Personal Development Document

Thomas Schenk

# Persona

My name is Thomas Schenk and I am 21 years old. Originally, I am not from Brabant, but from Hilversum. Luckily, I moved a bit down to Utrecht; so the commute is (somewhat) doable!

Aside from my interest in Technology and software, often times I am found in the garage working on vintage motorcycles and cars. You could say that my life is split between a very high-tech field of work and a very low-tech field of work! This has given me the opportunity to think differently about high-tech problems, often with a very nice solution as an outcome.   
Besides that, I think old technology is just super cool!

When I’m not found working, I like to relax by playing some guitar or to research something affiliated with previously mentioned topics.

Personality Type:  
Diagram

Description automatically generated with medium confidence

# Context

For this semester, I would like to work on more mechanical aspects of the ICT world. I feel like software and technology are the most recognizable, the most pronounced when they have a mechanical function. Furthermore, the design and different principles which come into play when designing mechanical functionality opens up a whole range of new research and field of works; all which interest me.

Besides this; visualization of data is also an interest I would like to explore. Especially random, generated data. And making a prediction based on this. A lot of the proposed projects offer great chances to do this, think about mapping, dashboarding and maybe even a controlling GUI.   
I think data visualization can create a very simple overview of something very complex for outsiders of the project. And thus is an excellent way of quickly describing and demo-ing your project.

# Project

## Top 3 projects

Top three (Native numeration of projects is used):

2. Autonomous Guided Vehicle Platform

I am very interested in this project since it utilizes a very basic form of data visualization; which is movement. Robots traversing on a set path, with random obstacles creates a challenging situation where some parameters are constant, but the majority is always changing. How to bring order to this chaos?

4. Autonomous exploration of building

Above points can all be inserted in this project too.

Furthermore, it is very interesting since the performance of this project can be directly mapped to known values and metrics. A room with a set size can only be its set size; it doesn’t change. Gathering feedback on the efficiency of this robot is therefore so easy and tangible; that it is very exiting to make it as efficient as possible.

6. Dynamic Sound Level Control in Learning Environments

The most interesting part about this assignment is the suspense of how the frontend of this project (website etc) is going to connect to the actual technology. This was also the main drive for this final choice in my top 3.

## Assigned research project: Autonomous exploration of a building

Ultimately I have been assigned to project #4; Autonomous exploration of a building. This project is led by the ministry of defense, alongside other similar companies and groups.

The project aims to create a robot which operators can use to scan/explore buildings when their layout is unknown. This robot can be used when entering a building in person is dangerous, or difficult. Some examples are hostage situations or firemen wanting to reach a certain location in a burning building.

This project offers great opportunities to work with Unix based systems which definitely is a skill I would like to develop further. There also are great opportunities for data visualization which I proposed earlier, the mapping of an area is naturally all about processing data in various ways to make it understandable.

Currently my focus in the project is like described above, Unix based systematics and mapping. This incorporates the usage of ROS(1) which is used to control everything.

The project isn’t new, two groups have previously done some work on it. We (the group) are the third group working with this robot.

## Personal project

My personal project focusses on vehicles and monitoring their data. For example, oil temperature or RPM. With this data, we can make predictions about engine life or engine wear, then informing the user on this is a main priority. This solves the fact that many people do not really look after their vehicles when it comes to maintenance, mainly because they do not know how. By lowering that difficulty, vehicles can be driven for far longer.

# Learning outcome table with proof

## Products with their description

**Integration of a new camera**

The camera which came with the robot had some issues concerning speed. Speed isn’t the only reason why an upgrade is proposed, the current camera also lacks some features which are explicitly desired by the PO. The most prominent being infrared compatibility to see in the dark.

To fix this, a recommendation by our PO and the previous group was made to upgrade this camera. This required installation and integration into the ROS packages currently running on the robot.  
  
**Proof of concept Map environmental structures with LIDAR**

The current robot uses a 2D lidar for its navigation and orientation and a camera for its 3D mapping. Both suffer from some impurities in their data, especially the camera. They can possibly be improved by implementing a 3D lidar, which would ultimately give the end user a more precise and polished map. It also could theoretically replace the camera when it comes to its 3D mapping function. This proof of concept implores upon the opportunity of increasing the quality and speed of the gathering of environmental data. With in mind not only the robot but the end user too.

**Project plan for Personal Project**

To properly keep track of what I am going to do, and (should) have done; I made a project plan to support my personal project in these needs.

Not only does this solve a personal planning goal, but it also means that outsiders of the project can quickly see and judge where and in which stage the project currently is.

