Project documentation——
Reeds digitalization

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Part 1: project topic

This semester my project is a series experiment about Reeds digitalization. I create a group of Reeds and they mainly include three kinds of topics: **L-System, API** and **Interpolation.** My REED finally ends up with a work called ***Wind postcard of the city.***

Reed postcard of the city is using winding reeds to show some cities' picture I took when I travel in Europe. The whole look is the city's landscape, but I use the reeds to make it somehow abstract. Reeds here is like the the basic element of the view instead of the color pixel grids. And I combine with WindSpeed of API. Different city has different speed which results in different reeds look.

Part 2: Reference

1. **L-system** are a mathematical formalism proposed by the biologist Aristid Lindenmayer in 1968 as a foundation for an axiomatic theory of biological development. Central to L-systems, is the notion of rewriting, where the basic idea is to define complex objects by successively replacing parts of a simple object using a set of rewriting rules or productions. The rewriting can be carried out recursively. In my Reeds case, L-system is applied in the reeds stem written. I create the grammar of rewriting stems in different direction in a random occasion, which looks like a very naturally plants.

2. **API**: Technically, API stands for **Application Programming Interface**. Nearly every website can provide the data service of their own website, so there is a API you can use to get the data from the website you want to use. then you should get the completely URL , which combines the basic structure ,the request and your API id. API id is your API key , this can be acquired from the website as long as you register it . After you getting the complete URL, the website will give you a data file, like CSV,J SON,XML,HTML, then you can use it in your program. I applied the ***open weather API*** to get the wind speed to blow my reeds, So actually my reeds can connect with the real physical

world's wind and Thus I can design a kind of feedback of L-system to the wind speed.

3. **Interpolation** is a method of constructing new data points within the range of a discrete set of known data points. Interpolation is the estimation of a value or set of values based on their context. Linear interpolation, a very simple form of interpolation, is basically the rendering of a straight line between two or more points. Interpolation is useful for filling in missing data, such as in upscaling images or creating statistical models. There are different words all about interpolation: lofting, tweens, morphing, interpolation.

4. *First and Second Beauty Composite (*Nancy Burson, 1982*)*. In the this two artwork ,the artist make the averages of famous American movie stars in 1950s in the left and make the averages of famous American movie stars in 1980s, Actually ,this is a kind of interpolation to show the population of fashion culture.

First and Second Beauty Composite:

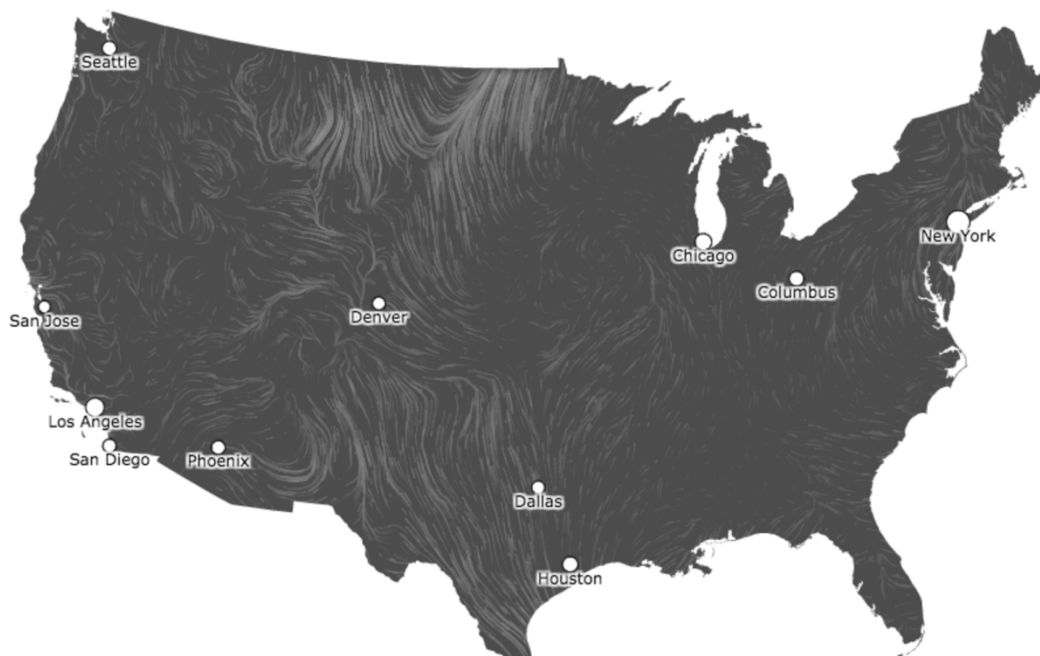Left：Bette Davis, Audrey Hepburn, Grace Kelly, Sophia Loren &

