ColaboraFari VR. *

Creation of a collaborative virtual space by a Safari to allow the learning of the animals in danger in Colombia.

Salazar Guido
Engineering department
Pontificia Universidad Javeriana Cali
Cali, Valle del Cauca Colombia
guidosalazar@javerianacali.edu.co

Salazar Luis
Engineering department
Pontificia Universidad Javeriana Cali
Cali, Valle del Cauca Colombia
luisalazago@javerianacali.edu.co

Newball Andrés†
Engineering department
Pontificia Universidad Javeriana Cali
Cali, Valle del Cauca Colombia
anavarro@ javerianacali.edu.co

ABSTRACT

One of the biggest problems in the Earth is the animals in danger, because this creates an unbalance in the ecosystem that we live. Besides, the human is responsible for the animals in danger, things as the pollution and the climate change cause a big problem to the animals, also, the people does not understand how serious this problem is. Thus, the technology plays a good part helping this problematic, the Virtual Reality has many characteristics that make the users (people) learn about the problem of the animals in danger. Finally, this research is going to talk about a functional prototype of a collaborative virtual space that uses Virtual Reality to allow the learning about the animals in danger.

CCS CONCEPTS

• Computing methodologies • Computer graphics • Graphics systems and interfaces • Virtual reality.

KEYWORDS

Virtual Reality, Endangered Animals, Collaborative Learning, Interactive Narrative

ACM Reference format:

Guido Salazar, Luis Salazar and Andrés Navarro. 2023. ColaboraFari VR: Creation of a collaborative virtual space by a Safari to allow the learning of the animals in danger in Colombia.

1 INTRODUCTION

Animals play a critical role in maintaining the balance of our ecosystems. Nevertheless, many species are currently facing the threat of extinction. Endangered animals are those that are at high risk of disappearing from the Earth entirely. The reasons for their decline are varied and often human-induced, including habitat destruction [1], pollution, climate change and the introduction of invasive species. It is important to be aware of this problem and promote education about endangered animals, especially for children for promoting conservation efforts, preserving the ecosystems, and encouraging sustainable living. To achieve this goal, it is important to engage the user on this new technologic era to make learning more interactive and immersive in contrast to current solutions as zoo's, documentaries, etc. Where there is no interaction between people and the animal in a natural way.

As a result, we find that Virtual Reality (VR) is technology capable of make the users have an immersive experience higher than other solutions mentioned above, in fact, in [2] shows how VR is a good proposal to use this kind of technology in an educational context with positive results. So, for this project we are going to use VR to build a functional prototype of a solution to the animal learning problem. VR let us build the prototype as a Collaborative Safari to at least two users playing at the same time in the same space.

On this paper we present the preliminary work of the construction of the VR prototype ColaboraFari VR. The paper is divided into 3 sections Theoretical Framework, Goals and finally Expected Results.

2 THEORETICAL FRAMEWORK

2.1 SIMILAR RESEARCHES

There is some research that investigates the same topic, in fact, they use VR or AR applied to an educational context.

Virtual Reality for Education? [2]: This paper talks about educational proposal of the "Zoo Atlanta" to teach the young students about the animals and their behaviors and characteristics. The authors use VR technology to make a prototype of the proposal, because VR can teach to the students the real behavior of an animal and they learn in a immersive way about it.

Mad City Mystery: Developing Scientific Argumentation Skills with a Place-based Augmented Reality Game on Handheld Computers [3]: In this paper the authors talk about a videogame using AR technology ("Mad City Mystery"). The people that played this game took a role into the game (detective, scientific, police officer, etc.) and one of the important things that they explain is about use an interactive narrative to play the game and use the AR technology with many people.

2.2 KEY CONCEPTS

For this project's development, it is necessary to define some key concepts related to technology and education. Those concepts are Virtual Reality, Interactive Narrative and Collaborative Learning.

Virtual Reality (VR): as it says in Zheng et. All [4], VR is a very advanced human-computer interface that simulates a real environment in a virtual way. In other words, VR aims to be an environment that simulates a programmable space of any context, where a person enters a state of immersion that changes their reality to another.

Interactive Narrative: are those types of stories that require a direct response from a user, either through a physical action, click, scroll, voice interfaces, emerging windows, etc. Therefore, interactive narratives force the user to interact with the story to continue its development. In other words, the story's continuation depends on the users' interaction. An example of those interactions are dialog boxes in videogames which have different options that the users can choose to generate their own history [5].

