POLY-WIDE ELECTIVE

EP0804 INTRODUCTION TO IMMERSIVE MEDIA

Class: Class 01
Session: AY2023/2024 Semester 1
Release Date: Term 1 Week 1, 21st April 2023
Submission and Critique Date: Friday, 23rd Jun 2023 at 8am (Class 01).
Critique Venue: Online MS Teams
Weightage: 30%
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Graded Assignment T1: Create an AR Application

Augmented Reality (AR) takes the real world and enhances it by adding virtual objects, thus giving the user the illusion of a richer environment and enabling designers to create a coherent, interactive experience. The percentage of real and virtual elements within an AR application varies. This continuum spans from reality, via the augmentation of reality with virtual elements, over the enhancement of virtual worlds with real elements, to pure virtuality. AR research has led to the development of many applications of diverse technology that it is difficult to clearly define the boundaries of augmented reality. The combination of the real and the virtual seems to open up boundless possibilities.

Augmented Reality applications have spanned various industries such as education, communications, medicine, industrial training, advertising and promotion, military, construction and design, entertainment, navigation and driving. For example, some AR applications, enable users to apply digital objects into real environments, allowing businesses to use augmented reality devices as a way to preview their products in the real world. Similarly, it can also be used to demo what products may look like in an environment for customers, to allow customers to preview what their products might look like through the use of 3D models. Some examples include augmented reality used to support surgery by providing virtual overlays to guide medical practitioners, to AR content for astronomy and welding. Augmented reality has been explored for many applications.

1.0 Objectives

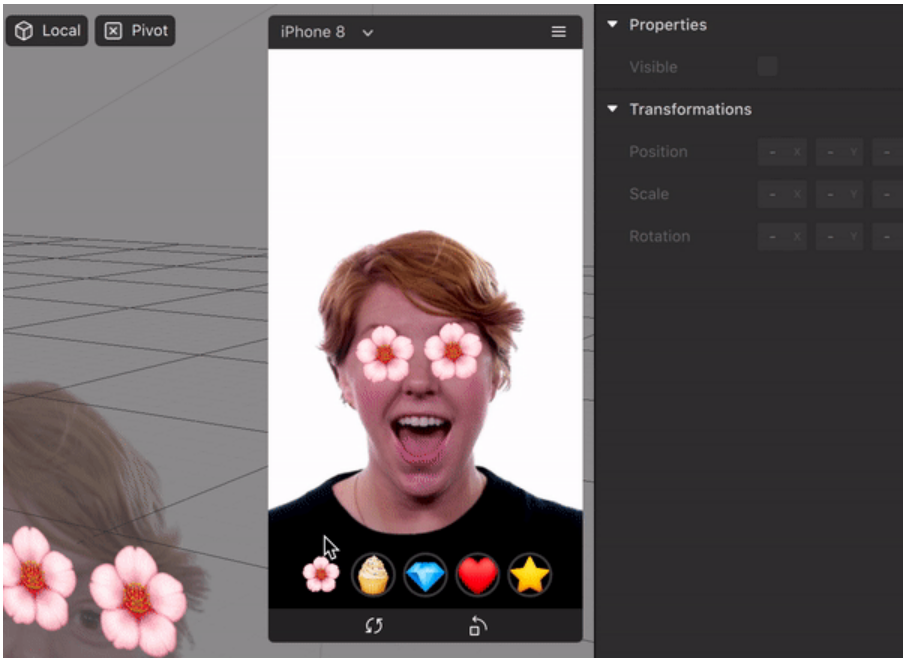
1. To design and develop an AR application using Spark AR Studio.
2. To identify a list of systems required and to design and develop an architecture that links up these systems.
3. Able to add animation, logic and interactivity to your project using the Patch Editor.
4. To understand how software and hardware can be integrated.

2.0 App Requirements

For this assignment, you are required to create an AR application using one of the following trackers in Spark AR Studio:

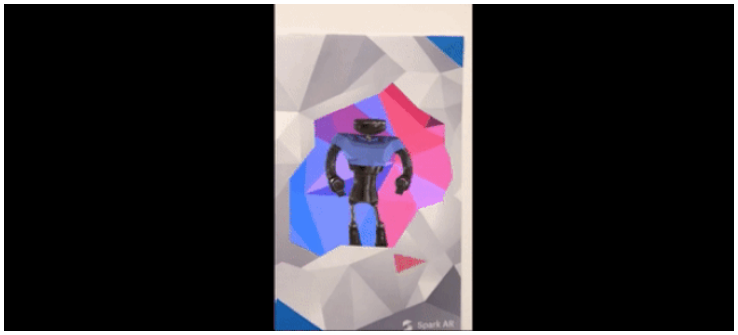
a. Face Tracker
b. Plane Tracker
c. Fixed Target Tracker
d. Hand Tracker

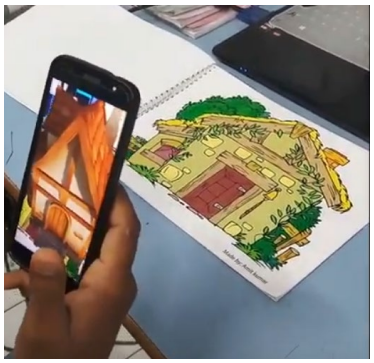
- Face Tracker finds, follows and selects a single face in your scene, you can use face mesh and materials to create effects that responds to or augments someone's face. You can have more than one face tracker in the scene.