Marilyn Monroe（1950s）;

right：Jane Fonda, Jaqueline Bisset, Diane Keaton, Brooke Shields &

Meryl Streep (1970-80s) ;

5. Wind map

Wind map is a famous example of data visualization, it gets the wind

data like speed and direction to show the whole USA wind state in

real time, so people can easily know the wind in a very simple and

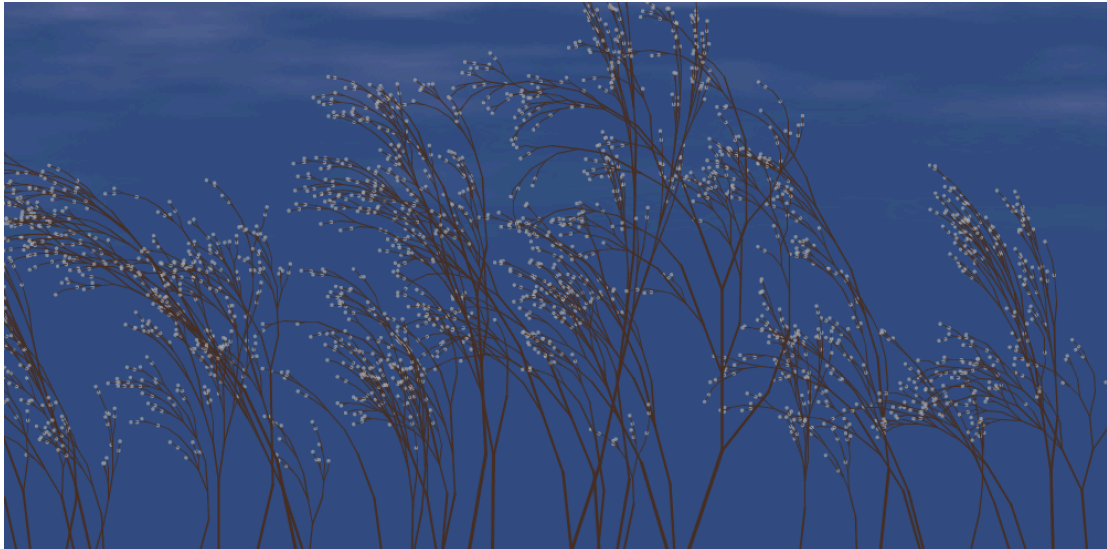direct visual way. Now there has many kind of wind map.
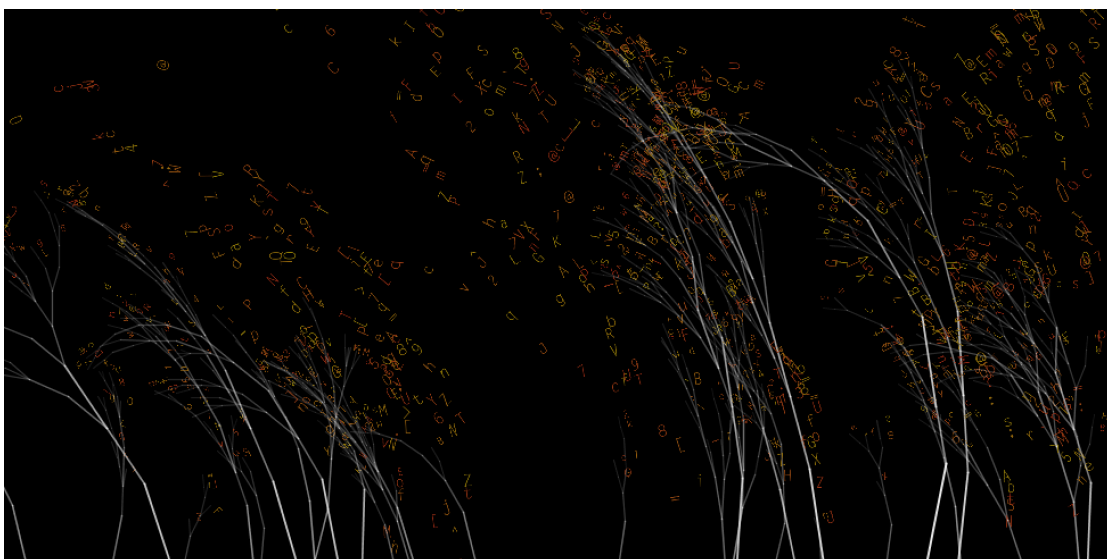
Part 3 : Execution and Technic

