;"><u>WorkFlow</u></p> <p>Obtain Facial Landmarks Data from various images</p> <p style="text-align: center;">↓</p> <p>Normalized the data</p> <p>Create file to label the data</p> <p style="text-align: center;">↓</p> <p>Feed the data into the learning machine</p> <p style="text-align: center;">↓</p> <p>Output</p>	<p style="text-align: center;"><u>Tools</u></p> <div style="display: flex; justify-content: space-around; align-items: center;">    </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;">    </div>
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# NAJIB

**Md Najibudin Hakiim Bin Hj Md Midun**  
BSc (Hons) in Digital Media

Machine learning is quite interesting and it can be implemented in many different ways.

***“The shortest and fastest route is straight ahead.”***

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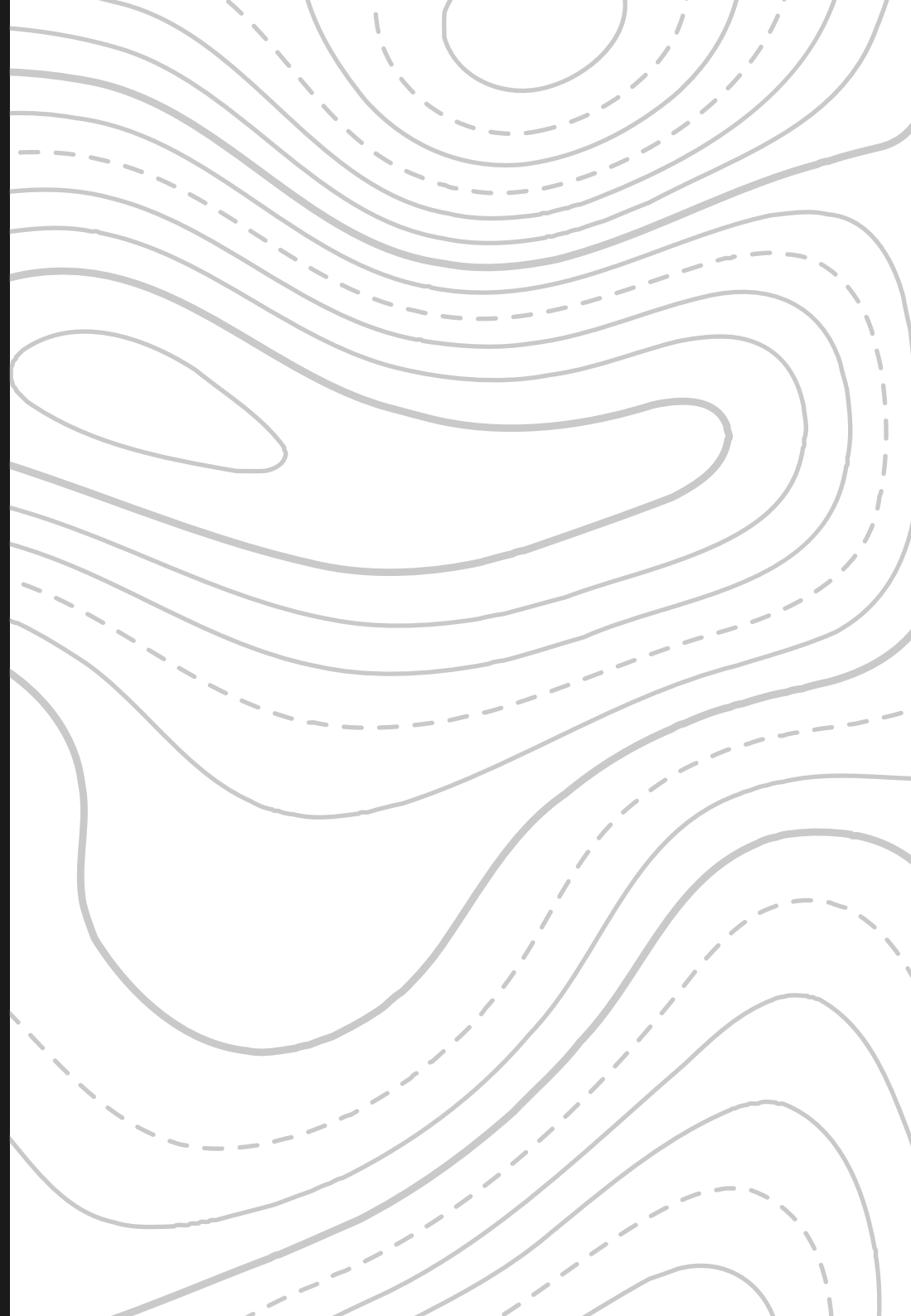
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