



Everything XR

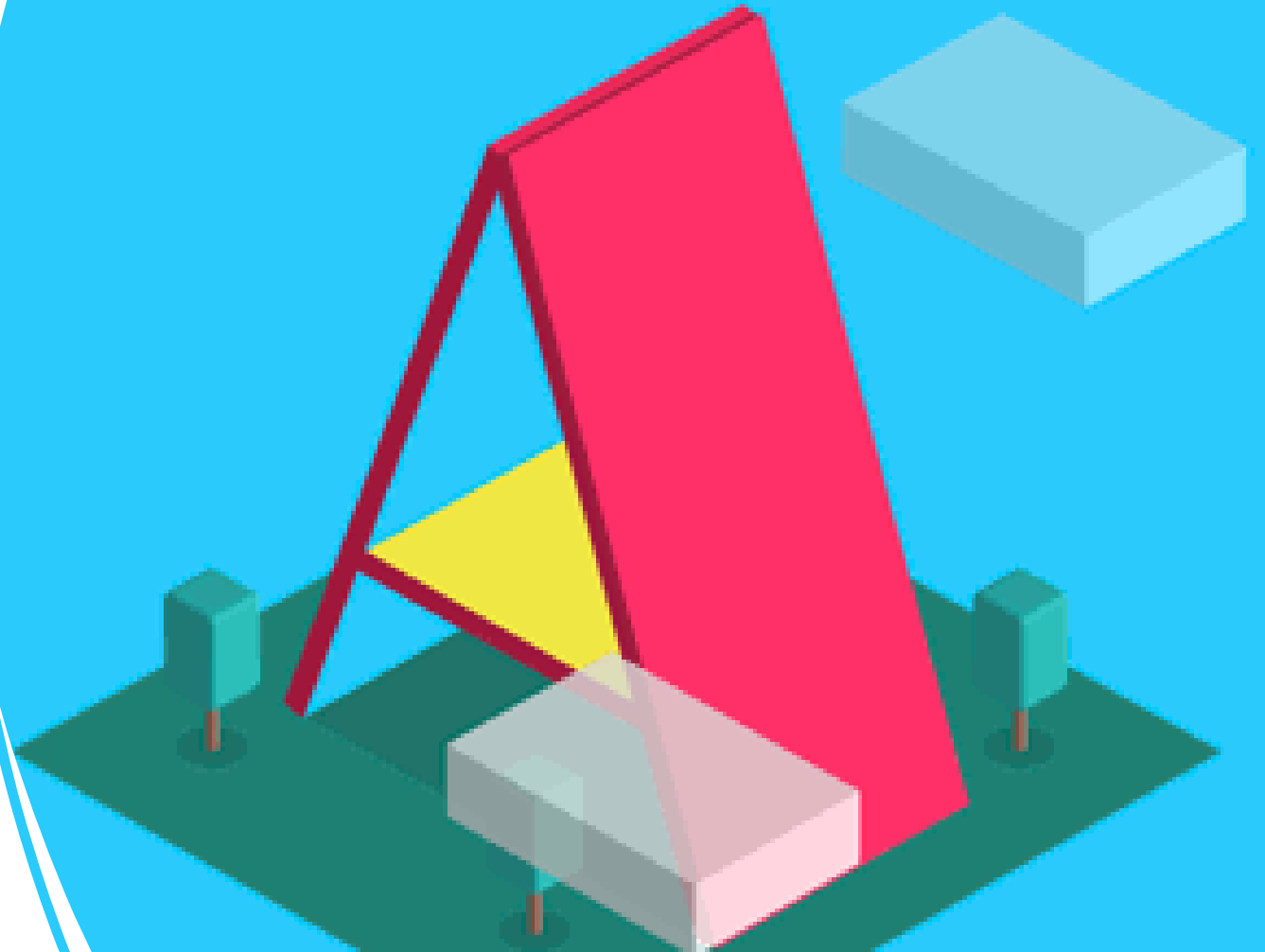
NuXR

WebAR Workshop

A-FRAME

A-FRAME

- Web framework for building virtual reality (VR) experiences.
- A-Frame is based on top of HTML and WebGL
- Is an independent open source project.
- Originally conceived within Mozilla and now maintained by the co-creators of A-Frame within Supermedium.



Why A-FRAME ?

- VR Made Simple
- Declarative HTML
- Entity-Component Architecture
- Cross-Platform VR
- Performance
- Visual Inspector
- Components
- Proven and Scalable



What Browsers Support A-FRAME?