experiment 1: use the L-system to do the basic Reeds view.

experiment 2: I applied weather API 's wind speed data to my Reeds. The wind's speed can be from all over the world's different city. In my case is from Shanghai.

experiment 3 : Add the sound volume to let the flowers fly away. I change the reeds' flower to letters, if the volume input is big enough, they will fly away randomly.

experiment 4: I turn my reeds grow up in a 3D environment, and let different wind in different space.At the same time I design a feedback about the L-system to the wind. Different city has different Wind speed, and show different kinds of Reeds,

From left to right, the third division is Berlin, Beijing, and Shanghai. We can see Shanghai has the strongest wind, and Beijing's wind is the smallest.

Part 4: Final work show

The final work is to combine the experiments above together. ***Wind postcard.*** I use the different cities' landscapes in my travel combine with the reeds. I like those magnificent building. They show the history of mankind, including life and wisdom. Although they are artificial, They are alive. They have their own active language ,like all living things,   and have the reflection to the nature as   well. My code is just giving   them Reeds-like reflection to the wind ,but I think there are many possible way we can imagine how those building behave in the wind or in the natural environment , like in the rain or in the sun. There some cases in my code, and actually, this work is a very individual feeling about wind physically or spiritually. And I choose some more recognizable building to show this work.
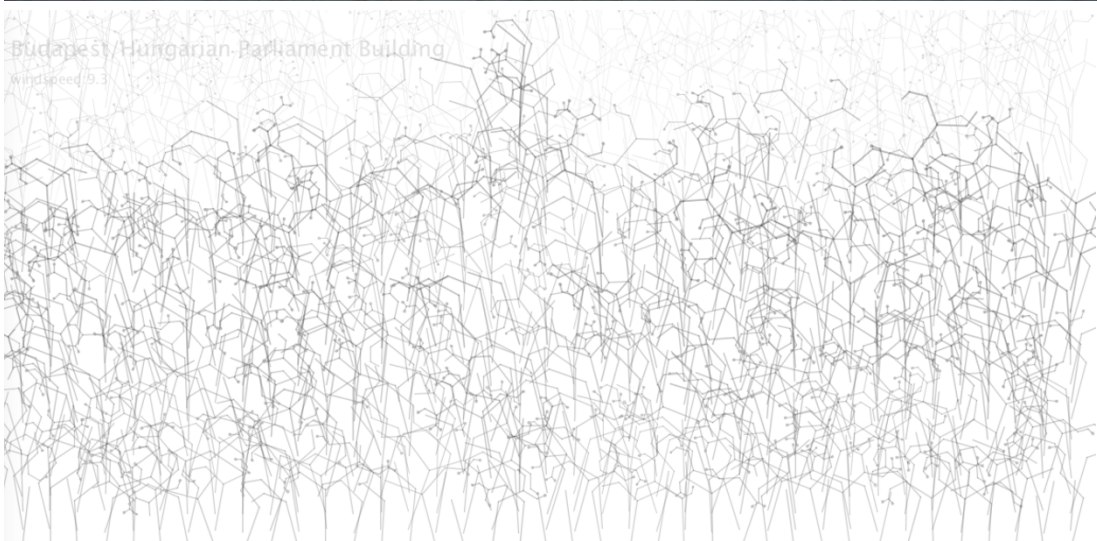
Case 1: Hungarian Parliament Building

