Development Plan
ProgName

Team #, Team Name
Student 1 name
Student 2 name
Student 3 name
Student 4 name

Table 1: Revision History

Date	Developer(s)	Change
Date1	Name(s)	Description of changes
Date2	Name(s)	Description of changes
...	...	...

This document outlines Team Alkalytics' project development plan.

This includes administrative details such as copyright and Intellectual Property (IP) agreements, the team's meeting schedule, communication methods, and expected roles.

This is followed by details about the team's planned workflow, project deliverables, scheduling, a Proof of Concept (POC) demonstration plan, and an expected technology stack for the project and relevant coding standards.

The appendices include a reflection on the writing process of this document as well as a team charter that outlines a few ground rules and expectations for the team.

1 Confidential Information?

There is no confidential information to protect with respect to this project.

2 IP to Protect

There is IP to protect with respect to this project. Currently, the type of agreement that the team may be required to sign is in discussion between the primary supervisor, Dr. Charles de Lannoy, and the Capstone course instructor, Dr. Spencer Smith. Once we have decided and signed the agreement, this section will be updated to reflect the terms of the agreement.

3 Copyright License

We will be adopting the license decided by Dr. de Lannoy and Dr. Smith. As this is still in discussion, we will temporarily adopt the standard MIT license, provided here. Once we have decided on the appropriate license for this project, this section and the linked license file in the repository will be updated to reflect the proper license agreement.

4 Team Meeting Plan

Weekly Meetings: We will have weekly check-ins on Fridays from 3:30PM to 4:30PM, either in-person on campus or virtually, depending on member's availabilities. Virtual meetings will be hosted on Microsoft Teams. Additional meetings will be scheduled as needed.

The current meeting chair should open a GitHub issue prior to a meeting. During a meeting, the chair will go over each item on a prepared agenda and all members participate in the discussion. The notetaker will record meeting minutes and post them as a comment under the GitHub issue after the meeting, as well as a summary of task assignments.

Supervisor Meetings: We will have biweekly or monthly meetings with our primary supervisor, Dr. Charles de Lannoy, depending on his availabiility. We will be using his Outlook calendar to arrange appropriate meeting dates. These meetings will be held either in his office or virtually on Microsoft Teams.

We currently plan to have weekly meetings on Tuesdays from 3:30PM to 4:30PM with our secondary supervisor, Bassel Abdelkader, as he works closely with the data we need to integrate into our project. These meetings will be virtual due to his schedule.

5 Team Communication Plan

The team uses an Instagram group chat for regular communication and a Microsoft Teams group chat for drafting emails and sharing resources.

We will communicate with our supervisors through email or scheduled meetings. The team liaison will be responsible for sending the emails and should CC all team members.

All project-related communication will be done via GitHub issues. Each issue will track a specific task and assign team members. Every pull request should link to its corresponding issue(s), and feedback is expected from all team members when a pull request is created.

6 Team Member Roles

The team plans to rotate through the following roles between every (or every few) milestone(s):

- **Meeting chair**: The meeting chair should prepare an agenda for each meeting and open an issue for the meeting. The issue should contain an attendance tracker, the agenda, and other topics that may need to be discussed.

- **Notetaker**: The notetaker will record meeting minutes during a meeting and post it as a comment under the meeting issue, along with a summary of task assignments.

- **Primary reviewer for Pull Requests**: The primary reviewer will give the official "approval" for pull requests. All members should review pull requests and provide feedback, but the primary reviewer will make the final decision to ensure a smooth workflow.

Once we begin implementation, all members are expected to contribute as developers. However, we anticipate appointing technical leads based on the members' skillsets, described below:

- Sumanya has experience in data analytics and working with large datasets, and will also serve as the main point of communication between the team and our stakeholders.

- Kate has experience in web development and programming in Python, as well as proficiency in several Python libraries we may need to use.

- Jason has experience in MongoDB and machine learning, as well as proficiency in GraphQL, which we are considering for our data visualization framework.

- Jennifer has experience working with large datasets and employing data visualization tools like PowerBI, along with a strong background in web development.

7 Workflow Plan

- How will you be using git, including branches, pull request, etc.?

- How will you be managing issues, including template issues, issue classification, etc.?

- Use of CI/CD

8 Project Decomposition and Scheduling

- How will you be using GitHub projects?

- Include a link to your GitHub project

[How will the project be scheduled? This is the big picture schedule, not details. You will need to reproduce information that is in the course outline for deadlines. —SS]

9 Proof of Concept Demonstration Plan

What is the main risk, or risks, for the success of your project? What will you demonstrate during your proof of concept demonstration to convince yourself that you will be able to overcome this risk?

