­­­­­Personal Development Report

Thomas van der Molen

S7-AI-A-RB

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| **Project Information** | |
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| Project name | Personal Development Report |

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# Introduction

My name is Thomas van der Molen, I am 21 years old and have previously done Mavo and Havo before coming to Fontys to study HBO ICT & Software Engineering.

I am currently working for the software company Author-e where I lead several different software projects.

I have done Advanced Software in my previous semester, and while I still want to focus on Software I think there is a lot to learn within the domain of AI, hence I decided to do Advanced AI as well.

During this semester, I want to learn more about the underlying algorithms power large AI models.

All previous semester I have been able to achieve an Outstanding grading, so I will try to achieve Outstanding this semester as well. However, I did recently learn that getting Outstanding every semester does not actually directly affect graduating with Cum Laude and for this reason I have put less importance on it.

# Data Preparation

You can **enrich/extend** and **clean** datasets, and are able to investigate and argument the use of **data storing methods**.

Evaluation 1: I think this learning outcome is currently at an **Orienting** level.

Evaluation 2: I think this learning outcome is currently at a **Proficient** level.

**Evidence Evaluation 1**

During the start of the group project, I have spent a lot of time researching varying DevOps tools specifically for machine learning projects, especially DVC for which I have created a research document, with guide for fellow students and have implemented my findings for data / model / experiment -management in the group project.

Furthermore, I have started performing data analysis on the data of the group project together with my project group, and have done initial dataset exploration for smaller datasets used during exercises which I have extensively discussed with Technical tutor (Olaf).

**Evidence Evaluation 2**

Since the last evaluation, I have created together with the rest of the project group the final data preparation notebook, this notebook contains the data merging techniques I had utilized previously in my EDA for One-class SVM and shared with the rest of the group. In this merging process, the datasets are grouped on specific identifiers, effectively squashing the data into less records, this process also creates new features such as average/median, deviations, timespans etc. that could enrich data records with timeseries-like features that from my research should be good indicators for predicting anomalies.

In the pre-processing file, I also create many versions of the datasets, including final Train/Test split datasets that can be used to standardize the data used when training/evaluating so that the various models can be compared more closely with each other. All the saved models are stored in DVC that I had previously set-up, allowing group-members and cloud pipelines to easily fetch the datasets needed (which with these enrich and computed datasets are starting to reach the 1GB file size which is already larger than GitHub’s 100MiB file push limit).

Feedback from Olaf confirms that the processing done was very well (note this feedback is of the whole data-preprocessing notebook which includes work of other students Fig 1), but more information of the reasoning behind the processing steps (EDA) could still be added.

A screenshot of a phone

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Figure 1 Olaf Feedback SUE data-preparation

Furthermore, I have also started looking into how to convert web pages (HTML/CSS/JS) into reinforcement learning environments, for my open-program/data challenge. This work was shortly covered in my data challenge plan, on which Qin gave positive feedback on (Fig 2).

A screenshot of a phone

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Figure 2 Qin data challenge plan feedback

Due to the vast amount of work I have done on the data preparation for group project and my own projects, I think I have shown a sufficient level of knowledge and execution within this field.

# Data analysis & model engineering

*You can* ***apply*** *different types of machine learning models and tune the* ***hyper-parameters*** *of these models. Furthermore, you can* ***evaluate*** *the results from a trained model and can perform* ***other data analysis techniques****.*

Evaluation 1: I think this learning outcome is currently at an **Orienting** level.

Evaluation 2:

**Evidence Evaluation 1**

Besides the workshops offered during this semester, I have explored models of which I had limited understanding such as CNN, for which I had actually found very unique issues while evaluating the model, which I have extensively discussed and further explored based on feedback from the Technical tutor (Olaf).

**Evidence Evaluation 2**

# Targeted interactions

*You can* ***clearly communicate*** *with readers/audience, keeping into* ***consideration*** *the knowledge of set audience and the medium used to communicate information.*

Evaluation 1: I think this learning outcome is currently at an **Orienting** level.

Evaluation 2:

**Evidence Evaluation 1**

During the early parts of the project, I have created a Business Proposal in collaboration with my project group, for which feedback from the Process tutor (Martijn) was very positive, keeping the audience in mind. Furthermore, I have created a DVC research intended to document my findings and be able to share this with my fellow students for them to use it as a guide, also providing a README in my group project with instructions of how to use DVC within our project.

During the initial meeting with SUE, I have also taken a leading position in communication both during the meeting and general communication via email/google chat in which I showed my ability to communicate clearly with stakeholder.

**Evidence Evaluation 2**

# Future orientation

*You can* ***identify and explore*** *the* ***context*** *in which your project takes place, and you can approach this from* ***multiple perspectives*** *within the machine learning domain.*

Evaluation 1: I think this learning outcome is currently at an **Orienting** level.

Evaluation 2:

**Evidence Evaluation 1**

For the set-up of the group project, I ensured that a Business proposal was created that could clearly show our understanding and vision of the project, to ensure that no unexpected issues will be encountered later on, including setting up effective communication channels with the stakeholders.

Secondly I have spent a lot of time researching and setting up a robust DevOps environment for the group project that the stakeholder company can adopt even after the project in finished, using best practices and tools explored in my DVC research.

**Evidence Evaluation 2**

# Investigative problem solving

*You can Identify a problem and create a* ***hypothesis*** *and* ***research question*** *and can do this using a sound* ***research methodology****.*

Evaluation 1: I think this learning outcome is currently at an **Orienting** level.

Evaluation 2:

**Evidence Evaluation 2**

I have created a research document, exploring DVC. This research document is done using the DOT framework methodology, including the machine learning extension specifically added for the machine learning context.

