# PERSONAL DEVELOPMENT REPORT

By Mihail Kenarov

I am Mihail Kenarov, a semester 4 student at Fontys, who is interested in AI. In this document I will record the steps that I take throughout this semester, as well as the progress that I make in the sphere of AI. This will include the social impact that it has, my understanding of data analytics and investigative analysis and finally my knowledge of machine learning and how it works and the way that it can be used. This will be a living document which will be updated once time an evaluation phase occurs.

# 1. Learning outcome 1: Data Preparation and Analysis

## Clarification:

***Data preparation and analysis of data is the process of aggregating and preparing given dataset as well as other open datasets and use them to analyse and identify the opportunities for predictive analytics.***

**Aggregate** means acquiring data from a variety of different sources and in different formats and putting it together into a meaningful larger total dataset.

**Prepare** consists of cleaning the data according to theories of data quality, in such a way that the process of cleaning and preparing those data is repeatable, transparent to others, and the results are suitable for data analysis.

**Data analysis** implies amongst others: descriptive analytics, statistical overviews, derived columns, trend analysis, etc.

**Opportunities** for predictive analytics can be identified by finding correlations between features, principle component analysis, summarization, anomaly detection, etc. and include an impact forecast.

## First Evaluation: week 5

I have looked up different datasets for an individual challenge and have gone through their data and accessed if they are eligible for the creation of my first project in the sphere of AI. I have also checked the legitimacy of their data, the source they have gotten it from and if what I found in it is similar to the data that other sources offer. While doing so I have also exercised what I have learned and tried to implement it in my individual challenge.

While doing the exercises of week one, I received feedback from our teacher – Hans Konings

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Self assessment: Orienting

Because I have looked through different datasets, checked their legitimacy and I am still practising on how to analyse and work on the data.

# 2. Learning Outcome 2: Model Engineering

## Clarification:

***Model engineering is the ability to use findings from data to preprocess data, apply machine learning algorithms and evaluate the quality and usefulness of produced models, for a defined domain.***

**Findings from data analysis** implies that your choice of data sources and feature selection is based on opportunities for predictive analytics that you previously identified.

**Preprocess** refers to applying systematic ways like feature selection, encoding, scaling, etc. of turning raw datasets into formats that are more suitable for model training.

**Apply** consists of training of different types of models like classification, regression, etc., as well as tuning hyper-parameters.

**Evaluate** means judging the results of machine learning with respect to recall, precision, accuracy, cross-validation, over/underfitted etc.

**A defined domain** refers to the fact that your evaluation must address the problem and impact definition as given by the domain stakeholders, and evaluation metrics must be translated to be meaningful to them.

## First Evaluation: week 5

The assignments that have been provided to us have been all made except the last one. I have a basic understanding of what they are, why are they used, what are they used for and also how can we apply them. Based on this I have chosen a the Nearest Neighbours Method (kNN), since I have decided that for my project, which is a recommendation system, based on the selected features it is a matter of classification. The idea is to show 3 games similar to the one that a user has chosen and see if the user will like them.

It does seem that I am going in the right direction as a whole for the project, however some things might be missing and I need to look deeper into the specified topics, mentioned from one of my teachers – Priyanka Darbari

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Self assessment: Orienting

Because I have looked at different projects, different datasets and decided that this particular model is useful for the current challenge, based on the features of the dataset.

# 3. Learning outcome 3: Explainable AI

## Clarification:

***Explainable AI is the ability to deliver projects that follow the three 'Explainable AI' principles of transparency, interpretability, and explainability.***

**Transparency** means that the process by which the used input data results in prediction models is reproducible, reliably described and its decisions are motivated.

**Interpretability** addresses the possibility for humans to comprehend the project cohesion and results by making them comparable to the domain knowledge and baselines.

**Explainability** refers to the application of tools and methods that turn black-box models into grey/white-box models by having the model draw out its decision making process and/or describe its feature importance.

## First Evaluation: week 5

The exercises that have been given to us throughout the semester until now have been done either in group or alone. I have also done research on recommendation systems, how they work and what types there are. While doing so I also understood the importance of them and how they operate in the world. Without them many stores would not be able to sell as much product, no matter the type of product and the user would not be able to find products that could be of interest to them.

After doing the exercise about domain understanding and cognitive maps, me and my colleague, Aleksander Konstantinov, managed to receive this feedback as well, from our teacher – John van Litsenburg:

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However, after the submission of my Project proposal, it does seem that I am missing some of the requirements that I need to do, to fully understand how to write such a document and it does show some lack of understanding from my part on the subject

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Self assessment: Unoriented

The reasoning behind this claim is the knowledge that I have on recommendation systems, as well as the exercises that have been done to solidify my knowledge on the subject, but despite that it does seem that I am missing some form of understanding on the subject.

# 4. Learning outcome 4: Professional standard

You show that you conduct work in accordance with an industry supported methodological approach (AI Project Methodology) in terms of your project's goals, stakeholder involvement, applied research, decision making and reporting.

**Goals** refer to identified authentic immediate and long term issues that you work towards finding appropriate solutions for. Whilst defining your goals you explore the context and environment of your project and you make the necessary business, sustainable and ethical considerations.

**Stakeholder involvement** implies that you involve relevant and competent partners in your project from beginning to the end. During your project you communicate constructively with all your stakeholders.

**Applied research** implies that you effectively use research strategies and methods, like those in the DOT-framework, for your domain understanding and other research activities.

**Decision making** means that you correctly identify the need for further iterations, using evaluation models like the TIC-tool and your stakeholder feedback.

**Reporting** refers to well-structured and well-motivated, correct and relevant documents, using APA style referencing for used external sources, as well as using visualizations, concluding your project proportionally covering all four phases of the methodology.

# 5. Learning outcome 5: Personal Leadership

You are aware of your strengths and pitfalls in ICT as well as your personal development. To nurture personal growth you are able to engage in actions that align with your core values, in a way that suits you.

**Being aware** **of your strengths and pitfalls** means that you are able to recognize (among other things through self-reflection and asking for feedback) what you are already good at and where growth is still possible.

**Being able to engage in actions** means that you take responsibility, growing towards a professional ICT practitioner, seeing and seizing opportunities in a structured, planned and efficient way.

**In a way that suits you** means that in the activities you undertake you apply an approach that fits your style of acquiring knowledge and skills.

# 6. Learning outcome 6: Internship preparation

6. Internship Preparation

You create chances to acquire and define an internship assignment based on a match between your ambitions, the school’s requirements and the field of expertise related to your profile or specialisation.