VR Simulation Project - Interactive Naval Battle

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1. Abstract

1.1. Motivation

In 1980, a significant archaeological discovery emerged off the coast of Atlit, Israel: the Atlit Naval Ram, a bronze artifact dating back to the 13th century BCE. Today, this on exhibit at the Haifa Naval Museum. The ram would have been mounted on the front of warships, it was used to strike enemy vessels with great force to sink them. This exhibit not only offers a glimpse into the past but also highlights the significance of maritime warfare during this era, shedding light on the strategies and technologies of ancient civilizations.

Today, virtual Reality (VR) is an emerging technology that has made significant strides in recent years. With the rapid advancement of hardware and software, VR has transcended the realm of gaming and entertainment to find valuable applications in education.

The Haifa Naval Museum is considering a 3D VR interactive experience at the naval ram exhibit, primarily driven by a desire to enhance its educational value, focusing on a younger demographic. By offering an immersive journey into the past, they hope to provide an authentic understanding of maritime warfare in that era. Ultimately, it seeks to make history more accessible and engaging, in a way that would appeal to young visitors as well.

1.2. Objectives

In this project we attempt to develop a simulation/game prototype for the museum's VR experience centered around the sailing experience and the sea battle style of the era. Our aim is to create an engaging proof-of-concept that showcases the potential of VR in enhancing the museum experience by leveraging immersive technology.

1.3. Conclusions

Our solution is comprised of two main scenes (stages of the game), where the first is intended for showcasing a wide range of immersive interactions unique to VR consoles, and to provide a tutorial for the rest of the game. With that said, the main scene is the second one, where the full experience of sailing a ship on the open seas and ramming into enemies is simulated in VR.

The result is immersive, fun, and gives a well-rounded experience. Not only does it demonstrate the advantages of incorporating this type of experience at the exhibit, but VR capabilities are also well showcased. Furthermore, the simulation includes numerous “gamified” elements, such as task completion and scoring points.

Ultimately, after examining the simulation on the VR console, we found that our implemented solution surpassed preliminary expectations, as on top of being a very convincing POC, it was also optimized for the target device while having very demanding graphics (particularly wave simulation).

The implemented features work as desired, including some novel ones, and the prototype can be used as part or even a basis of a much larger simulation. The solution can be further developed to incorporate more historically accurate models and to fit the narrative goals of the museum.

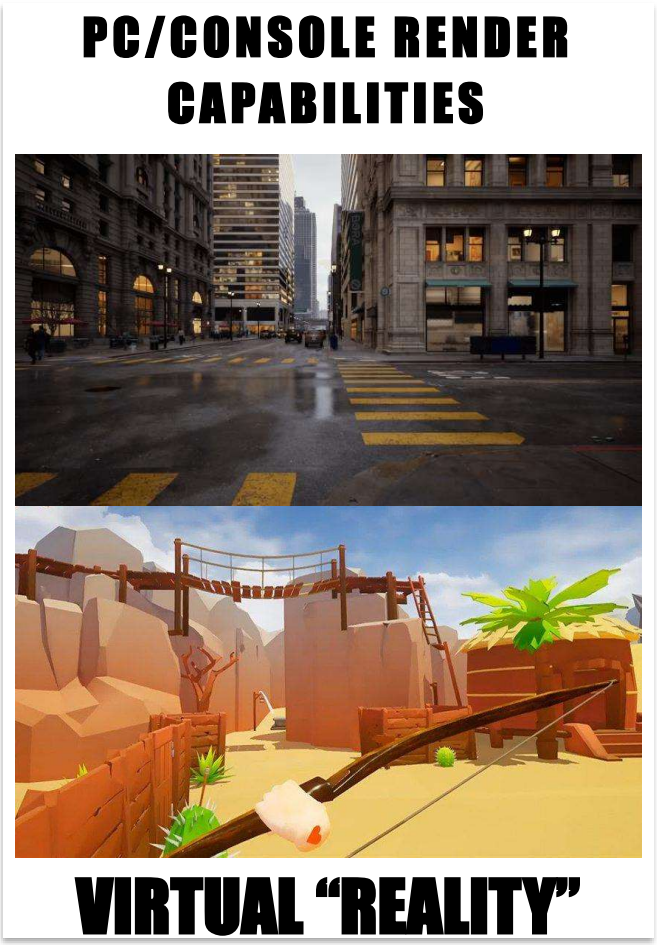

Figure 1-1: Visual representation of overselling