

ParrotAttacks VR

Spieleentwicklung in VR mit Unity 3D

Christoph Bergemann, Thomas Endres,

München, 18.05.2018





CHRISTOPH BERGEMANN



THOMAS ENDRES



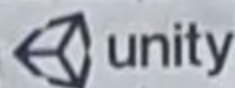
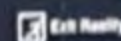
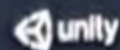
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Eck-VR.com

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HOTEL zetta



1:10

20



PARROT ATTACKS



DEMO

Virtual Reality



SPRINT VECTOR

SPRINT VECTOR





Tools



STEAM® VR







Center Local



Collab



Account

Layers

Layout

Hierarchy

Create Q*All

- minigame
 - Directional Light
 - Ground
 - Player
 - Main Camera
 - Walls

Project

Create Q

- _scenes
- Materials
 - Background
- Scripts
 - CameraController
 - PlayerController

Scene Game

Shaded 2D



Inspector

Player Static

Tag Untagged Layer Default

Transform

Position X 0 Y 0.5 Z 0

Rotation X 0 Y 0 Z 0

Scale X 1 Y 1 Z 1

Sphere (Mesh Filter)

Mesh Sphere

Sphere Collider

Is Trigger

Material None (Physic Mater)

Center X 0 Y 0 Z 0

Radius 0.5

Mesh Renderer

Lighting

Materials

Dynamic Occluded

Rigidbody

Mass 1

Drag 0

Angular Drag 0.05

Use Gravity

Is Kinematic

Interpolate None

Collision Detection Discrete

Constraints

Player Controller (Scri

Inspector

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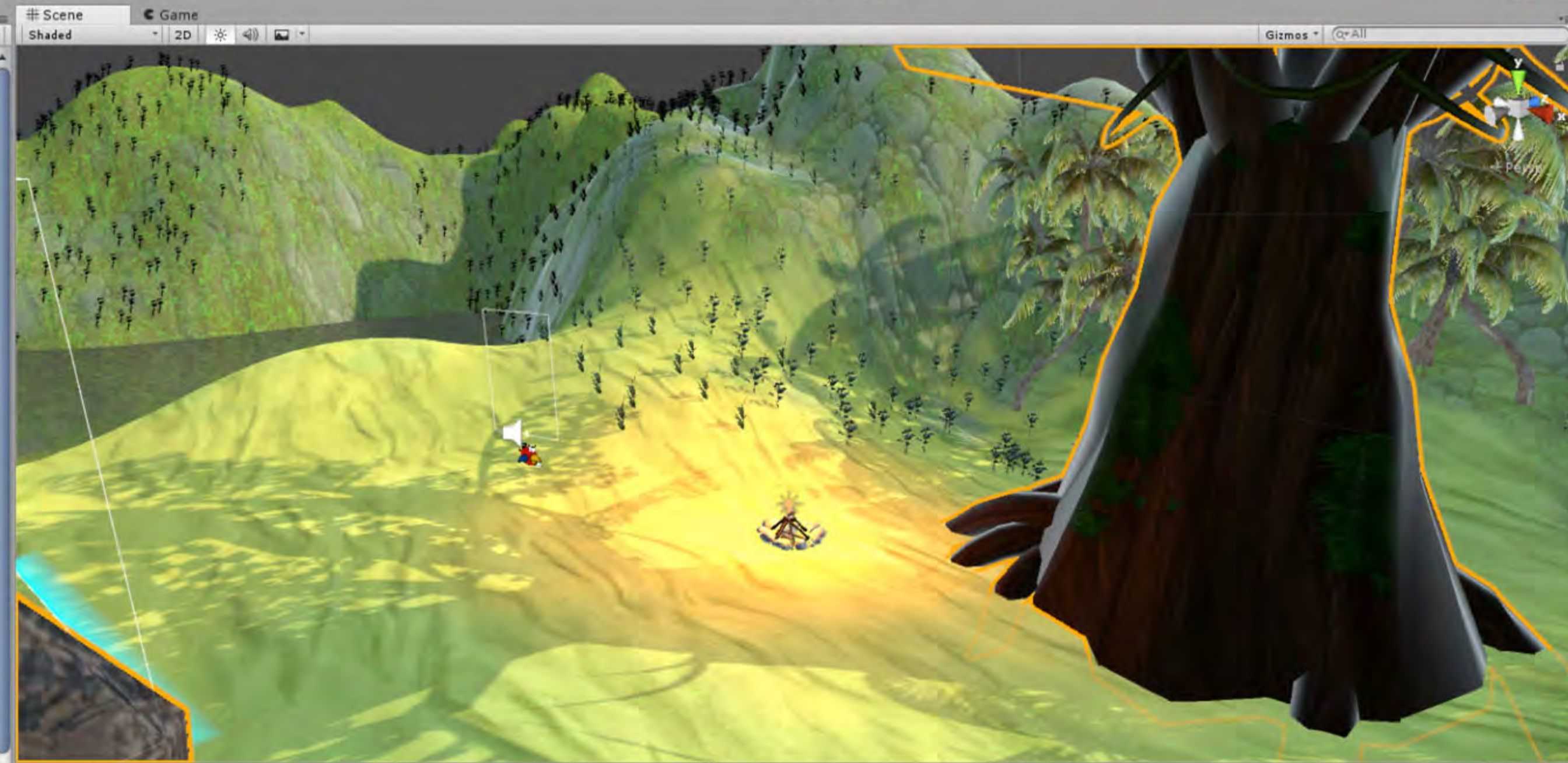
Constraints