- Plane Tracker tracks an infinite, horizontal plane. Currently Spark AR Studio only supports one plane tracker in the scene at a time.

- Fixed Target Tracker to trigger an effect when camera detects a 2D image (the target) on a static surface.





- Hand Tracker finds and follows a single hand in your scene and controls the position of any child objects.

Demonstration your ability in implementation of the following:

- Transformation controls i.e. translation, rotation and scaling
- Material control i.e. color, transparency, texture
- Adding particle effects
- Adding audio
- Adding interactivity
- Adding 2D/3D text
- Adding model animation
- UI design, e.g. adding native UI slider, native UI picker
- Use of appropriate visuals and sense of aesthetics to match the theme
- Testing and porting of application to handheld mobile device
- Must make use of built-in front and/or rear camera on handheld device for live capture of real world

The following are some AR apps for your reference and research:

- WallaMe
- Ink Hunter
- YouCam Makeup

- IKEA Place
- Snapchat
- Instagram
- Holo
- BBC Civilisations AR

1. This is an individual graded assignment, which constitutes **30%** of overall module weightage.
2. Development platform is using Spark AR Studio.
3. Published application must be runnable on mobile platforms.
4. Screen orientation for handheld device can be either in **landscape or portrait mode**.
5. Ready or custom-made textures and models are accepted.
6. Submission date will be on **Friday, 23rd Jun 2023 at 8am (Class 01)**. However, there will be an **interim check on 4th week** upon release of brief. Each student is required to **submit a proposal using AR App Proposal Template (Your Name).docx.**
7. Submission channel is through Brightspace, submission should contain all **project files** and student name and ID in zipped format i.e. Student Name (Student ID).zip. You are also required to **capture and submit a video of your app** using another mobile device or any other video capture tools. **All physical markers used for AR demonstration must be included for submission.**
8. Application must also be tested on the handheld device before submission deadline.
9. There will be an individual presentation of the developed application.
10. Weekly hands-on practice and in-class exercises do help you towards building up the application to be delivered. Hence, it is extremely important to make an effort to attend these lessons promptly.
11. Late or non-submissions and plagiarism will be awarded zero mark. Incomplete submission will be penalized for not fulfilling requirements.

3.0 Assessment Criteria

This assignment is based on the following assessment criteria.

Item	Category	Description	Weightage	"A" Grade Rubrics
1	Software Proficiency	The use of appropriate tools to add assets, logic and interactivity.	20%	Tools are all used appropriately with innovations. Show mastery of the software and its features.
2	Planning of Systems	Clarity and systematic design in planning of objects to achieve requirements.	20%	Efficient, systematic and clear organization of objects. Meets all of app design needs. Optimized, and allows scope to expand the app and system design.
3	Organization	Ability to organize the workspace and project files and to name objects according to conventions.	10%	Workspace and project files are neatly organized. Good naming convention applied, such that the intended purpose is understood immediately.

4	Features Implementation and Creativity	Application functions as intended, gesture-based controls, UI functionalities.	30%	Program runs robustly. Extremely detailed with extensive planning and development of functionalities, intuitive and user-friendly UI.
5	Visual Aesthetics and Appeal	Quality of overall layout and presentation.	20%	Very strong in presentation style. All graphics and audio elements are very well developed and have excellent control layout, typography and sense of color. Design has good focus and match closely with theme.
		Total	**100%**	

WARNING!

- Plagiarism will be awarded zero mark and disciplinary action will be taken against offenders. If found guilty, one may fail the module and/or even be liable for expulsion.
- Work submitted within 1 hour after submission time will be deducted 10 marks from raw score.
- Work submitted 1 hour after submission time will be award zero marks.
- If student submits work as required but does not show up for critiques, submitted works are assessed and 50% will be deducted from total raw score.
- Technical failure attributed by hardware or software failure e.g. laptop infected with virus with project files wipeout, hardware failure in external hard disk, is not considered as a valid reason for deadline extension.
- Submit official documents e.g. MC, official letters within 2 working days from the last date of LOA.
- If a student is sick, there must have a Medical Certificate (MC) for the day of critique or submission. Letters from parents/guardians are considered as NOT valid for Leave of Absence (LOA).
- Students must do the following:
  - The student must inform tutor personally via email/phone/text message BEFORE the start of the critique or submission. Otherwise, late submission rules will still apply.
- Student will need to follow up and submit the LOA within 2 working days after expiration of the MC. Late submissions will not be accepted.