A picture containing scene

Description automatically generated

700119 ACW Report

001\_CWRK: ACW1: Procedural Visual Effects in HLSL

Date: 17th Apr’ 2023

A picture containing shore

Description automatically generated

1. **Underwater environment:**

Surface waves on the horizon are created by **ray marching** a signed distance function.

**Multi octave noise** is used to create a **fractal** pattern to modulate the surface height of the water waves.

Additionally, volumetric fog and lighting are implemented as part of advanced effects.

Clouds in the sky

Description automatically generated with medium confidence

1. **Procedural sea floor:**

The terrain is implicitly modelled by **ray marching** a signed distance function.

**Multi octave noise** is used to create a **fractal** pattern to create realistic looking texture for the sea floor.

A picture containing night sky

Description automatically generated

1. **1. Vertex shader-based coral object:**

The terrain is implicitly modelled by **ray marching** a signed distance function.

**Multi octave noise** is used to create a **fractal** pattern to create realistic looking texture for the sea floor.

A picture containing outdoor, nature, spring, ocean floor

Description automatically generated

**3. 2. Pixel shader-based coral object:**

The terrain is implicitly modelled by **ray marching** a signed distance function.

**Multi octave noise** is used to create a **fractal** pattern to create realistic looking texture for the sea floor.

A picture containing background pattern

Description automatically generated

**3. 3. Geometry shader-based coral object:**

The terrain is implicitly modelled by **ray marching** a signed distance function.

**Multi octave noise** is used to create a **fractal** pattern to create realistic looking texture for the sea floor.

A picture containing night sky

Description automatically generated

**3. 4. Hull and domain shader-based coral objects:**

The terrain is implicitly modelled by **ray marching** a signed distance function.

**Multi octave noise** is used to create a **fractal** pattern to create realistic looking texture for the sea floor.

A picture containing outdoor, spring, day

Description automatically generated

1. **Reflective bubbles:**

The terrain is implicitly modelled by **ray marching** a signed distance function.

**Multi octave noise** is used to create a **fractal** pattern to create realistic looking texture for the sea floor.

1. **A shoal of colourful coral reef fish:**

The terrain is implicitly modelled by **ray marching** a signed distance function.

**Multi octave noise** is used to create a **fractal** pattern to create realistic looking texture for the sea floor.

1. **Implicit sea plant modelling and animation:**

The terrain is implicitly modelled by **ray marching** a signed distance function.

**Multi octave noise** is used to create a **fractal** pattern to create realistic looking texture for the sea floor.

1. **Novelty and own effects:**

The terrain is implicitly modelled by **ray marching** a signed distance function.

**Multi octave noise** is used to create a **fractal** pattern to create realistic looking texture for the sea floor.