Player Controller (Scri

ParrotAttacks VR

Project

- Foreign Assets
- game
- menu
- menu_alternative
- MenuAssets
- Plugins
- Resources
- Scripts
- Shaders
- Standard Assets
 - Characters
 - CrossPlatformInput
 - Editor
 - Effects
 - Environment
 - ParticleSystems
 - Materials
 - ParticleAfterburner
 - ParticleDuststorm
 - ParticleFireball
 - ParticleFirecloud
 - ParticleFirework
 - ParticleFlameLicks
 - ParticleFlames
 - ParticleGlow
 - ParticleSmokeBlack
 - ParticleSmokeMobile
 - ParticleSmokeVertlit
 - ParticleSmokeWhite
 - ParticleSpark
 - ParticleSplashes
 - ParticleSpray
 - ParticleSteam
 - ParticleSteamMobile
 - ParticleWaterSpray
 - Prefabs
 - Scripts
 - AfterburnerPhysicsForce
 - ExplosionFireAndDebris
 - ExplosionPhysicsForce
 - Explosive
 - ExtinguishableParticleSy
 - FireLight
 - Hose
 - ParticleSystemMultiplier
 - SmokeParticles
 - WaterHoseParticles
 - Shaders
 - Textures
 - ParticleSystemsGuidelines
 - PhysicsMaterials
 - Utility
 - SteamVR
 - Editor
 - InteractionSystem
 - Core



Hierarchy

- game
 - Water
 - Terrain
 - baobab
 - Rock
 - Campfire
 - Directional Light
 - FPSController
 - CameraRig
 - Bird
 - Score

Console

Inspector

Terrain Data: New Terrain

Enable Tree Collider:

Audio Source

- AudioClip: ambientloop
- Output: None (Audio Mixer Group)
- Mute:
- Bypass Effects:
- Bypass Listener Effe:
- Bypass Reverb Zone:
- Play On Awake:
- Loop:
- Priority: 128
- Volume: 1
- Pitch: 1
- Stereo Pan: 0
- Spatial Blend: 0
- Reverb Zone Mix: 1

3D Sound Settings

Score Tracker (Script)

- Script: ScoreTracker

Score Cloner (Script)

- Script: ScoreCloner

Game Controller (Script)

- Script: GameController

Time Tracker (Script)

- Script: TimeTracker
- Game Start Audio Cl: game-start
- Game End Audio Cliq: game-end
- Time Running Audio: time-running

Game Fader (Script)

- Script: GameFader

Bird Cloner (Script)

- Script: BirdCloner

Shot Controller (Script)

- Script: ShotController

Perk Tracker (Script)

- Script: PerkTracker

Kill Dispatcher (Script)

- Script: KillDispatcher

Shot Controller (Script)

- Script: ShotController

Perk Enabler (Script)

- Script: PerkEnabler

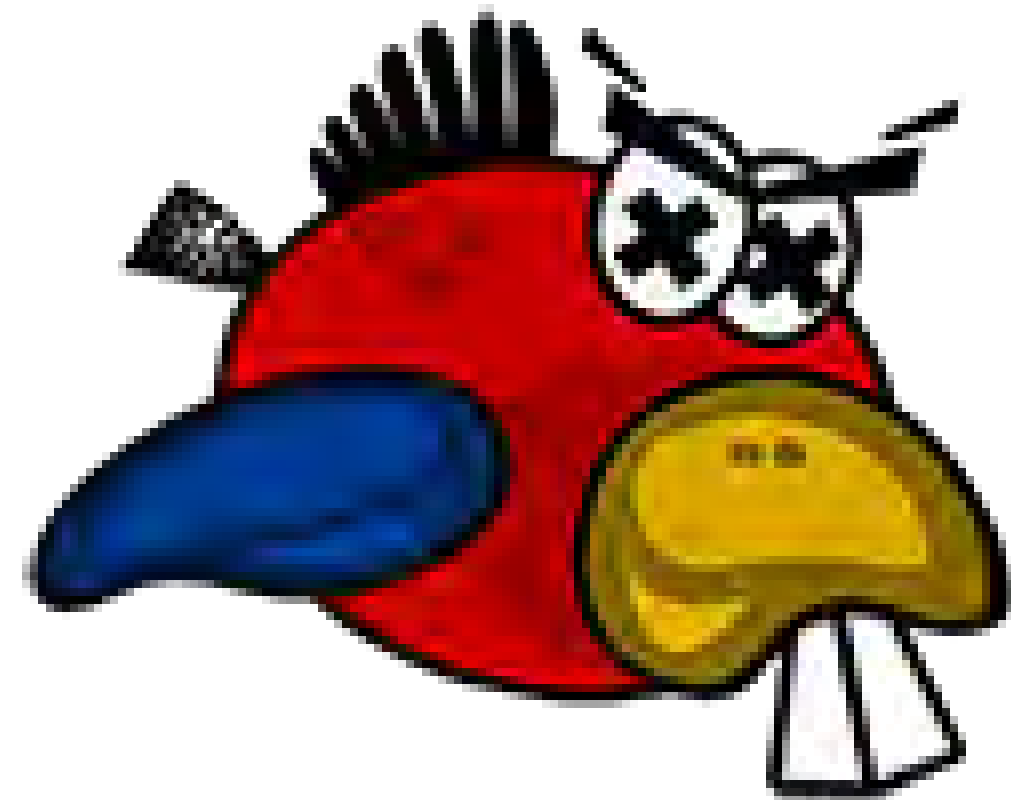
Fast Kill Perk (Script)

