TI2806 Contextproject - Final Report Draft

Virtual Humans - Group 4

https://github.com/tygron-virtual-humans

Sven van Hal - 4310055

Tom Harting - 4288319

Nordin van Nes - 4270029

Sven Popping - 4289455

Wouter Posdijk - 4317149

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1 Introduction

This report is the final project report for Group 4 of the Virtual Humans for Serious Gaming Contextproject. The main goal of this project was to make a virtual human that could replace an actual human in the Tygron (Tygron, 2015) urban planning game. This virtual human should be able to play the game like it is a real human, this includes making rational choices as well as making choices based on emotions. For an in-depth description of our customers and their requirements, please read our Product Vision (Contextgroups, 2015).

The focus of our group was on making the emotion part of the virtual human. In this report you can find how we made this emotional part, you can also find a description of the software engineering aspect as well as the interaction design, the failure analysis and an outlook in what is next.

2 Overview

Our final product is a GAMYGDALA (Popescu et al., 2013) plug-in for the GOAL programming language (Hindriks, 2014). The final product can be split into two separate parts: the GAMYGDALA port and the GOAL plug-in.

2.1 GAMYGDALA port

"GAMYGDALA is an emotional appraisal engine that enables game developers to easily add emotions to their Non-Player Characters (NPC)." (Popescu et al., 2013).

GAMYGDALA is written in Javascript, but for it to properly work with GOAL, which is written in Java, we needed to port GAMYGDALA to Java. This GAMYGDALA port is our biggest software product. When we finished our initial port, we noticed that the Java code did not follow the Software Engineering principles. This is why we decided to do a total code refactor.

Our final version of the port is far better then the original port on account of the Software Engineering principles and it behaves in the same way as the original GAMYGDALA code. You can read more about this refactor in the Emergent Architecture Design (VH4, 2015) and in next chapter.

2.2 GOAL plug-in

The other part of our software product is the GOAL plug-in. We had to alter the GOAL source code to enable the usage of GAMYGDALA in GOAL. We now have a fully working plug-in that developers can use in their GOAL programs. The full GAMYGDALA functionality can be used within the GOAL environment.

3 Reflection from a software engineering perspective

4 Developed functionalities

5 Interaction Design

This section contains our interaction design report. You can read who will be the users of our final product, how we let these users test our product and what we learned from the results of these tests.

5.1 Users

As stated before, our final product is a fully functioning version of GAMYGDALA in the GOAL programming environment. Therefore, our final users will be GOAL programmers who want to use emotions for their GOAL agents.

To find testers we looked for students who were familiar with the GOAL programming language. Because the GOAL programming language is a language that is taught during the first year of the Computer Science bachelor (Logic Based Artificial Intelligence and the Multi Agent Systems project) there are a lot of Computer Science students that are familiar with GOAL.

We decided to ask second year Computer Science bachelor students to help us by trying to use our GAMYGDALA plug-in in GOAL. We chose some students who are also working on our Virtual Humans for Serious Gaming Contextproject, as well as some students who work on other Contextproject. This way we could collect the opinions of students who already know about our product and how it should work, as well as the opinions from students that did not use our product before.

5.2 How do we test

The best way to let our testers use our product is by just letting them play with it. This is why we asked them to try to give an agent some simple emotions.

For this test we used the Thinking-aloud method (Nielsen, 2012). This means that we asked our testers to say anything that came up in their mind during the test. This was the easiest way to find out if the testers enjoyed using our product and if the usage was easy enough.

5.3 Results

The results will be discussed here in the final report. This draft does not contain these results yet.

6 Evaluation

In this section you can read our evaluation about our experiences during this Contextproject. It consist of an evaluation of the product, a failure analysis, an evaluation of collaboration between our group members as well as an evaluation of the collaboration between the separate groups of our Contextprojext.

6.1 Product

This subsection is divided into two parts, the GAMYGDALA port and the GOAL plug-in.

6.1.1 GAMYGDALA port

6.1.2 GOAL plug-in

6.2 Failure analysis

6.3 Collaboration between our group members

6.4 Collaboration between the groups

7 Outlook

References

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