Project Summary

Projet L3D2 2022-2023 - Systèmes proies-prédateurs

***Les informations d’identification du document***

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| Auteurs: | Fu Suntanqing  Rossignol Paul  Xu Remy  Ye Frédéric |
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The project developed during this year is the Preys Predators simulation. It is supervised by Mr. Claude LATTAUD in the UFR of Mathematics and Computer Science (University Paris Cite). Our team is composed of 4 students of the University of Paris : Ye Frédéric, Paul Rossignol, Xu Remy and Fu Suntanqing.

The goal of the project is to rework on a project from the previous years, adding new features while correcting the old ones.  
Our goal was to create a functional simulation that would allow the analysis of an environment and the behavior of agents (animals, plants) as realistically as possible. The utilization must also be intuitive for the user and the implementations must match each situation we wanted to observe.  
The realization of the project was done with the Unity3D game engine with the C#, SQL and XML languages.  
The goals of the project are to solve the existing bugs and to add the following mandatory features : the improvement of the weather system, the control of an agent by the user, the mimicry, the improvement of the laboratory and the creation and management of a pack.

The time frame for this project is from the 23/01/2023 to the 14/05/2023

We have some deadlines concerning the documents, each document needed to be sent before a deadline, and our supervisor Mr. Claude Lattaud also gave us a deadline to send a prototype of the project for testing. For the project, we used the application Discord as a way to communicate, and during the development period of the project we were working separately on the different tasks we were given. At the beginning of the project the main challenge we encountered were the bugs we needed to resolve, to understand how everything was working in the project and also learning C# since it’s the programming language used for Unity3D.

For the beginning of development we first tried to have a functional simulation with all the basic functionality so during the first 3 weeks of development we were working on resolving bugs and understanding the code. The main bugs we faced were missing script and interface problems. The hard part of this job was as a new developer with Unity. It was the first time we took back a project from last year and the bugs took us a long time before we got rid of it. During the course of the whole code we found out some functionality were missing and some scripts were just there without interaction with the simulation. So we handle it to have a clean simulation and we also improved the GUI of the application.

During the fourth week of development we started to work on new features to add to the project, for example : taking control of an agent, changing the map depending on the season, the creation of packs for the agent, and a system to teleport to the different agents in the simulation.

During the fifth week of development we resolved the bugs we encountered because of the new features we added and also other bugs we didn’t notice. We also developed other features such as a fear system which allows preys to run away from their predator, creating manual action we can do while controlling an agent. We also added an alpha for each pack, characteristics for each agent, and started the development of the behavioral mimetism.

During the sixth week of development we improved the mimetism system, created a new action which allows two agents to fight each other to determine a new alpha for their pack, changed the temperature system and improved the new weather and season system, added new panel in the simulation and also resolved bugs concerning the fight which was making Unity crash.

During the seventh weeks of development we tried to resolve everything bug of the application, improved the GUI and add features to facilitate a live demonstration for the oral presentation we will make in the future, for example the possibility to change the health, stamina, hungry, thirst and fear bar of every single agent during the simulation, and also develop something to allow us to save and load a simulation.

After this week we start working on documents again with the account of the project and the oral presentation. The main goal of the presentation will be to talk about the whole subject, every functionality and make a demonstration of the simulation in a short time of 15 minutes and in English. So we started preparing to have the same speaking time and cover the whole project.

As a conclusion of the document, we learn a lot of things by working on this project.

For the social side, we faced group problems and managed them together, it taught us how to work and listen to each other.

For the developper side we learned a new computer language C# and how to handle a project that is not yours with all the bugs and problems that are related.

We created a project we are proud of, that reflects the work provided. And we hope that it will serve for others to make it better year after year.

Thank you for reading.