

Beacon Of Life - AI

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Computing Project
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Outline Description

It is a game with a multi agent system able to keep itself in the habitat in which it is found seeking the necessary resources to live and cover their basic needs also they can alter the environment and learn new skills to make its life easier and enjoyable.

The idea is to make the AI able to learn new skills learning by themselves and even being able to give that knowledge to other artificial intelligence.

This will include the possibility of get and store materials and the ability to create and destroy buildings.

Implementation Plans

08/02/17 - Project Proposal
12/02/17 - Create the Blog, Repository and project
17/02/17 - Create the camera and the basic elements
26/02/17 - AI can create buildings

05/03/17 - AI can interact with environment
12/03/17 - AI can interact with buildings
19/03/17 - AI can store objects (inventory)
26/03/17 - AI learn new skills

02/04/17 - Adapt the plans according to the progress
April - Fixing bugs and finishing all the tasks
May - Implement some new content if I have time

Current state of Development

At this point of the project I have already created the blog, repository and also I have started the implementation of the project with a camera top-down and some other basic elements of the game.

I am currently using a web page where I keep track of the parts I am implementing and the designs I am making the web is called Trello.com.

In the following weeks I am going to prepare the game to be at the alpha state and then with that prototype start working in the deepest experience with the AI.

Prototyping Methodology

With this methodology I will have to create portions of the project that demonstrate some functionality and make changes when they are needed.

As I want a record of everything I have done and all that needs to be done I will use trello.com to keep track of everything that is going on with the project.

On the other hand the code is going to be on an online repository to make sure that is accessible from any place when I needed and also I can go back to an early version if It is needed so it will work as a backup too.

The image below shows how the methodology works.

Deliverables / Objectives

To create the product I will use Unreal Engine 4 and use the blueprints combined with C++ on Visual Studio and it will run on Windows platform.

On this project I will deliverer a videogame that shows a virtual world with AI that will try to survive while you play as a god with them.

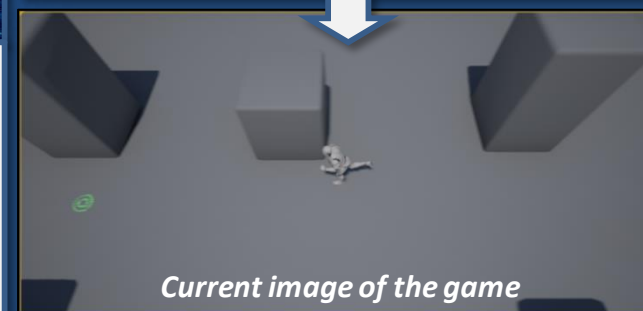
The AI will be human like and will have feelings and motivations and will learn new skills that allow them to life better.

Background research

I have been interested in AI since quite long time and I decide to make this project an AI project because I consider now I know enough about how to create a life-like AI and I want to prove that I have all that knowledge.

I have watched some videos, articles and books that make me learn the basics about how to create AI and some tricks to make it right.

I have taken classes about AI the last year, I have done an AI project at the end of that classes and I have been doing the AI on the AGD class this year. The image below shows the 'Maslow's hierarchy of needs' (Maslow, 2013), this is the approach I will follow to make the AI behavior.



Current image of the game

Software

Engine: Unreal Engine 4
Language: C++
Code Editor: Visual Studio, Notepad++

Platform: Windows 10 Desktop
Repository: GitHub, SourceTree
Task Organization: Trello.com

Blog: blogs.tees.ac.uk/beaconoflife
Documents creators: PowerPoint, Word

Self-actualization

Esteem

Love/belonging

Safety

Physiological

morality,
creativity,
spontaneity,
problem solving,
lack of prejudice,
acceptance of facts

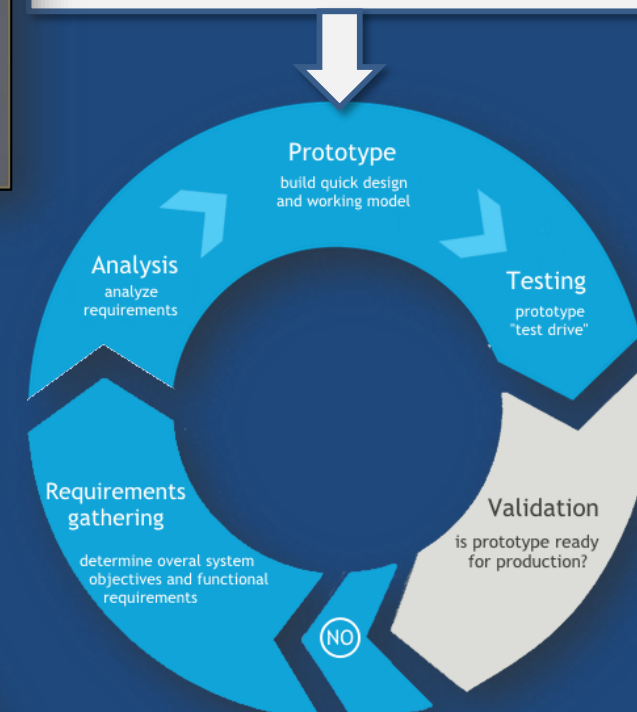
self-esteem, confidence,
achievement, respect of others,
respect by others

friendship, family, sexual intimacy

security of: body, employment, resources,
morality, the family, health, property

breathing, food, water, sex, sleep, homeostasis, excretion

Maslow's hierarchy of needs



Prototyping Methodology

Legal, Social and Ethical Issues

- I want everyone to be able to play this game so I will have to make sure it has nothing that is not allowed by PEGI.
- I will try to stay at the PEGI 3 but if the development goes faster enough I may try to add sounds, better assets or animations, adult interactions or something else so maybe some change makes me turn to PEGI 7 or any of the other labels.
- All the assets are going to be free but if the author/s wants to be on the credits or something else I will consider to use that asset and then act according to the author's condition.

References

- Maslow, A. (2013). A Theory of Human Motivation. 1st ed. Lanham: Dancing Unicorn Books.
- Unknown, (2015), Methodology [ONLINE]. Available at: http://virtue-intelligence.com/wp-content/uploads/2015/12/img_soft_prototyping.png (Accessed 23 February 2017).
- Unknown, (n.d.), Background [ONLINE]. Available at: http://www.planwallpaper.com/static/images/cool_background_by_harrywolke5-d51eq6a.jpg (Accessed 23 February 2017).
- Unknown, (2016), Maslow's Hierarchy of Needs [ONLINE]. Available at: <http://worldbuilding.stackexchange.com/questions/36062/how-does-an-ai-keep-its-human-pets-happy> (Accessed 23 February 2017).

Professional Skills Relating to Employment

- As I decide to develop my project using Unreal Engine I will get a further understanding of the functionality of one of the most used videogames engines of the last years and that will allow me to get access to more variety of jobs.
- C++ language is used in a lot of applications and that is why it is the perfect language to learn because it is very easy to find examples and tutorials and it makes ease to change to another language once you know enough of this one.
- The game I am implementing is focused on the AI aspect of the game and that is going to allow me to improve all my AI skills to develop all the actions of the AI to make it the more real possible and of course that knowledge can be useful on a future job.
- GitHub is the repository I have chosen and it is very common on the industry so learning how to use it is going to be great for me.
- SourceTree is the application that manages the repository, I have choose this application but I know how to use others and that is the important fact.
- All the planning and the progress review in order to keep on track with the work will be a perfect simulation of a job as a programmer.