GitHub

Pokemon OST Generator

Project Charter

By

Scylidose

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Contents

1 Introduction

This document allows us to highlight the different goals, deliverables, timeline, organization for the project and to describe our place and our involvement in the team.
In this document, we will first describe the different goals for the project and in which context the idea was originated, we then describe the deliverables to be delivered to the client with a timeline that focus on each important step for the project and how much time they will surely take to complete.
Then we highlight the organization put in place, whereas the details for the budget allocated and the team roles and task.
Finally, we will focus on the known and unknown constraints for the project and what it could imply for the success of the software.

2 Project Mission and Context

The principal mission of the project is to learn the concepts, architecture and constraints when it comes for an Artificial Intelligence to generate songs and to practice the programming language React by creating a Full-Stack app. In order to accomplish the desired output, the algorithm has to generate authentic Pokemon songs. It will have to learn from MIDI files some tunes from the Pokemon Platinum/Diamond/Perl (4th generation) games.

The context behind the project idea comes from the will to learn and practice new technologies, combining thirst for knowledge and something that I enjoy.

3 Deliverables and Measure of success

The project has to deliver in total 9 generated songs based on Pokemon Platinium/Diamond/Perl generation.
Each three days, a set of 3 songs as to be proposed to the client via the GitHub repository for the project.
A list of the **detailed deliverables** can be found in Appendix A.

The measure of success will be based on poll results, there will be two online polls, where votes will represent the resemblance ratio from the generated songs compared to the real ones (From 1 to 5 how much the generated song looks like compared to a real Pokemon song).

A satisfying result is an average resemblance ratio of around **3 or higher**.

4 Timeline

- Make research on the subject (Day 1 - 2)
- Fetch data (Day 1 - 2)
- Create and train LSTM model (Day 2 - 3)
- Generate and Evaluate songs (Day 3)
- Improve LSTM model (Day 3)
- Create and train WaveNet model (Day 3 - 4)
- Generate and Evaluate songs (Day 4)
- Improve WaveNet model (Day 5)
- Do poll and collect Feedback (Day 6)
- In-Depth improving (Day 6 - 8)
- Create React App (React and Python Flask) and integrate the best performing model (Day 7 - 9)
- Final poll (Day 9)
- Finalization and conclusion (Day 9)

A visualization for the project Timeline can be retrieved from the Appendix B1, which use a **Gantt chart**.

5 Team and Organization

The project will be done by only one developer. This sole developer will be in charge of integrating and managing the data that will be collected from a third-party source. To get more insight on the data, the developer as to provide some data visualization.

He is also responsible for designing, building and evaluating the machine learning models, in order to be sure that the generated output is relevant.

Finally, the developer as to implement the machine learning model in a Web App, using React.js for the client side (Front-End) and Flask for the server side (Back-End).

The only tools of communication for the project will be :

- Discord App, where will be broadcasted the two polls and to collect opinions by text chat used to get insightful feedback.
- GitHub, where a Jupyter notebook, the Web app and the different generate songs will be published.

6 Budget

As there is only one developer, and that his task can be resumed as the tasks for a Data Engineering, we can estimate his average hourly salary as being 36 $.
The developer will work around four hours per day for nine days, which can be summarized to a total of 36 hours for the project. We can estimate the budget allocated for the salary of the developer as being around 1300 $.

In order to prevent other necessary costs (infrastructure, deployment, ...) we allocate another 100 $.

The final budget for the entire project is 1400 $, is expected 3 generated songs every three days till the end of the project for September 9, 2020.

7 Constraints and Assumptions

In this section we focus on the project's known and unknown parameters.

The principal known constraint is related to the available data, using only one Pokemon generation will limit us on a finite and small set of songs, for the 4th generation we know that there are around 150 songs and not every one of them will be used, we can then expect a data set of around 5 to 10 songs for each themed song.
We can include time constraint, since we only have nine days to create 2 models, generate 9 songs and create a Full-Stack App that will integrate the best model.

The next constraints are assumptions based on what we know from the project at this point in time.
First, we can predict that the generated outputs could not be enjoyable to listen and that the resemblance ratio to be close to 0 or 1, even when each sprint of three days is focused on the improvement of the generated songs.
Secondly, there is a chance that there could be not enough participation on the online polls or in the text chat, thus the team could not receive significant feedback on the ways to improve the model.