Collaborative Learning: according to the EIA University in Antioquia Colombia [6] is the consolidation of the individual contribution of each person within a group through techniques and groups dynamics, which favor collective learning. This is achieved by assuming individual responsibility for learning to contribute to the group's objectives. This is done through respectful communication for the exchange of knowledge to develop a task and build knowledge.

3 GOALS

3.1 GENERAL

Develop a VR prototype that promote the collaboration into the learning of the Colombian animals for children.

3.2 SPECIFIC

Study the characteristics of four Colombian animals in danger of extinction to identify what behavior, habitat and appearance elements can include in a collaborative expanded realities space.

a. Design a system-based in an interactive narrative pre-created that allow the accessibility focus in the children.

b. Implement the prototype design using VR technology.

c. Test the implemented prototype.

4 EXPECTED RESULTS

The most important thing in this research is to watch what kind of results we will have. As the most important result we will have functional prototype in VR creating an interactive narrative that uses four animals (Condor, Spectacled bear, Titi Monkey and Jaguar). Another result will be testing the system with users in the in the Universidad Javeriana, the users will be different people (students, children, professors, etc.). Thus, using the results and discussions about the project, we will determine some important aspects of the research and make a base for future research in this topic.

4.1 LIMITATIONS

The project will grant a functional prototype in VR that has four endangered animals, developed and design in other projects of the same topic inside the University.

The prototype will be designed with UNITY. Also, the prototype will be designed in a way that at least two users interact within the environment and thus encourage collaboration. This will be achieved through missions and obstacles to reach a final state that allows learning.

This project is aimed at children as target users since it is intended to promote learning in an innovative and interactive way. The project is also directed for use within the Instituto para Niños Ciegos y Sordos del Valle del Cauca which is an ally of the Javeriana University and the research hotbed of Computer problems where this project was born. Therefore, the Institute is an important ally for the support and recommendation that they can provide for the realization of this project.

4.2 FUTURE WORK

The next step in this project's development is to develop a narrative that could help the children learn more about the endangered animals inside the Columbian territory. For this goal, it is necessary to determine whether a preexistent narrative of the Institute could help us and be modified so it can be transformed into an interactive narrative. Or create an entirely new narrative for the project.

Then, is necessary to develop the prototype in VR with the narrative, with the objective of being tested with Childs and giving a brief insight of whether the VR technology could help in the collaborative learning of endangered animals.

ACKNOWLEDGMENTS

Funded by Fonds de recherche du Québec - Société et culture (FRQSC), with the support of Université de Sherbrooke, Pontificia Universidad Javeriana Cali and the Instituto para Niños Ciegos y Sordos del Valle del Cauca.

REFERENCES

[1] Ministerio de Ambiente de Colombia. (2022). Se redujo y disminuyó la deforestación en Colombia durante los últimos cuatro años. [Online]. https://www.minambiente.gov.co/bosques-biodiversidad-y-servicios-ecosistemicos/se-reduce-y-se-contiene-la-deforestacion-en-colombia-durante-los-ultimos-cuatro-anos/

[2] Don Allison & Larry F. Hodges. 2000. Virtual reality for education? In Proceedings of the ACM symposium on Virtual reality software and technology (VRST'00). Association for Computing Machinery, New York, NY, USA, 160–165 DOI:https://doi.org/10.1145/502390.502420

[3] Squire, K.D. & Jan, M. (2007). Mad City Mystery: Developing Scienti-fic Argumentation Skills with a Place-based Augmented Reality Game onHandheld Computers. J Sci Educ Technol 16, 5–29. DOI:https://doi.org/10.1007/s10956-006-9037-z

[4] J. M. Zheng, K. W. Chan & I. Gibson. (1998). Virtual reality. in IEEE Potentials, vol. 17, no. 2, pp. 20-23. Doi:https://doi.org/10.1109/45.666641

[5] Orihuela, J. L. (2009). Narraciones interactivas: el futuro nolineal de los relatosen la era digital. Palabra Clave, 2. [Online] https://palabraclave.unisabana.edu.co/index.php/palabraclave/article/view/338

[6] (2020). APRENDIZAJE COLABORATIVO Construcci´on conjunta de aprendizajes. Universidad EIA, Envigado, Colombia. [Online] .https://www.eia.edu.co/wp-content/uploads/2020/09/6.-Aprendizaje-colaborativo.pdf