- Safari for iOS
- Firefox for iOS
- Chrome for Android
- Samsung Internet
- UC Browser



Which VR Headsets Does A-Frame Support?

- HTC Vive
- Oculus Rift
- Oculus Quest
- Oculus Go
- Google Daydream
- Samsung GearVR
- Vive Focus

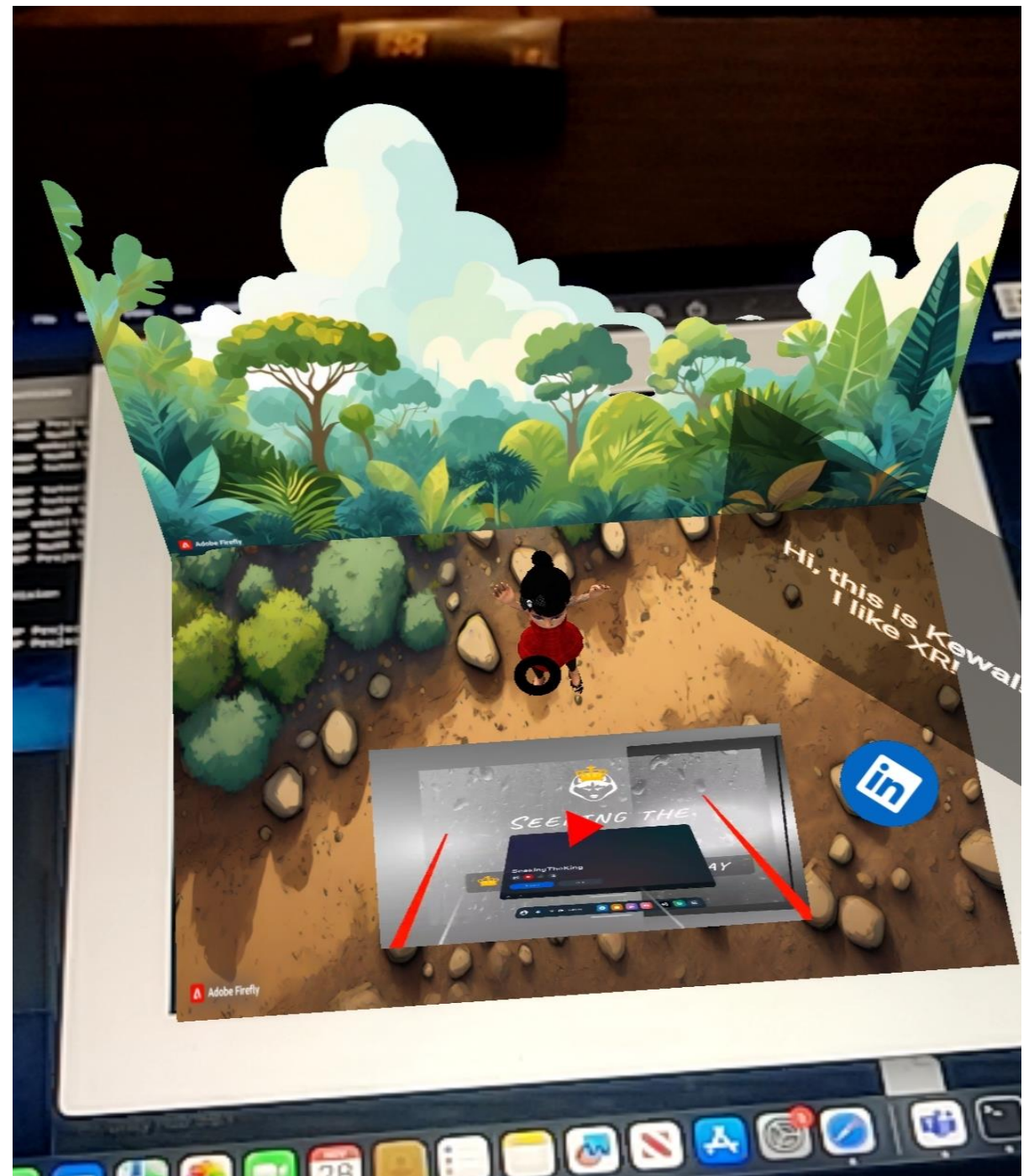


What are we making ?

Interactive AR portfolio experience.

What do we need ?