- Script: FastKillPerk
- Enabled:

Erzeugung der Vögel

- Niemals im Sichtfeld
- Maximal n Vögel gleichzeitig
- Maximal ein Vogel / Sekunde
- Zufällige Entfernung zum Spieler
- Zufällige Größe/Geschwindigkeit

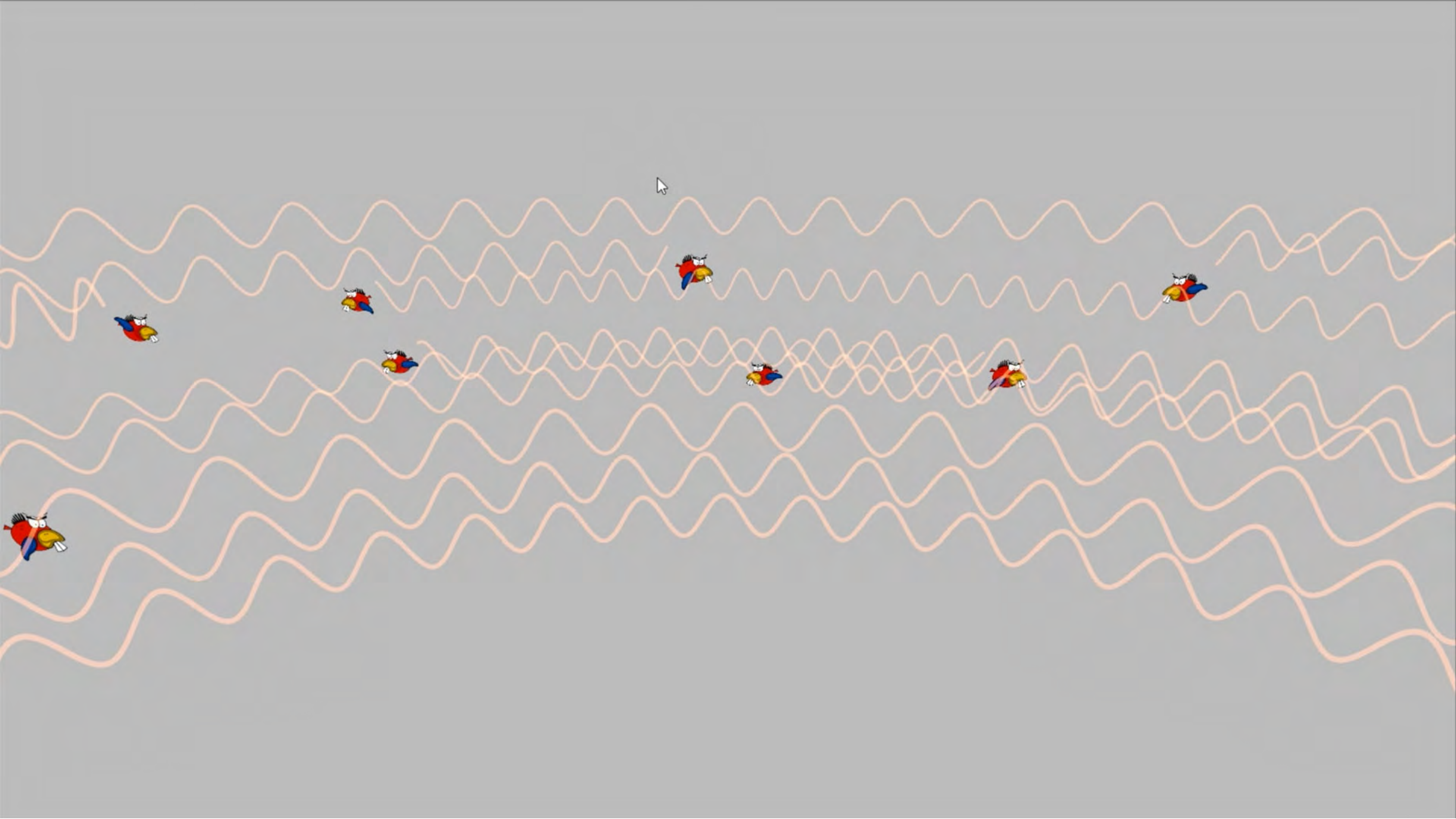
Darstellung



銀 銀 銀 銀



Game interface elements including a character portrait, three status bars (green, red, blue), a yellow label '041-1', and a toolbar with icons for a starburst, a hand, a horse, crossed swords, and a shield.



