**LIGHTSHIP TEMPLATES CHALLENGE** **– CLOSING DATE 30th JUNE OR RESEARCH PUBLICATION**

<https://lightship.lenslist.co/>

**Competition scope**: Must leverage a template entry to be eligible, can reuse/build upon that template or even combine templates.

Graphical user interface, application

Description automatically generated

* **Current Maths VR game**

The Maths VR game focusses on rapid gameplay where the core mechanic is to select/chose and combine a series of currently available numbers to achieve target numbers in the shortest time possible.

Graphical user interface, application

Description automatically generated

The main game play limitation is that the trajectory or behaviour of the blocks to collect is linear, static, predictable and does not react/interact with the world around it.

Lightship offers the ability to interact with and respond to the physical world and make the gameplay more dynamic and situational, taking advantage and making use of the physical characteristics of the environment e.g., contextual awareness, visual positioning system and AR fundamentals.

* **Proposed approach – first prototype**

Create a VR prototype and make the behaviour of the blocks more like the footballs in the video i.e., interact with the environment and each other.

A screenshot of a computer

Description automatically generated with medium confidence

Creating an Infinite Bouncing Ball with Physic Materials (Unity Tutorial)

<https://youtu.be/ZOxnizAvMys>

Add an invisible boundary to the space around the player and adjust the behaviour/physics of the balls to ensure they can not leave this invisible boundary e.g., limit height the ball can go up to before it slows down and starts to fall back down.

Diagram

Description automatically generated with medium confidence

Add objects to the world which changes the way the ball bounces/interacts with the object based on the material and surface type.

Diagram

Description automatically generated

* **Second prototype – AR Lightship internal**

Port this to AR using Lightship and allow the balls to interact with the physical world but in this instance try to change the trajectory/behaviour of the ball based on the type of plane it interacts with and area e.g., floor using semantic segmentation.

A picture containing text, indoor

Description automatically generated

The ball would respond to and interact with the physical world

* **Third prototype - AR Lightship external in a specific location with VPS**

Using Lightship, allow the balls to interact with the physical world but in this instance try to change the trajectory/behaviour of the ball based on the type of plane it interacts with and area e.g., swing or roundabout and whether it is on the ground or moving towards the sky using semantic segmentation.

A group of people at a playground

Description automatically generated with low confidence

* **Fourth prototype - AR Lightship external with core mechanics from Maths VR and VPS**

Extract the core mechanics and structure of the existing Maths VR game and make the behaviour of the blocks interact with the physical environment and a specific location e.g., playground.

**A group of people at a playground

Description automatically generated with low confidence**

**Useful links**

Creating an Infinite Bouncing Ball with Physic Materials (Unity Tutorial)

<https://youtu.be/ZOxnizAvMys>

Unity3D Physics - Rigidbodies, Colliders, Triggers

<https://youtu.be/dLYTwDQmjdo>

Ball game with unity 3D, control the ball like golf battle

<https://youtu.be/xZ0pPnm3tDI>

How to make Jelly Mesh in unity || Softbody(tutorial)

<https://youtu.be/Kwh4TkQqqf8>

Tennis Game - EP3 - (Ball Hitting) - Unity Tutorial

<https://youtu.be/vbQKBP_AEuc>

Animated Bouncing Balls in Unity Tutorial

<https://youtu.be/Os_8fT2-oVs>

Ball Throw With Curve

<https://assetstore.unity.com/packages/tools/modeling/ball-throw-with-curve-119482#description>

Beach Ball Particles

<https://assetstore.unity.com/packages/vfx/particles/spells/beach-ball-particles-6885>