I was in Budapest last new year eve. On the morning when we were leaving Budapest, I want to see the famous Parliament building, I took a subway channel across the Donau river, and saw the full picture of the building, I was totally moved by this fine buildings.I think the reeds stroke should be thinner but sharp.
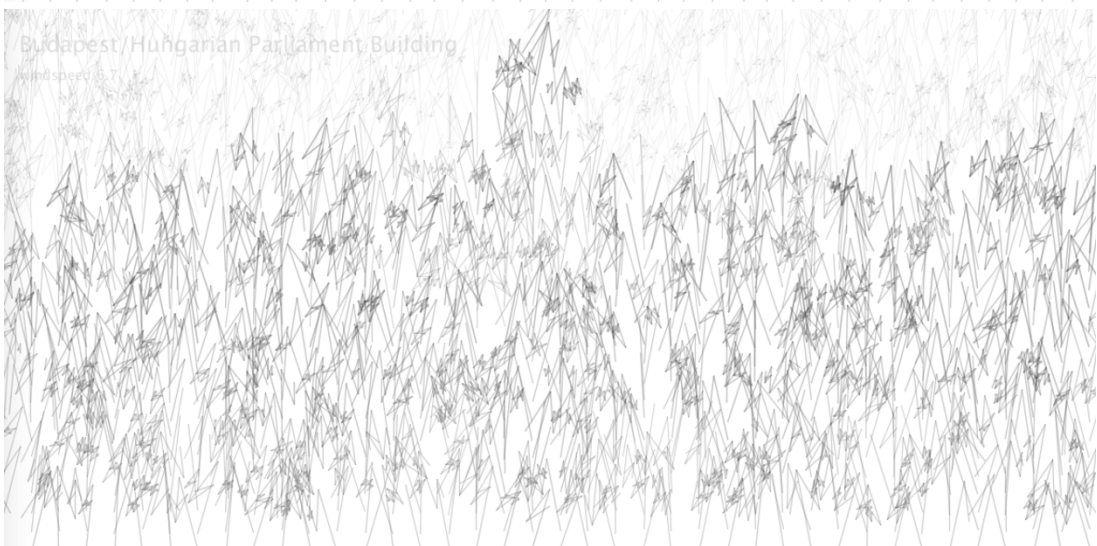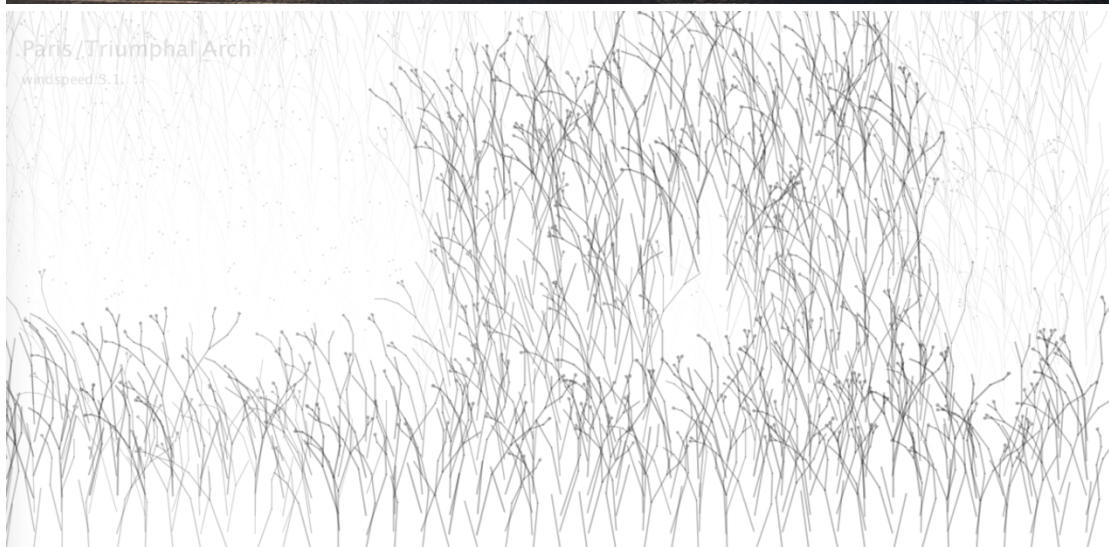
Budapest / Hungarian Parliament Building
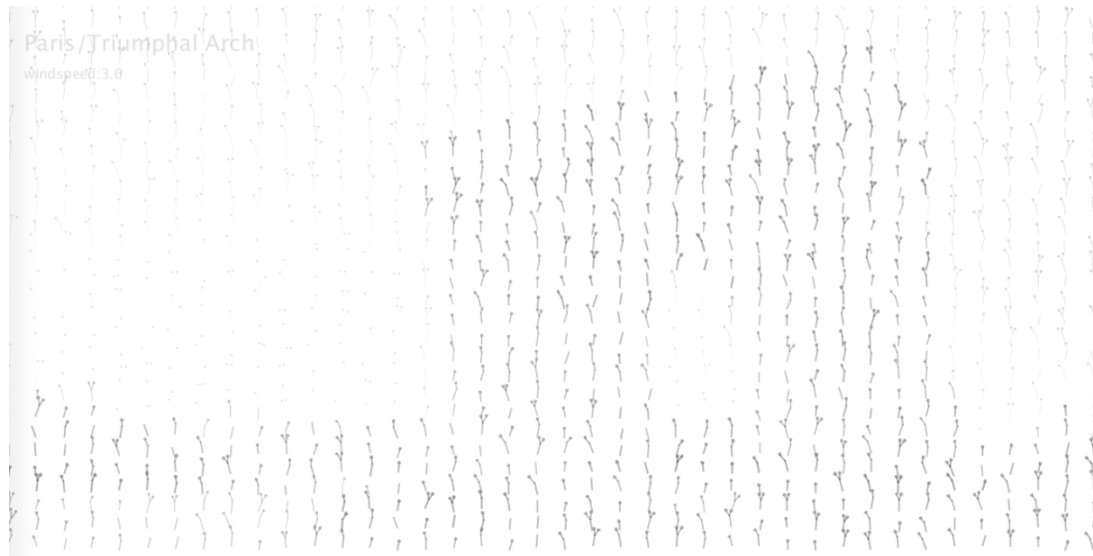Windspeed 9.3