10 Expected Technology

[What programming language or languages do you expect to use? What external libraries? What frameworks? What technologies. Are there major components of the implementation that you expect you will implement, despite the existence of libraries that provide the required functionality. For projects with machine learning, will you use pre-trained models, or be training your own model? —SS]

[The implementation decisions can, and likely will, change over the course of the project. The initial documentation should be written in an abstract way;

Topics to discuss include the following:

- Specific programming language

- Specific libraries

- Pre-trained models

- Specific linter tool (if appropriate)

- Specific unit testing framework

- Investigation of code coverage measuring tools

- Specific plans for Continuous Integration (CI), or an explanation that CI is not being done

- Specific performance measuring tools (like Valgrind), if appropriate

- Tools you will likely be using?

[git, GitHub and GitHub projects should be part of your technology. —SS]

11 Coding Standard

[What coding standard will you adopt? —SS]

Appendix — Reflection

The purpose of reflection questions is to give you a chance to assess your own learning and that of your group as a whole, and to find ways to improve in the future. Reflection is an important part of the learning process. Reflection is also an essential component of a successful software development process.

Reflections are most interesting and useful when they're honest, even if the stories they tell are imperfect. You will be marked based on your depth of thought and analysis, and not based on the content of the reflections themselves. Thus, for full marks we encourage you to answer openly and honestly and to avoid simply writing "what you think the evaluator wants to hear."

Please answer the following questions. Some questions can be answered on the team level, but where appropriate, each team member should write their own response:

1. Why is it important to create a development plan prior to starting the project?

2. In your opinion, what are the advantages and disadvantages of using CI/CD?

3. What disagreements did your group have in this deliverable, if any, and how did you resolve them?

Appendix — Team Charter

[borrows from University of Portland Team Charter —SS]

External Goals

By the end of Capstone, our team wishes to deliver a project that is impactful and useful beyond our graduation. We seek the personal satisfaction that comes from knowing our product could contribute to improvements in climate change. By achieving these goals, we thereby anticipate and hope for an excellent grade in the Capstone course.

Attendance

Expectations

All members are expected to attend all weekly check-in meetings, meetings with our supervisors, and maintain punctuality. We will not require full attendance at every Capstone lecture or tutorial, as long as at least one member from the team attends. All forms of attendance will be logged through GitHub Issues.

Acceptable Excuse

It will not be acceptable for a member to miss a meeting or a deadline without any prior communication. Missing a few meetings will be acceptable as long as the member communicates their absence to the rest of the team at least 1-2 hours in advance. There will be no acceptable excuses for missing a deadline unless they have an emergency. The guidelines for such a situation are outlined in the following section.

In Case of Emergency

If a team member has an emergency and cannot finish their work or meet a deadline, they are expected to communicate this as early as possible. The rest of the team will discuss potential accommodations and ensure that all tasks are completed by the deadline.

Accountability and Teamwork

Quality

All members should prepare for weekly check-ins and meetings by doing the following:

(a) Review the agenda prepared by the meeting chair in advance, and

(b) Prepare a short progress report and any questions/concerns that were not already mentioned in the agenda.

Each member is expected to put in consistent effort and deliver high-quality work that meets or exceeds the expectations described in the applicable rubric. Code should be well-structured, well-documented, and adhere to the coding standards outlined in Section 11 of this document.

Attitude

All members are encouraged to share ideas, ask for feedback/help, and collaborate harmoniously. Feedback should always be clear, concise, and respectful. We do not necessitate a Code of Conduct, but if issues begin to arise over the course of the project, we may consider standardizing one as part of a conflict resolution plan.

Stay on Track

We will track everything using GitHub and GitHub Projects. We have a Kanban board to track attendance and tasks for deliverables as GitHub Issues, and other metrics will be collected by the methods provided in the projMngmnt folder of the project repository (e.g., performance metrics).

If uneven contribution becomes a pattern or a team member's quality of work degrades over time, the team will try to resolve the issue internally by bringing it to that member's attention. Uneven contribution may present itself in the form of fewer commits or fewer tasks completed despite being assigned, etc. If no improvement is seen after two internal discussions, the issue will be escalated to our assigned Teaching Assistant (TA). If there is still no improvement after the TA's involvement, it will be brought to the instructor's attention.

Team Building

We plan on building team cohesion through our interactions outside of the Capstone project. As we all have similar class schedules, we have numerous opportunities to interact and work with each other in environments that differ from the Capstone project.

Decision Making

Decisions are to be made through a majority vote and should only be made after the team has had a thorough discussion. If there is a tie, we may approach our supervisors for their input if it is relevant for them.