Scripting & Dynamics Learning Contract

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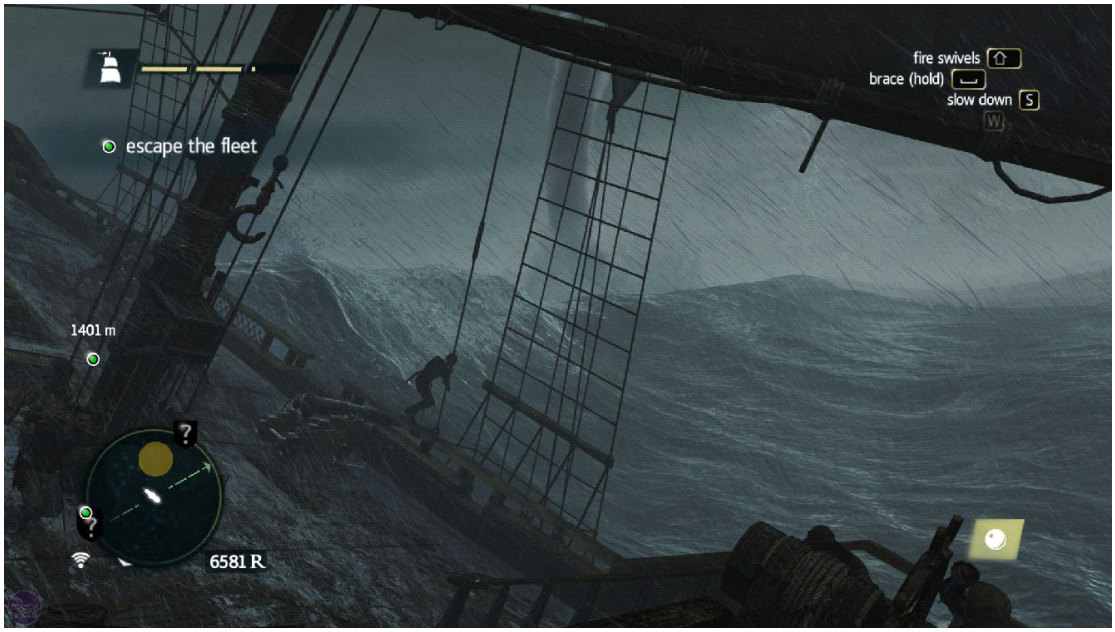
Project Title: Weather & Water Systems in Video Games and Film

Rationale:

Water has always been amazing in video games and movies, from being the centre of attention to a beautiful but complex background to look at, water plays a key part in the viewer's experience in both film and games. For viewers, being immersed is the key to their enjoyment, even one thing out of place or acting abnormal can catch a viewer off-guard and disconnect them so a realistic and believable weather and water system is key.

Games like "Grand Theft Auto: V" display a beautiful and immersive weather and water system, where majority of the time is a pretty background but when explored provides an extra layer of gameplay and experience for the player. "Assassins Creed: Black Flag" is another game that is essentially designed around the water, the water provides gameplay as well as being something pretty to look at.



In film the city flooding scenes of "The Day After Tomorrow" and "Deep Impact" are among the most impressive and will be part of the research in this project as well as various game/filmmakers and their experience with creating water systems.

(image from The Day After Tomorrow "Super-Sized Tsunami" scene)

This project will look into how to control and manipulate the dynamic fluids to provide that impressive experience while experimenting with other elements of a scene such as boats and buildings and how they can influence a scene and how to control the water even after their introduction.

Additionally the technology known as Bifröst will be researched in great detail and technology hopefully exploited to create a beautiful, realistic and animator-friendly scene.

Aim & Objectives:

Aim:

1. To research, explore and create a weather and water systems that makes use of dynamic fluids and particles.

2. Create an Easy-To-Use and friendly UI to control all aspects of the weather system and scene.

3. Explore and Implement extra elements that are affect the water and affected by the weather

Major Tasks:

0. Research, in detail, the use and creation of the water and weather effects in games and film.

1. Weather/"Atmosphere" generation - clouds, dust, wind

2. Water generation - Realistic, immersive, beautiful water.

2.1 Have the water interact and be controlled by the weather.

3. Easy-To-Use but expansive UI that allows animators and film makers to control all aspects of the scene.

Timeline:

Week 6/7:

- Research into all aspects that are planned for the project

Week 8:

- Create very simple script to switch between several scene presets.
- Begin exploration and creation of atmosphere

Week 9:

- Begin exploration and creation of water.

Week 10:

- Add forces to the scene to manipulate the water.

Week 11:

- Add additional objects to the scene (or create a new scene with new water for flooding)

Week 12:

- Improve UI to control all aspects of the weather and water.

Week 13+:

- Add cameras and explore effects and exploits of the cameras. Improve scene, add additional ideas and polish - before beginning rendering on final week.

Resources:

Hardware:

Home PC

OS: Windows 10 Pro 64-bit

CPU: Intel Core i7 4790K @ 4.00GHz

RAM: 8.00GB Dual-Channel DDR3 @ 799MHz

Motherboard: ASUSTeK COMPUTER INC. Z97-P

Graphics: 4095MB NVIDIA GeForce GTX 970

Software:

Autodesk Maya 2015

- Additional Plugins May Be Required

Sony Vegas Pro 12

- Post Production video renderer.

3rd Party (Free-For-Use) Models may be used.

References:

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Day After Tomorrow, 2004. [film]. Directed by Roland Emmerich. International: 20th Century Fox

Grand Theft Auto V. 2015. [computer game]. Microsoft Windows. Rockstar North

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Barton. M. 2008. *How's the Weather: Simulating Weather in Virtual Environments*. [online]. Available from: http://gamestudies.org/0801/articles/barton [Accessed 29th Feburary 2016]

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Movieclips. 2015. *The Day After Tomorrow (2/5) Movie CLIP - Super-Sized Tsunami (2004) HD.* [online]. Avaliable from: https://www.youtube.com/watch?v=GmjAp2eRDH0 [Accessed 29th Feburary 2016]