



Space
Situational
Awareness

SEMESTER PROJECT

INTEGRATING WEATHER FORECASTS TO OPTIMIZE TELESCOPE USAGE

AUTUMN 2024



EPFL

Project overview

- **Type of Project** : Semester project
- **Duration** : 14 weeks (Official start/end date : September 9-December 20)
- **Submission of final report** : January 13
- **Final Presentation** : TBD
- **Recommendation** : This project is suitable for students with an interest in weather forecasting and data management.

Context

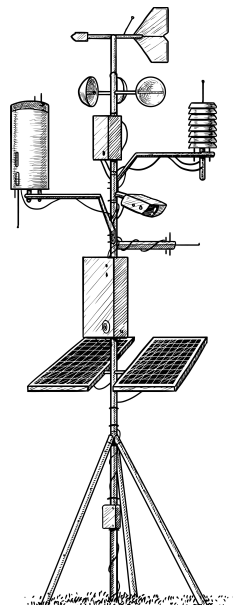
The number of objects orbiting Earth, such as satellites and debris, is increasing at an unprecedented rate. This proliferation poses significant hazards to space traffic and various fields related to space activities.

The main goal of the [SSA EPFL Team](#) is to build an open-access catalog of orbiting objects. This catalog will provide complete transparency, allowing anyone to access detailed information about these objects. To gather this information, the SSA EPFL Team will use two telescopes housed in protective domes. To prevent damage to the telescopes the domes must automatically close in case of bad weather.

To accurately predict weather conditions, data from a local weather station and Météo Suisse will be managed and analyzed. The local weather station will provide real-time data on temperature, wind speed, atmospheric pressure, and other relevant factors. This comprehensive data integration will ensure precise weather predictions, allowing the system to determine when it is safe to conduct observations.

Project Scope

The goal of this project is to achieve highly accurate weather predictions to maximize observation time. This requires getting a good understanding of weather forecasting and proficient management of data from different weather stations. Thorough execution of this project is essential to prevent damage to the expensive tools and ensure the reliability and safety of observations.



Tasks

- Set up a local environment to store and access the data from the local weather station.
- Build an interface between the local weather station and the telescope control software.
- Find a way to merge the local station's data with data from other stations (e.g., Météo Suisse).
- Accurately predict weather conditions to inform telescope operation decisions.

Prerequisites

- A good understanding of weather forecasting.
- Skills in data management and analysis.
- Proficiency in handling and interpreting weather station data.

Contact

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