Replay-System

UI-Design

PICKED UP A CLIP.



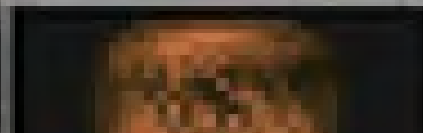
24

79%

2

3

9



0%

20

BULL 124 / 200

SCORE 0
TIME 0:48



PLAY THE GAME



HELLO
MY NAME IS

POLLY



PARROTSONJAVA.COM

HIGH/LOW SCORE

W/A

1ST	2ND	3	4TH	5TH	6
100	100	0	100	100	0
100	100	0	100	100	0
100	100	0	100	100	0
100	100	0	100	100	0
100	100	0	100	100	0

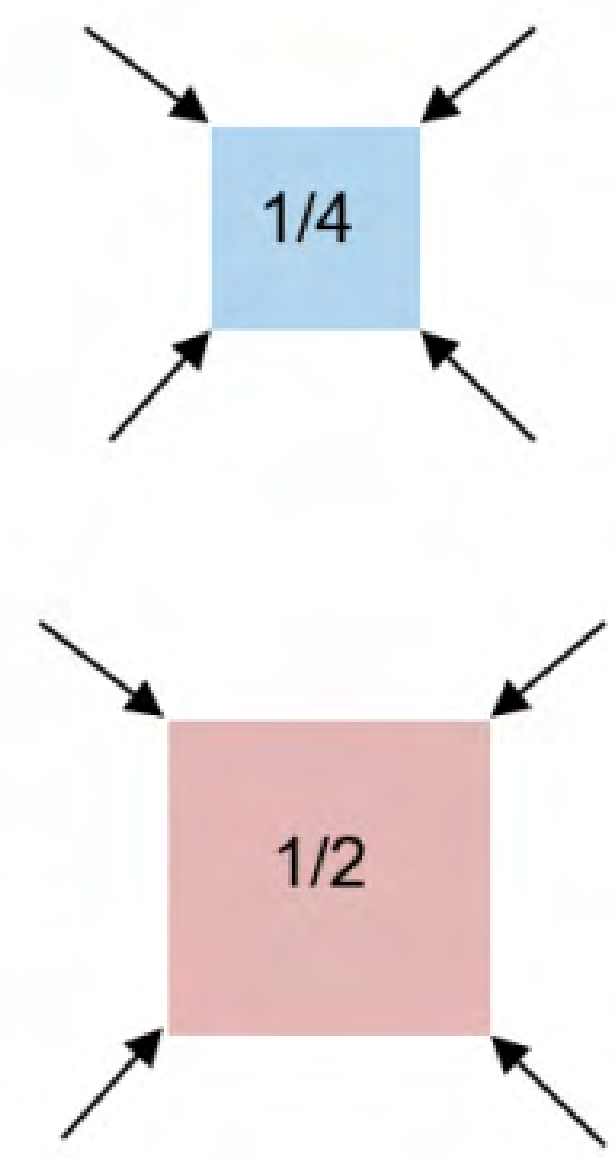
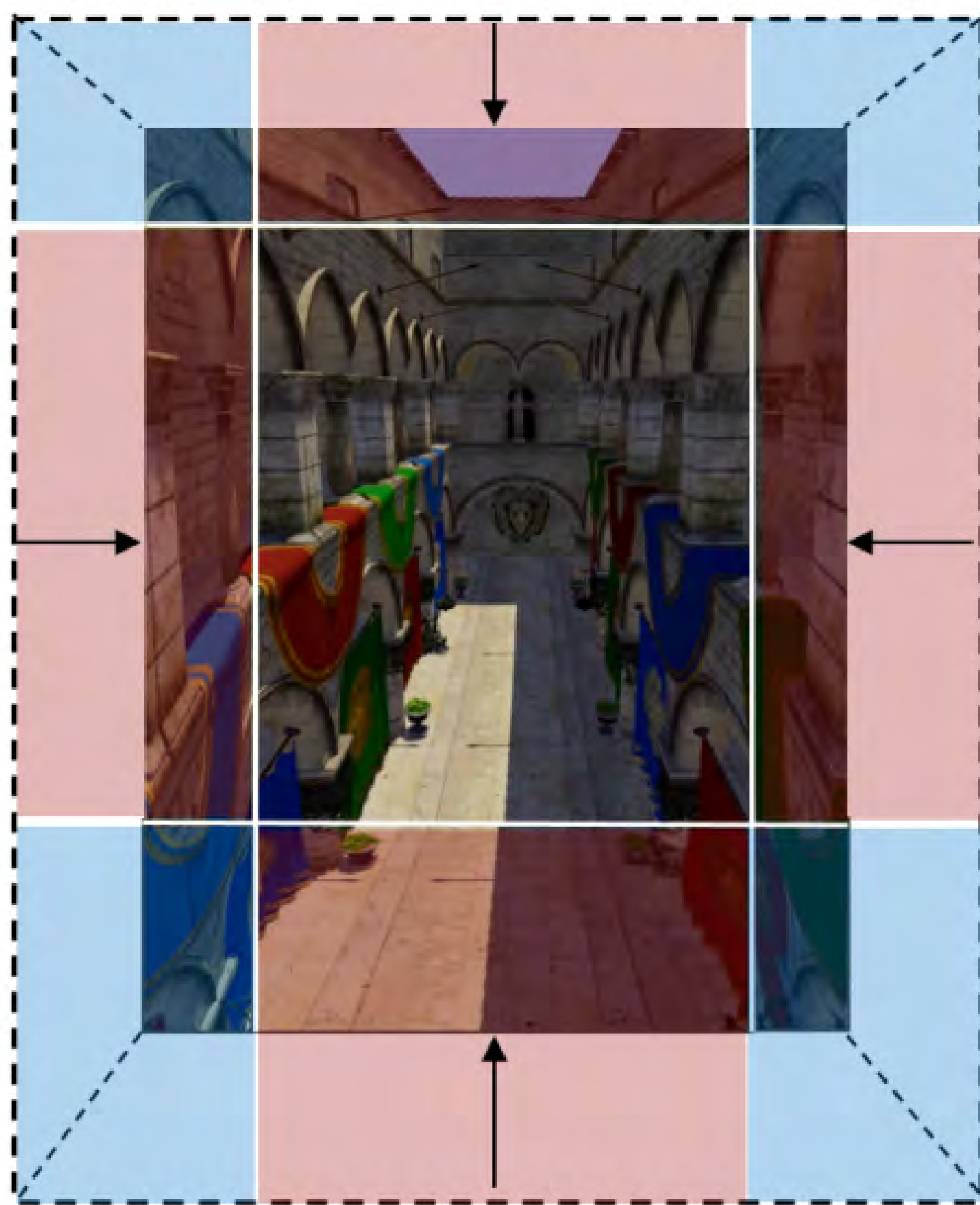
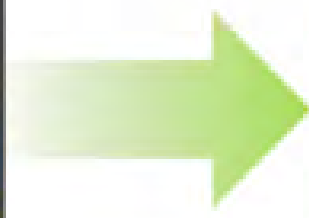
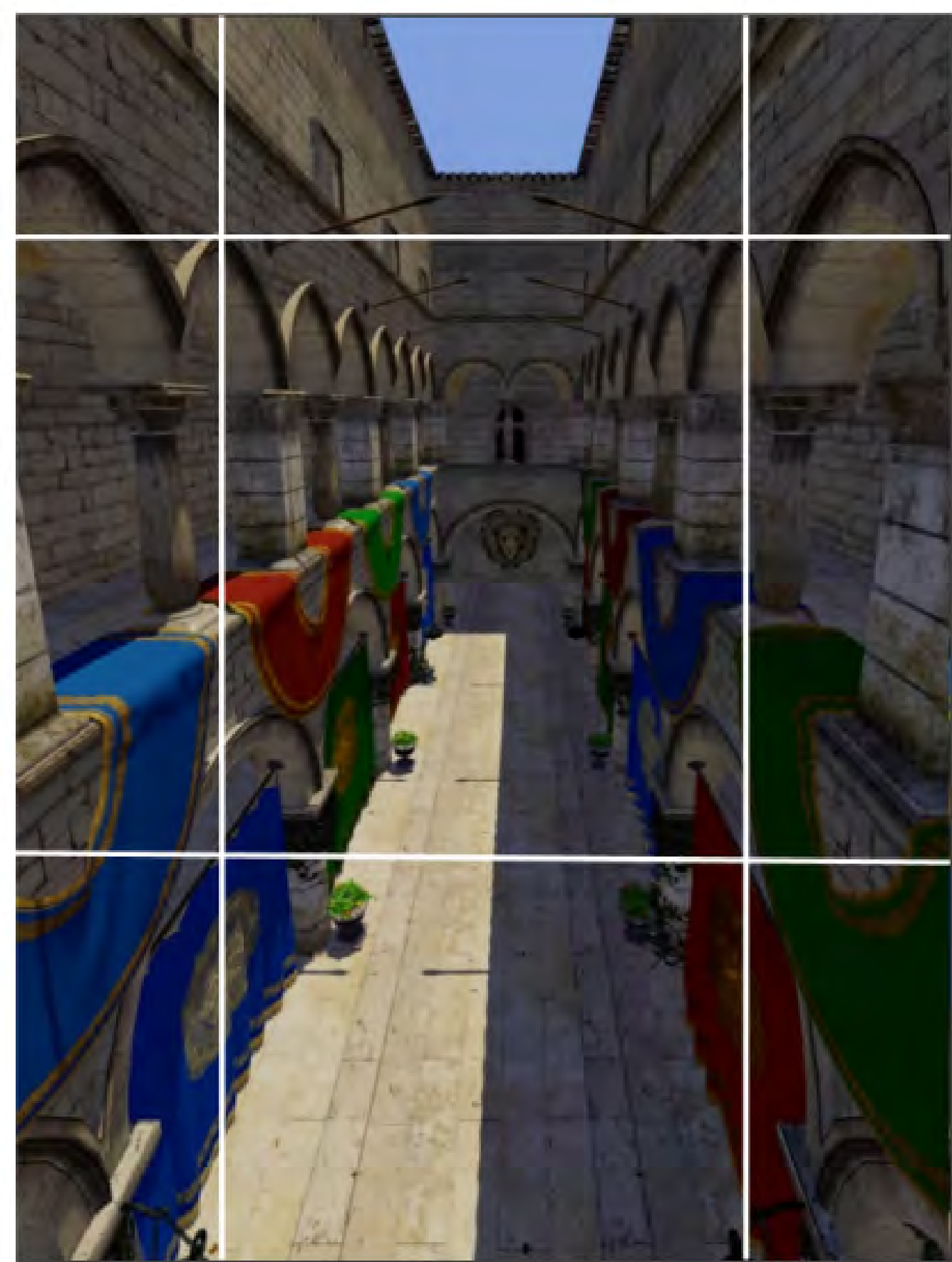