- Laptop/Tablet
- Mobile device
- Glitch account
- Adobe account (Optional)
- SketchFab account (Optional)



Env Setup

Glitch.com



Basic Template

- **HTML BASIC TEMPLATE**

- **CDN**

```
<script  
src="https://aframe.io/releases/1.4.0/aframe.min.js"></scri  
pt>
```

- **Initialize the scene**

```
<a-scene>  
</a-scene>
```



Primitive Elements

- `<a-box position="-1 0.5 -3" rotation="0 45 0" color="#4CC3D9"></a-box>`
- `<a-sky radius="10" color="#F00"></a-sky>`



Changing Properties

- `<a-box position="-1 0.5 -3" rotation="0 45 0" color="#4CC3D9"></a-box>`
- `<a-sky radius="10" color="#F00"></a-sky>`





Visual Inspector

Windows :
<ctrl> + <alt>
+ i

MAC : <ctrl>
+ <option> + i

AR.js

- AR.js is a lightweight library for Augmented Reality on the Web, which includes features like Image Tracking, Location based AR and Marker tracking.
- Web, means to avoid all the Mobile app development efforts and costs related to App stores (validation, time to publish). It also means to re-use well known technologies like Javascript, HTML and CSS, familiar to a lot of developers and possibly designers.
- <https://ar-js-org.github.io/AR.js-Docs/>



AR.js Basic Template

- **CDN**

```
<script src="https://raw.githack.com/AR-js-org/AR.js/master/aframe/build/aframe-ar.js">
```

- **Initialize the scene**

```
<a-scene  
  vr-mode-ui="enabled: false;"  
  renderer="logarithmicDepthBuffer: false;"  
  embedded  
  arjs="trackingMethod: best;"  
>  
</a-scene>
```





Markers

In build markers : hiro , Kanji

```
<a-marker preset="hiro">  
</a-marker>
```

Custom Markers :

<https://jeromeetienne.github.io/AR.js/three.js/examples/marker-training/examples/generator.html>



Asset collection or generation

Adobe creative cloud : 2D/3D content

Mixamo : Free 3d characters + animations

Firefly

Express

SketchFab : 3D content

<https://sketchfab.com/feed>

Asset Management System

- Preload and Cache assets for better performance.

```
<!-- Asset management system. -->  
<a-assets>  
  <a-asset-item  
    id="pacman" src="https://cdn.glitch.global/88fa00fb-8324-4d32-a1d3-7fa450ed8fbd/pacman_arcade__animation.glb?v=1697529456784">  
  </a-asset-item>  
  
</a-assets>
```



Animating Characters

Aframe-extras :
animation-mixer



About me!

Introduction to :

- Planes
 - Text
- 



Socials!

Introduction to :

- Images

Interactions

- 2D Browser Events
- Gaze Events
- Controller

(click, mouseenter, mouseleave, touchstart, touchend)





Components

- Components of A-Frame's entity-component framework are JavaScript modules that can be mixed, matched, and composed onto entities to build appearance, behavior, and functionality.
- Components are configurable, reusable, and shareable.
- Most code in an A-Frame application should live within components.



Project demo

Introduction to :

- Video





Contest!



Submit your WebAR experience to win NuXR Hoodies.

Deadline : 12/05/2023

Topic : Anything





Showcase

- <https://github.com/bryik/aframe-ball-throw>
 - <https://accessmars.withgoogle.com>
- <https://d1vlj71acq3rf7.cloudfront.net/index.html>
- https://www.linkedin.com/posts/tks-yoshinaga_webar-webvr-webxr-activity-7042052698967326720-4031?utm_source=share&utm_medium=member_desktop



Resources

- <https://ar-js-org.github.io/AR.js-Docs/>
 - <https://sketchfab.com/feed>
 - <https://aframe.io/>
- <https://www.mixamo.com/#/>
 - <https://firefly.adobe.com/>



AR SDK DEVELOPMENT

NuXR Project Alert :

Interested in Building an SDK like AR.js from scratch ?

Contact : gokuldas.k@northeastern.edu
oak.sa@northeastern.edu



NuXR Core Team



Interested in the XR domain ?

Want to build the XR community at Northeastern University ?

Join the NuXR core team !

Contact : gokuldas.k@northeastern.edu
oak.sa@northeastern.edu





Thanks !

Join the NuXR Discord group -
<https://discord.gg/nvRFWQ7m>