Budapest / Hungarian Parliament Building
Windspeed 9.7
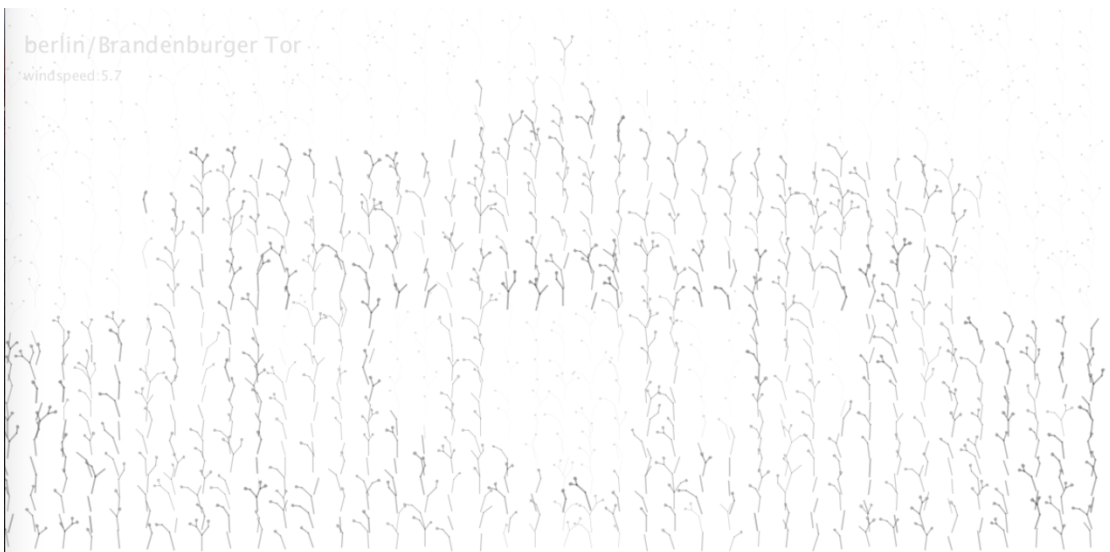
Case 1: Triumphal Arch in Paris

