AUDREY MARTIN
YVAN SMORAG

MELOD'IMAC

using Magenta js

- ALGORITHMIC AESTHETICS -

1. Think, collect

First steps

The first thing we did when we started to work on the project was collecting information and inspiration about magenta.js and what we could do with this library. So, we started by appropriating the library and its basic possibilities by testing the online demonstration. We discovered different ways to play with sounds and music and what we could do with Machine Learning.

Inspirations

To understand better the extent of possibilities offered by magenta, we tested a lot of projects using this library (all of them can be tested online, from the magenta website). Some of them allow the user to compose his own melodies and rhythms ; you can discover some AI-generated music on others. We also discovered a real game based on magenta and music, and we understood that we could do everything we want with this library.
All of these inspirations helped us to find our definitive project idea.

Scenario

In terms of scenario and UX/UI design, we started to think about a simple one, based on music creation. The user should be at the center of his experience, and Machine Learning would only be a tool to express his creativity. The user could create his own melody and ask the AI to do something with it. we thought about all the interactions he could have with our website :

- listen and pause some music tracks;
- record his own melody;
- launch the AI;
- erase all and start again from scratch.

1. Think, collect

Brainstorming and ideas

After one or two days of reflection, we came with 2-3 strong concepts :

- **A music generator "in the style of".** We would feed a machine learning model with different pieces of an artist or a group. Thus, the algorithm would have been able to produce song who would musically look alike something being really created by the original artist

- **A melody ending tool.** The user plays some notes he/she has in head (or even something totally hazardous), and the programm will automatically complete it to produce a coherent follow up to the melody.

- **A music visualizator which would be highly interactive. T**here would be a small musical loop turning, and you can add drums, a more complex melody, chords, change the rythme etc, and seeing the live evolution on the visualisator.

2. Sketch

We finally decided to choose to create a melody ending tool. We thought it would be very interesting to create a tool allowing anyone with no musical background to create a melody of his own, either by playing some random notes on the keyboard, or a small riff towards a more complex musical theme. It is a way to boost up creativity and experiment with sounds. Melod'IMAC was born.

We sketched first our idea with the help of pen and paper by imagining the organization of the webpage. It helped us to clearly understand our project orientation, and make sure we had the same vision of what we wanted to do with Melod'IMAC.

Then, we created the page structure with the help of P5, HTML and CSS before producing anything with magenta.js. Then, we added Machine Learning and MusicRNN functionalities to create the final result on the webpage.
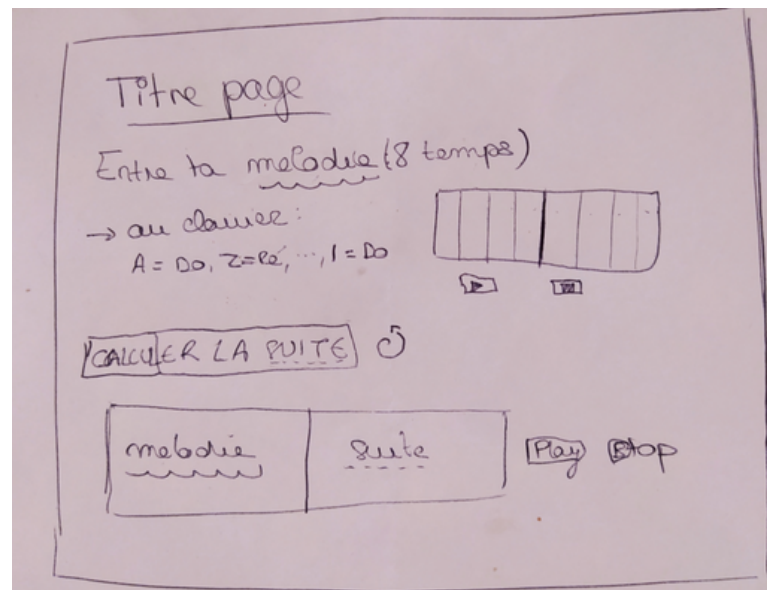
Paper sketch of our webpage

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3. Produce

Website Explanation

On the website, the user can only push on the "start composition" button. Once done, the user can type on her/his keyboard and most of the keys are being linked to a certain note (defined by its pitch). Before typing the note, he/she can choose the length of the note, on the right-side menu(dureeNote), a value of 0.5 meaning the note will last a half note, a value of 1.0 is equivalent to 2 half notes and so on. Once the user is done composing, he will be able to hear its whole initial melody, and restart the process if the melody doesn't fit her/him.