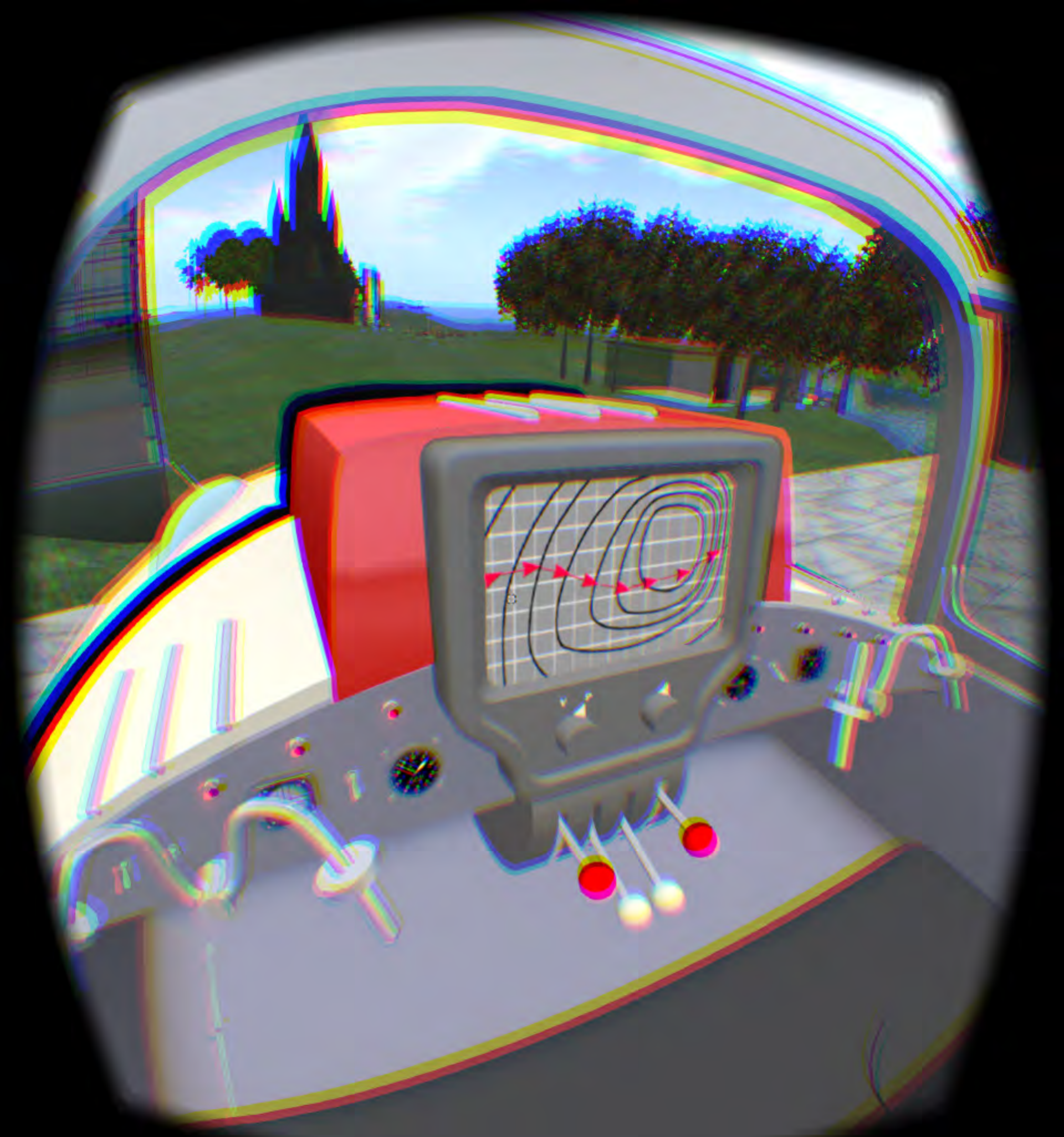