It was a beautiful afternoon, My friend and I walked through the Champs Elysées. When the Arc de Triomphe was seen, the sunset was just the right moment, spectacular and beautiful.
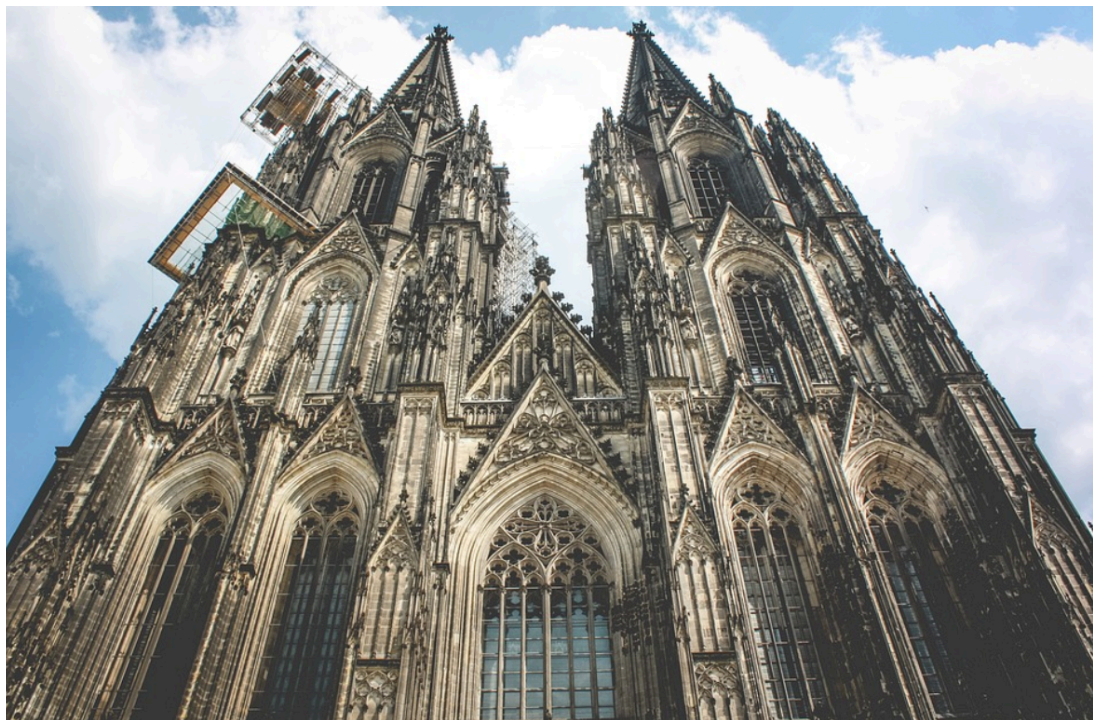

Paris / Triumphal Arch
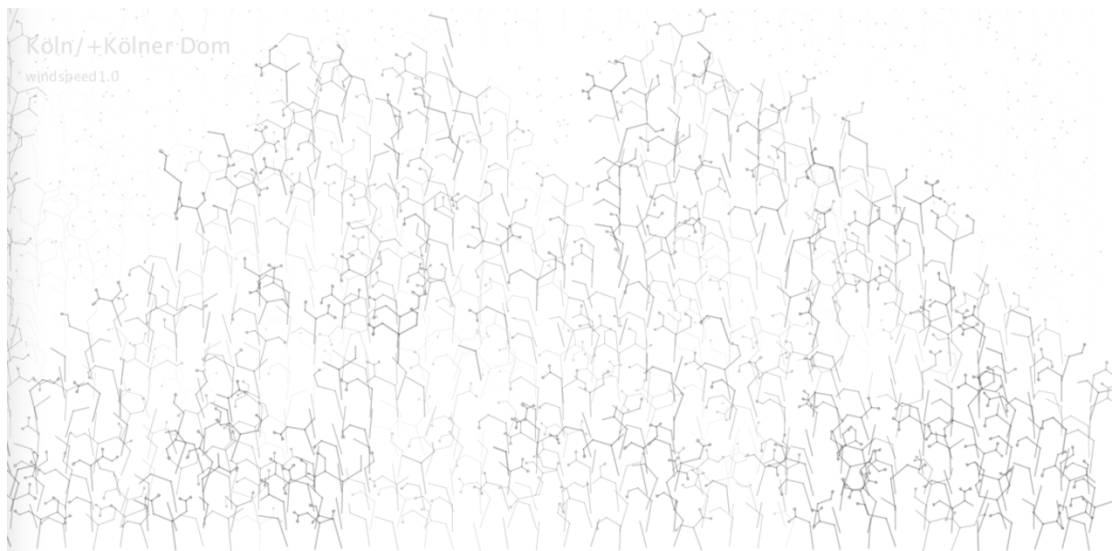windspeed 3.1.