When he/she finds the melody convenient, he/she can now create the melody thanks to the machine learning model. The first parameter of the model is the temperature which quantifies the randomness of the process, from a musical point of view : a high temperature, i.e higher than 1.5, will result in something quite chaotic, which may be very interesting in a creative process. The second parameter is the step quantity, which refers to the amount of musical steps that will be added after the original composition. The higher this parameter is, the longer the final melody will be. It is possible to refresh the IA as many times as possible to have several different compositions all issuing of the same original melody. At any time, it is possible to change the tempo (the global speed) of the piece.
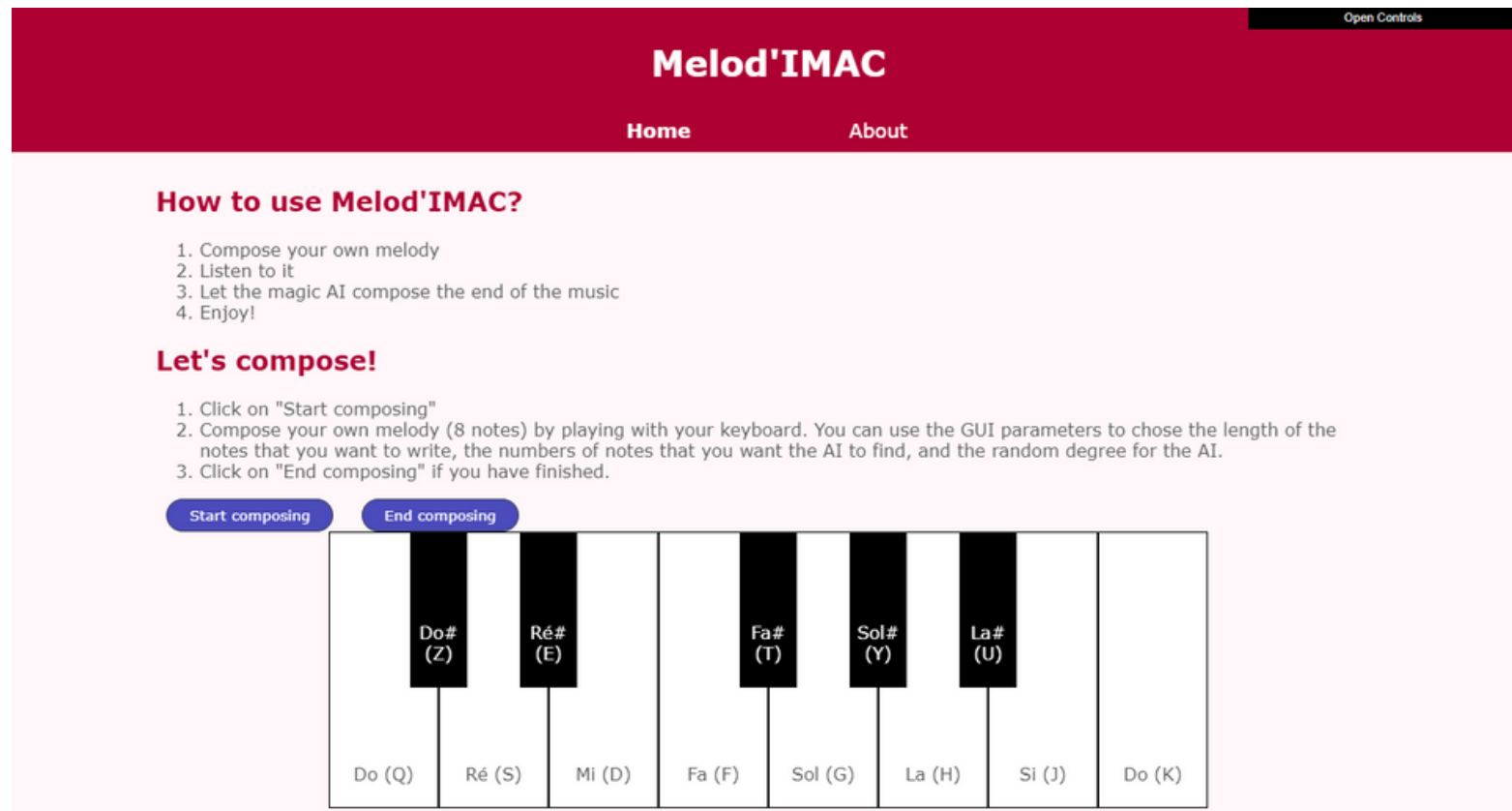
Difficulties encountered

During our creative process, we mainly faced one difficulty : the lack of knowledge and global tutorials about @magenta/music. We spent a huge amount of time reading the API's documentation online, trying to understand the functions, what they were doing, how to access resources etc. We both discovered magenta with this project and music manipulation, and It was a true challenge to learn how to look for information and figure out how - for instance - the machine learning model was working, because we never worked with this kind of sophisticated algorithm before.

- **Source code** : https://github.com/adudree/creative_project
- **Website** : https://adudree.github.io/creative_project/

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Conclusion

Melod'IMAC was a very interesting project. It was based on the manipulation of sounds and music, something we had never done before, especially in a web project. Music is often underrated – as it is less noticeable than raw images and videos – and a musical background –either in musical theory or the practice of an instrument - is almost a must-have to compose something coherent. Create a tool helping non musicians to express their creativity was important for us, and we think we managed to do so.

Screenshot of the website