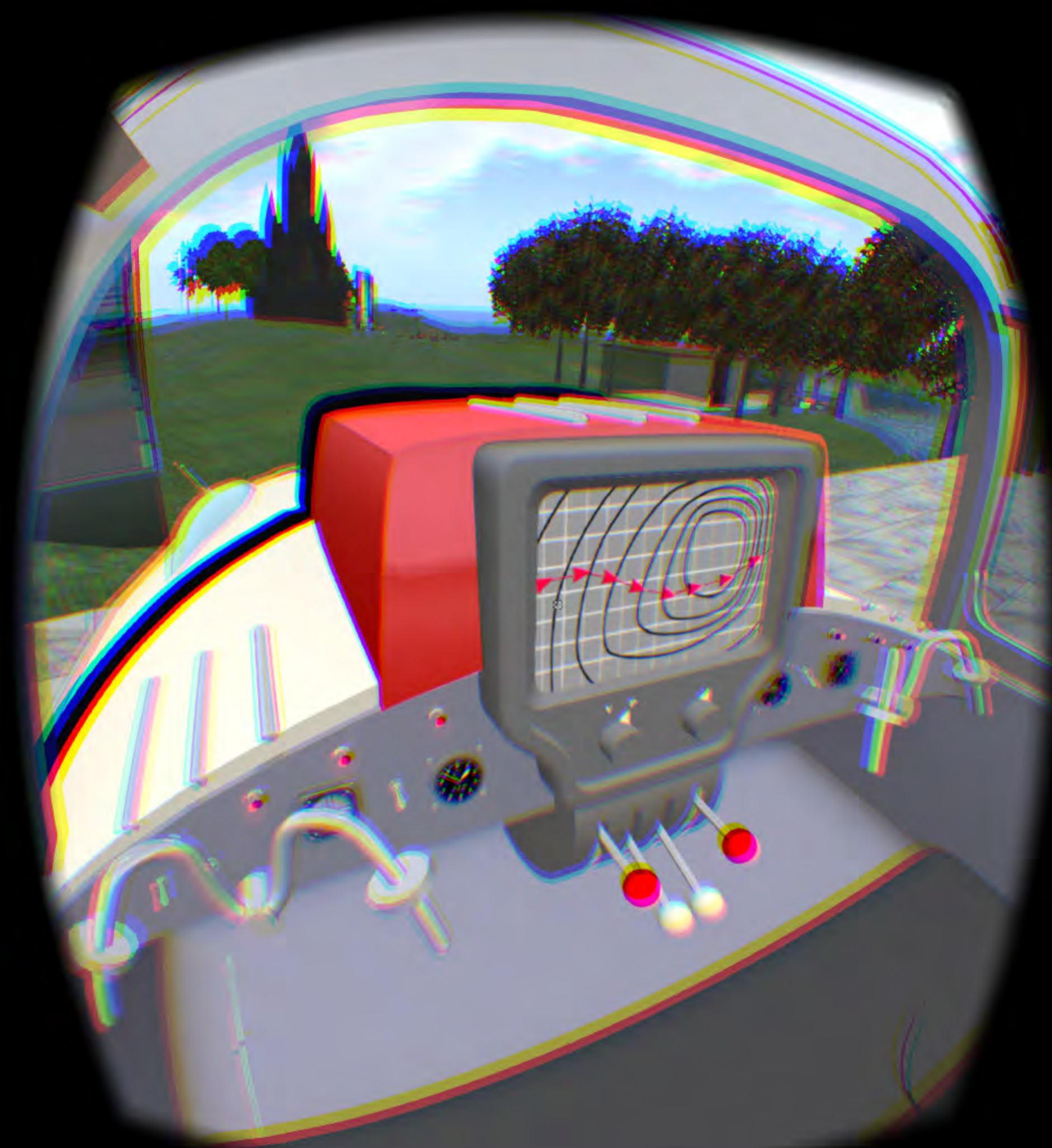
Herausforderungen VR-Rendering