## Learning outcome table

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| --- | --- | --- |
| **Learning outcome** | **Proof** | **Rating** |
| **1. Analysis** You specify a distributed computer system including timing, resource use and performance, taking into account safety aspects. And you compile an acceptance test plan and an integration test plan. | **Camera Installation**  **Proof of concept Map environmental structures with LIDAR** | Current: U  Self: Orienting |
| **2. Advise** Based on your analysis, you provide technical advisory on the (distributed) computer system that is to be realised, including hardware and software components and links. | Personal project | Current: U  Self: O |
| **3. Design** You design a distributed computer system including determining actuators, sensors, timing, resource usage and performance. | Personal project | Current: U  Self: O |
| **4. Realisation** You realise a complete computer system (or parts thereof) including network, hardware and system software based on your own design. And you compile and carry out an acceptance procedure to validate the implementation. | **Proof of concept Map environmental structures with LIDAR** | Current: U  Self: O |
| **5. Manage & Control** You set up and make use of a system for version management, release management, teamwork support and automated testing for hard- and software systems. | **Project plan for Personal Project** | Current: U  Self: O |
| **6. Future-oriented organisation** You explore the organisational context of ICT assignments, make business, sustainable and ethical considerations and manage all aspects of the execution of the assignment. | **Proof of concept Map environmental structures with LIDAR Integration of a new camera** | Current: U  Self: O |
| **7. Investigative problem solving** You critically consider IT assignments from different perspectives, identify problems, find an effective approach and come up with appropriate solutions. | **Project plan for Personal Project Proof of concept Map environmental structures with LIDAR Integration of a new camera** | Current: U  Self: O |
| **8. Personal Leadership** You are entrepreneurial with regard to ICT assignments and personal development, pay attention to your own learning ability and you keep in mind what kind of ICT professional and/or what type of positions you aspire to. | PDD document | Current: U  Self: O |
| **9. Targeted Interaction** You determine which partners play a role in the ICT assignment, collaborate constructively with them and communicate appropriately to achieve the desired impact. | Integration of a new camera | Current: U  Self: O |

# Sprint retrospective and personal reflection

**Sprint 1**

This sprint brought with it a lot of good work, both qualitative and quantitative; it was missing a bit of documentation though. I feel like I did a lot of good work, but I missed the point of documenting it properly. Both because Im not that good at it; and the severely different way of work this semester. It really does not play into how I usually work/go about documentation well. The work itself was good since technically it all worked out. Not only that, I was also able to communicate it to my group very well. Something they seemed to like. This made the first sprint for me very enjoyable since it all worked out well!

I aim to improve this the next sprint.

**Sprint 2**

This sprint I tried to pay more attention to what I was doing and documenting this properly. The last sprint I think I lacked in this. I also tried to better this by planning a feedback moment with the teacher, to gauge where I am at a few days before the deadline. This way I can improve upon my documentation skills and in a timely manner make adjustments.

I also worked a lot on the LIDAR and camera making major steps in their development process. I think I did very well on bringing new functionality to the table with my work, yet I think next sprint we need to change the roles. I had the feeling that I was continuously researching and prototyping while the rest of the group waited for me to finish. When I was done, I went ahead and explained my work to them and they would refollow all my steps; while I went on with the next bit. I think that is inefficient.

Group retrospective:

As a group we discussed the activities we had in the last three weeks. One very prominent factor that came up was efficiency. We all felt like we had to do something about this, be more structured about this. We tried to put this in motion, by assigning specific tasks to specific persons upfront. This made it all very clear, which before was sometimes a bit vague. We also sat down with one of the group members to confront them about their work, since the consensus was that the rest of the group was not happy with their work; or the lack of it. I think we very clearly and explicitly stated our opinions and that we had a very civil and humane conversation about this. Luckily at the end we could all wrap this up as a group and be happy about the work done.

**Sprint 3**

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**Sprint 4**

…

**Sprint 5**

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# Evaluation and reflection on the whole semester

For ‘wrapping up’ the semester. Add an evaluation and a reflection of your whole semester. Your evaluation describes what went good and bad during your process and how you dealt with that. Your reflection describes how you have grown as a person, and what you will take with you in your further professional career (e.g towards the graduation internship).

# Feedpulse

Sprint 1 Feedpulse:

Graphical user interface, text, application, chat or text message

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, text, application

Description automatically generated

Sprint 2:

Graphical user interface, text, application

Description automatically generated

Graphical user interface, text, application, Teams

Description automatically generated

Graphical user interface, text

Description automatically generated