8 References

- The Digital Project Manager. (2011). Write A Project Charter: How-To Guide, Examples Template. Retrieved from https://thedigitalprojectmanager.com/project-charter/
- Office Timeline. Logiciel Diagramme de Gantt. Retrieved from https://www.officetimeline.com/fr/online/logiciel-diagramme-de-gantt

Appendices

A List of Deliverables

A.1 First Deliverable

- Set of three songs, one for Battle themed, Route themed and Structures themed OST.
- First Deliverable will use LSTM has architecture.
- Success Criteria will be to atleast get some harmonized partitions.
- Estimated release : 01 September 2020

A.2 Second Deliverable

- Set of three songs, one for Battle themed, Route themed and Structures themed OST.
- Second Deliverable will use WaveNet has architecture.
- Success Criteria will be to atleast get some enjoyable songs.
- Estimated release : 04 September 2020

A.3 Third Deliverable

- Set of three songs, one for Battle themed, Route themed and Structures themed OST.
- Third Deliverable will use the best architecture between LSTM and WaveNet based on an online poll.
- Success Criteria will be to get realistic Pokemon songs, and that people enjoy them via a different poll.
- Estimated release : 07 September 2020

B Scheduling documents

B.1 Planning Roadmap

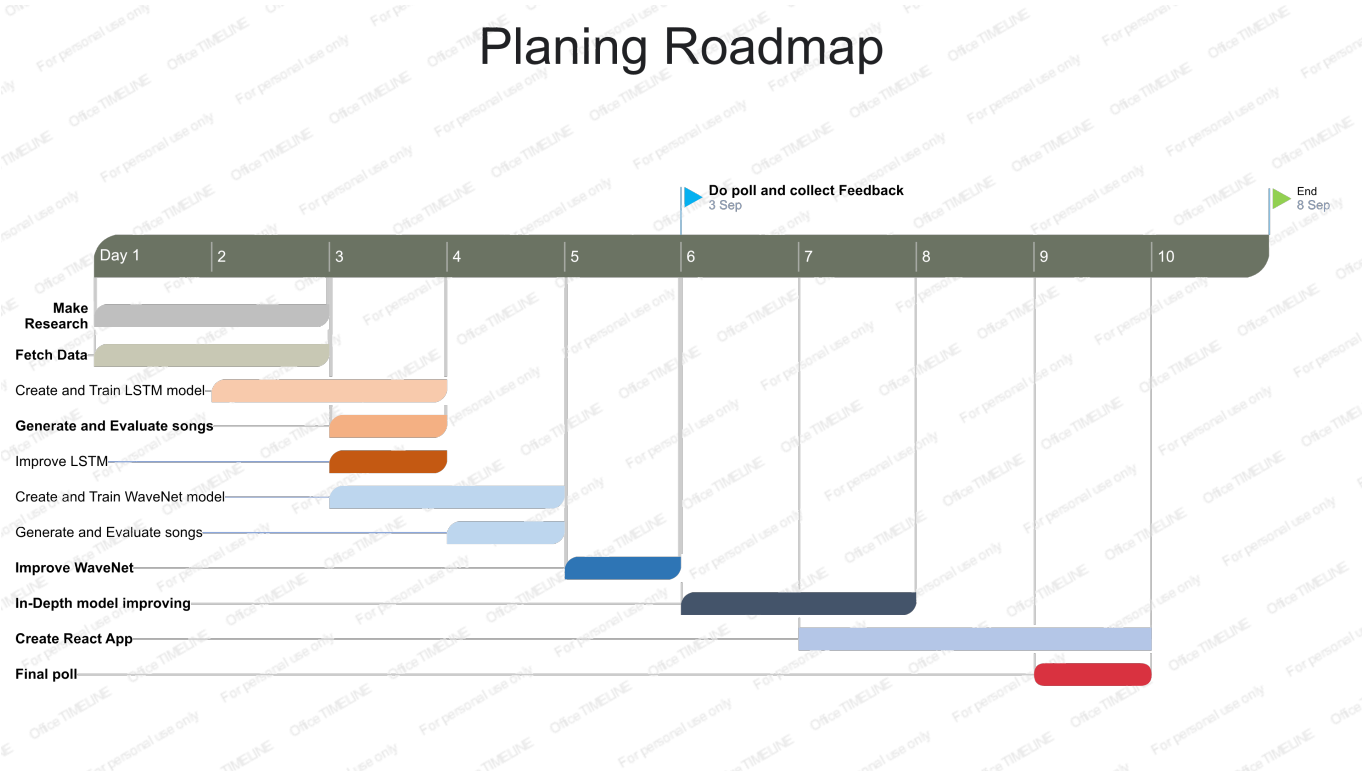

Figure 1: Gantt Chart