Internship plan

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Contents

Introduction

In this document, I will outline my soon to be started internship at Tilburg University. To begin, I will list some of the basic information about this internship below.

- Name and studentnumber: Robert Kraaijeveld - 0890289
- Internship company and company-coordinator: Tilburg University, dr.ir. P.H.M. Spronck
- Starting date and end date of the internship: 5-9-16 until approx. 26-12-2016

Update 25-9-16: This document has been updated to reflect some of my changing thoughts about this internship; specifically, how changes in how I intend to fullfill my competences.

1 The internship project

We (me and my 2 teammates, supervised by mr. Abbadi and Dr. Spronck) will be creating a tool allowing for the procedural generation of game avatars with distinct personalities in Unity. If we have sufficient time, we will implement these avatars within the context of a restaurant game, played within the Experience Room.

My internship company/institution will be Tilburg University; specifically, the Department of Communication and Information Sciences within the Tilburg School of Humanities. This department of Tilburg University, which employs over a 100 staff-members, focuses on research and education regarding a wide variety of subjects regarding IT and digital communication.

For me personally, this internship will allow me to gain considerable amounts of technical prowess and allow me to work with state-of-the-art, complex hardware and software under the supervision of skilled professionals. This may sound like a bit of an advertising blurb, so let me elaborate.

The project will be carried out by me and my teammates Cees-Jan Nolen and Steven Schenk, assisted and supervised by mr. Abbadi and Dr. Spronck. Therefore, this project is very much 'ours'. I will be able to design, create and deliver an entire project from the ground up with my teammates and supervisors, rather than making a relatively tiny contribution to, say, a huge codebase that has been around for 30 years. I think that this will enable me to learn much more, both from the hands-on experiences that I will have as well as from my very knowledgeable colleagues/supervisors.

The second great thing about this internship is the fact that me and my teammates will be able to work with, and add to, very interesting and very new hardware and software. The programming language that we are going to use as a 'proxy' to the visual interface of Unity is Casanova, a newly created language by (amongst others) mr. Abaddi.

In the same vein, the aforementioned Experience Room, a 3d mixed reality room located at Tilburg University, has only been operating for less than a year. Thus our usage of both of these pieces of hardware and software will provide very useful data on what works and what doesn't work with them. This is especially useful for the very young experience room, being itself an implementation of the very young concept of virtual and mixed reality.

2 Competences

Since the Hogeschool Rotterdam requires my internship to facilitate me working on the 6 competences, I have listed how I am going to work on each aspect of these competences during my internship.

The six competences are:
1. Management
2. Analysing
3. Consulting
4. Designing
5. Implementing
6. (Social) Skills

Each competence has several sub-competences associated with it. For each sub-competence I will answer the following question: "How will I show that I meet the sub-competence?".

An exception being the (social) skills competence, whose sub-competences are only answerable after I have started my internship.

Internship plan

No.	Sub-competence	Answer
1	I can work according to a pre-made and approved internship-plan, and provide motivation for any changes.	I will work in this project using Kanban; a scrum-like project methodology. Kanban emphasizes working on small tasks once at a time within small time cycles. At the same time, kanban still has the concept of a product backlog, allowing me to use a pre-made task list. Update: Regularly visiting with both dr. Spronck and mr. Abbadi has often saved us from implementing something that was actually not 100% in line with the clients wishes. Also, the requirements for the project proved to be much more volatile than I thought.
2	I can create an analysis of the given internship task, using existing methods and techniques. Also, I am able to create a requirementanalysis for (part of) a software system with different stakeholder, whilst taking into account quality standards.	I will be researching established literature on procedural avatar generation in order to avoid any duplication with our research project, since creating a duplicate tool would not be useful for my stakeholders. Using tools such as UML and DFD's I will document the multiple stakeholders that this project will revolve around. Update: Carefully documenting our progress and documenting proposed changes proved to be very valuable when communicating with our client. Also, carefull research with the guidance of mr. Abbadi into (for example) possible algorithms for us to use was very interesting and valuable
2	I am able to create a specifi- cation using an analysis.	I will be especially targeting this competence during the later part of the project, when we will create an VR-implementation of our work. In this stage it will be of the essence that I implement a specification that matches the (unexplored) capabilities of the experience room; since mis-designing the implementation would mean we end up with a game that does not match the experience room's intented use.

2	I am able to create an acceptance-test using quality standards.	The very purpose of procedurally generating characters with distinct personalities is to make games more immersive for players; it would be very easy to develop some simple tests to see whether players can 'see the difference'. Thus, even if me and my teammates would not be able to develop a fully fledged game, we could still easily acceptance-test the project.
3	I am able to provide a wellargumented and guiding advice regarding processes, software and/or new technologies, and I am able to present this advice in a convincing and understandable way.	A large part of my project, and a very important aspect for Tilburg University is gaining insight into the potential usage of both the Casanova language and the Experience Room. Therefore, I will use the results of the aforementioned acceptance testing as well as my practical experiences with Casanova to document possible improvements to the University, or suggest certain approaches over others. Update: See the update at the 2nd competence.
4	I am able to create a design for (part of a) softwaresystem, using existing components, libraries and designqualitystandards.	I will be heavily reliant on existing work during this project; we will be using the Unity engine as our 'heavy lifter' and the earlier mentioned Casanova language as an intermediate language. Also, we will likely be using external textures and 3D models. Both when designing the system and during its' implementation me and my teammates will be using UML and UMLlike techniques to communicate both amongst ourselves and to our client. ERD's will likely be used less, unless we are going to be collecting player data. Update: Casanova was often difficult to use because of its experimental nature, but we did learn a lot so far and were able to use mr. Abbadi's knowledge of the language to our advantage.
4	I am able to validate a design based on specifications which resulted from analysis.	I will use the Kanban project methodology combined with some kind of iteration mechanic. This will allow me and my teammates to constantly reaffirm whether what we have implemented matches our clients' wishes. Update: See the update at the 2nd competence.

5	I am able to implement software which conforms the requirements of the given assignment, holding this software by the high standards of quality that are used in the software engineering industry today.	I will be creating C classes following the proxy design pattern, allowing for these classes to be a wall of abstraction between the Unity engine and Casanova code. Casanova therefore only has to deal with relatively abstract concepts as defined in these proxy classes, rather than making direct use of the very specific Unity engine code. The casanova language also mixes functional and OO-style code, allowing for easy integration between the proxies and the pure casanova code. I will also be documenting the code (most likely in the form of a github wiki), both to allow current and later developers to easily dive into the project. Another big reason for documenting is to provide Tilburg University with useful data on Casanova's and the Experience Room performance for this particular task. Update: My expectation as laid out here originally proved to be true: Casanova best lends itself to very abstract logic-handling rather than more specific implementation details since it doesn't contain constructs like functions etc.
5	I am able to use unittests, integrationtests and systemtests. I am also able to automate these tests.	I will be, together with my teammates, creating a simple testing framework for casanova in order to make testing easier for us. We will also setup a Jenkins continuous integration service on a virtual server, allowing us to test automatically whenever we push code upstream.