- 90 fps, zwei verschiedene Ansichten
- Naive Auflösung (Oculus, Vive): 2160x1200
 - + Lens Warp Overhead = 3024x1680
 - + Super-Sampling, Anisotropy-Aliasing



Alex Vlachos, Valve, GDC 2015





Game Engines

Modes



Search Classes

- Recently Placed
- Basic
 - Empty Actor
- Lights
 - Empty Character
- Cinematic
 - Empty Pawn
- Visual Effects
 - Point Light
- Geometry
 - Player Start
- Volumes
 - Cube
 - Sphere
 - Cylinder
 - Cone
 - Plane
 - Box Trigger
 - Sphere Trigger
- All Classes



World Outliner

<Selected Objects> 6 obj

Search

Transform

Location: Multipl Multipl Multipl

Rotation: Multipl Multipl Multipl

Scale: Multipl Multipl Multipl

Mobility: Stt Stt Mc

Static Mesh

Static Mesh: None Multiple Value

Materials

Element 0: Display 3 materials

Physics

Simulate Phys:

MassInKg: 0,0

Linear Dampin: 0,01

Angular Dampit: 0,0

Enable Gravity:

Constraints

Ignore Radial In:

Ignore Radial F:

Apply Impulse:

Collision

Simulation Gen:

Phys Material: None

Generate Overl:

Can Character: Yes

Collision Prese: Default

Lighting

Overridden: 32

Lightmass Sett:

Cast Shadow:

Rendering

Content Browser

Add New Import Save All Content

Filters Search Content



Audio Blueprints Character Effects Env Maps Sounds Vehicles Weapons



9 items View Options

Create Object X Console X

- AI
- Area
- Brush
- Entity
- Geom Entity
- Particle Entity
- Archetype Entity
- Audio
- Designer
- Game Custom
- Misc
- Prefab

Level Explorer

File Edit View Active Layer: AB01

Search

V	F	Name
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB01
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB01_Gameplay
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB01_PFX
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB02
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB02_Gameplay
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB02_PFX
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ParticleEffect53
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ParticleEffect54
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ParticleEffect55
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ParticleEffect56
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ParticleEffect57
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ground_smoke_ptx5
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB03
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB03_Gameplay
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB03_PFX
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB04
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB04_Gameplay
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB04_PFX
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB04
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB04_WaterVolume1
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AB04_waterfall_splash
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Decal10
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Decal11
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Decal12
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Decal6
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Decal7
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Decal8
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Road9
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SpawnPoint4
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	canyon_rock_d180
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	canyon_rock_d181
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	canyon_rock_d182
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	canyon_rock_d253
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	canyon_rock_d286
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	canyon_rock_d287
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	canyon_rock_d288
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	canyon_rock_d289



Properties Terrain Editor X

canyon_rock_d180

General

Type Brush

Name canyon_rock_d180

Color [Color Picker]

Layer AB04

Override Material [Material Picker]

MinSpec All

Transform

Position	1727.59	878.578	44.6759
Rotation	-1.7494	-0.9694	63.0148
Scale	1.0	1.0	1.0

Group

Group [Create] [Attach]

Properties

Geometry canyon_wall_high_a.cg

CollisionFiltering

Type [Dropdown]

Ignore

Hideable None

LodRatio 100

ViewDistRatio 50

AIRadius -1.0

ShadowLodBias 0

OutdoorOnly [Checked]

CastShadowMaps [Checked]

RainOccluder [Checked]

SupportSecondVisarea [Checked]

DynamicDistanceShad [Checked]

NotTriangulate [Checked]

NoDynamicWater [Checked]

NoStaticDecals [Checked]

NoAmnbShadowCaster [Checked]

RecvWind [Checked]

Occluder [Checked]

DrawLast [Checked]

Operators

CGF [Reload CGF] [Save CGF]

VR Hardware



Google Cardboard



Samsung Gear VR



HTC Vive Focus



Oculus Go



Oculus Rift CV1



HTC Vive



Dell Visor (Mixed Reality)



Samsung Odyssey (Mixed Reality)

Nicht-Gaming VR Anwendungen






Image courtesy of BMW



Image courtesy of BMW





$$Student = \int_{-1}^1 \frac{1}{x} dx$$
$$R_{\mu} = \frac{R}{2} g_{\mu} + \Lambda g_{\mu} = \frac{R}{2} g_{\mu}$$
$$x + \omega x^2 = 0$$
$$\frac{\partial x}{\partial t} + \omega x^2 = 0$$


Do not open before
Today 4pm

100% feeding
after
Midnight 00

100%
12/2



NAO ROBOT



DONKEY KONG

Nintendo

SCORE 001200 HIGH SCORE 456906



Augmented Reality





LEFT SIDE: THOMAS AS SEEN IN REAL WORLD
RIGHT SIDE: THOMAS AS REAL TIME
HOLOGRAPHIC REPRESENTATION AS SEEN
INSIDE THE HOLOLENS



CHRISTOPH BERGEMANN



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