This research document has been shown to the Process tutor (Martijn) who was positive about the methodology and research done.

**Evidence Evaluation 2**

# Personal leadership

*You are* ***proactively*** *looking to improve your own* ***development*** *and* ***learning****, while taking a* ***leading position*** *in your projects.*

Evaluation 1: I think this learning outcome is currently at an **Orienting** level.

Evaluation 2: I think I have proven a **Sufficient** level of proficiency for this learning outcome.

**Evidence Evaluation 1**

From the start of the semester, I have tried to ensure that my work can properly cover the learning outcomes set out for this semester. Secondly, I have taken a leading position within the group project, often leading meetings both within the group and with stakeholders.

Furthermore, I have spent significant time performing research and exploring machine learning within my own time to try and further understand topics that might not be covered by the normal curriculum (excluding the Open Program). I have also tried to be very proactive in asking for feedback on my work done, giving me valuable knowledge and ideas from both tutors and fellow students.

**Evidence Evaluation 2**

I have tried to have meetings with tutors and other stakeholders as often as possible to get feedback on my progress so far, which has helped me quickly adapt and learn when for example making incorrect assumptions about model performance.

During the group project, I am still taking a leading role in most meetings and outside of the meetings, including making sure assignments are submitted on time, and feedback/standups are done regularly, allowing the group project to run smoothly and make constant progress.

During this semester, there were two things that I wanted to improve on further with the first one being ethical concerns. As I knew this was a topic that would be covered later during this semester (and was covered for the Software domain during advanced software), I decided to get a jumpstart and already investigate potential ethical concerns in my open program, which was then transferred to my data challenge plan. I discussed the ethical concerns with Qin and received positive feedback on my approach (Fig 1) and was offered tools to look at further.

A close up of a text

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Figure 1 Qin Feedback data challenge plan

One thing that I have always been bad at, is approaching people/companies which during my preparation for future after Fontys, was identified as one of the biggest potential failing points if I were to start working as a ZZP’er. To try and improve on this skill, I decided to go to the Career day at Fontys TQ, for this I had created a QR-code that linked directly to my CV and had created (sort of a minigame) challenge of getting as many companies as possible to scan the QR-code and look at my CV. As expected, at the start of the day, I was very hesitant to show it as I could not naturally work it into the conversations. But after talking with InfoSupport who were extremely excited when I mentioned I had a CV that they could get via a QR-code (instead of a piece of paper), I became far more confident in not only just asking people to view my CV, but in talking with companies in general (eventually leading 10+ companies to have scanned my QR-code and viewed my CV, which has now caused most companies to contact me to mention this fact meaning that it might have actually helped me stand out).

Due to all the progress and continued leadership I have shown during this phase, I think I have shown a sufficient level of personal leadership.

# Graduation Preparation

*You create* ***opportunities*** *for finding a* ***graduation internship****, that aligns with your* ***personal needs*** *and the* ***school’s requirements****.*

Evaluation 1: I think this learning outcome is currently at a **Beginning** level.

Evaluation 2: I think I have achieved a **Proficient** level for this learning outcome.

**Evidence Evaluation 1**

Before the start of the semester, I have already spent a lot of time building up an understanding of what I want to do after graduation, including interviews and domain explorations and improving my outwards appearance for companies by improving my LinkedIn, GitHub, CV and creating a portfolio website.

I already have created a full planning for finding a graduation internship, including fallback plans which can be found in my Open Program Plan.

The work done so far has already seemed to pay of with me getting semi-daily emails and LinkedIn messages from new companies and previously approach companies both for working opportunities and internships.

**Evidence Evaluation 2**

Since the first evaluation, I have done a lot of work on finding a graduation internship (most of it directly following the previously made planning).

First thing I did was create a spreadsheet containing a list of companies I am interested in, either from LinkedIn or the ASAM portal with all required information. I have been using this spreadsheet to keep track of the status and remind me of my previous opinion of a company (Figure 1).

Internship candidates spreadsheet


Figure 4 Internship candidates spreadsheet

From this spreadsheet, I had reached out to my T1 (green) companies, sadly these companies did not have (or want me for) an internship, so I moved on to my T2 (blue), while also responding to all companies that had contacted me on LinkedIn (even the ones offering me a job instead of internship).

During this period, I was still trying to get an internship with SpendLab (my nr1 candidate), as they were not responding to my emails making me contact them via other means and eventually getting into contact with the previous recruitment manager who had apparently told their successor to reach out to me (which he never did). After getting into contact with the new recruitment manager, he told me they had filled all internship spots, but forwarded me to a different company (Waves Process Intelligence) (while he mentioned he did that because of my excellent portfolio, I have a feeling that he might also feel bad that I could have gotten the internship if he had just replied to me earlier).

After corresponding with Waves Process Intelligence, and having an in-person interview I was offered 3 possible projects to do for them (which all of them are very interesting, and I even offered to share them with more Business/AI students), meaning that I now have a company I can do my graduation internship at. The company however, is very small so for now I am still looking for other companies knowing that I have a fallback company that I can always do the internship at.

I also went to the Career-day at TQ, here I talked with many companies (including some that did not respond to my emails…). As preparation for the Career-day, I had made my CV into a QR-code and shared it with companies during the day (companies were surprisingly extremely excited about this), which got me an interview with InfoSupport BDO and Alten in the coming week, and correspondents with others.

After all this work, I have been able to find a fitting graduation internship that I would like to do, but have also been able to get into contact and be offered interviews with more companies (as I would still prefer to do an internship at a “large” company to get experience within that environment).

# Retrospective

# Conclusion