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## Project Plan



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## 1 Project Introduction

The goal of this project is to collect data from the FMI interface and prepare it for integration into a neural network pipeline, which I am developing as part of my final thesis.

The purpose is to create clear and practical documentation for fetching various types of data from the FMI interface and processing it in a way that makes it suitable for use in machine learning models, particularly neural networks.

## 2 Project plan

The basic idea for this project emerged when I first started planning the integration of weather data into a neural network. Initially, I thought obtaining the data would be a simple task, but I quickly realized that understanding the documentation would take more time than expected. This led me to the idea of creating the missing piece of the puzzle by writing clear, user-friendly documentation on how to effectively use these services and apply the data in a prediction model. At the same time, by completing this project, I can fulfill the course requirements and receive credit for this course

### 2.1 The objectives of the project

The objectives of this project are designed to address both the technical and practical challenges involved in collecting, processing, and utilizing weather data from the Finnish Meteorological Institute (FMI) interface. These objectives are essential for ensuring the success of the project.

#### 2.1.1 Collecting data from FMI interface

The primary objective of the project is to develop an efficient and automated process for collecting different types of weather data (e.g., temperature, precipitation, wind speed) from the FMI interface. This will involve designing a robust system to fetch the data on a regular basis, ensuring that data retrieval is automated, accurate, and scalable. Establishing this reliable data pipeline will serve as the foundation for further processing and integration into the neural network model.

#### 2.1.2 Comprehensive documentation

The second objective is to develop a thorough and well-structured documentation that will act as a reliable resource for anyone needing to access various types of weather data from the FMI interface. This documentation will outline the steps for data collection, provide examples, and explain the processes for handling and utilizing the data. It will be designed to be user-friendly, clear, and accessible for future use and reference.

### 2.1.3 Fulfilling course requirements

The third objective is to carry out the project in a way that aligns with the course requirements in order to receive credit for the course. This will involve meticulously documenting the hours spent on each task, ensuring that all documentation is written in English, and producing several key documents. These documents will include the project plan, project requirements, use case diagram, sequence diagrams, final report, and a lessons learned document. This objective ensures that the project is not only technically sound but also meets the formal expectations and academic standards set by the course.

## 2.2 Project scope and boundaries

The scope of this project is focused on the collection, preprocessing, and integration of weather data from the Finnish Meteorological Institute (FMI) interface for use in a neural network pipeline. The project aims to create reliable documentation that serves as a comprehensive guide for fetching different types of weather data and preparing it for integration into machine learning models.

### 2.2.1 Project scope

The scope of this project is focused on documenting the process of collecting and preprocessing weather data from the Finnish Meteorological Institute (FMI) interface. The primary goal is to create comprehensive and user-friendly documentation that will allow for the easy retrieval of various types of weather data, including temperature, precipitation, wind speed, and snow depth. This documentation will serve as a guide for efficiently accessing and preparing this data, ensuring that it is ready for integration into machine learning models or other applications.

### 2.2.2 Project boundaries

While the project covers data collection, preprocessing, and integration for machine learning, there are certain boundaries that define the limits of the work. The project will only focus on weather data sourced from the FMI interface and will not explore other external weather data providers or APIs. The development of the neural network model itself is not a central objective of this project.

## 2.3 Methods and approach

For this project, I will be creating a public GitHub repository that will serve as a central resource for the documented process of fetching different types of weather data from the Finnish Meteorological Institute (FMI) interface using Python. This repository will contain all the necessary documentation and code related to the course and the project, ensuring transparency and accessibility for future reference.

The main programming environment will be Visual Studio Code, which will be used for writing and testing the Python code. I will leverage the official FMI documentation to understand the API and data retrieval methods [1]. Additionally, I will consult various online resources, including forums, troubleshooting websites, and large language models (LLMs), to resolve potential issues or refine my approach as needed. These resources will help address any challenges that may arise during the development process and provide guidance on best practices. For example, I plan to utilize resources like StackOverflow for troubleshooting and advice [2], and ChatGPT as a language model for assistance in solving problems and refining code [3].

The project will focus on developing a well-documented codebase that details each step of the process, from fetching weather data to preprocessing it for machine learning use. This will include comprehensive comments in the code, examples of how to retrieve different types of data, and explanations of any issues encountered along the way and how they were solved.

## List of references

1. Finnish Meteorological Institute. Open Data. Available from: <https://en.ilmatieteenlaitos.fi/open-data>
2. StackOverflow. Available from: <https://stackoverflow.com>
3. OpenAI. ChatGPT. Available from: <https://chat.openai.com>