Case 3: Brandenburger Tor in Berlin

It was really cold and winding the first time I went to berlin. But on my arrival at Brandenburger Tor, I forgot about everything and I really heard the clatter of a horse's hoof, I enjoy that feeling ,I had the same feeling when I saw the Nike of Samothrace in Louvre museum, there was a mix of wind sound coming from the sea in Greece, and the noisy of people in the museum , amazing experience it was .

berlin/Brandenburger Tor
windspeed:4.1

berlin/Brandenburger Tor
windspeed:5.7

Case 4: Kölner Dom in Köln

First time I saw Kölner Dom ,it was a kind of complex feeling. At first I felt sad, he was really like an ill old man, with many bandage, standing in front of me, when I came close to it there is a tremendous stress and depression coming over to me. The decoration is so exquisite and complicated on his body, how much time should thousands of highly skilled sculptors and artists spend on building this man, and how many years can he still stand here.   But I remembered there was a performance of street artist playing very nice guitar 哦你 the square. I think the old ill man can also feel those happiness everyday happens around him.
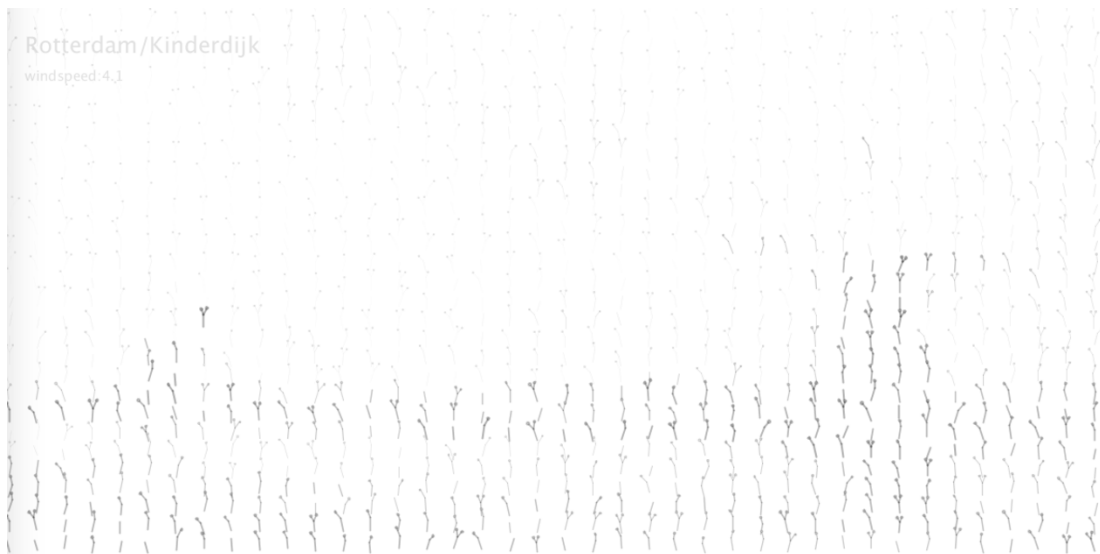
Case 5: Kinderdijk near Rotterdam

A warm spring when I was in Nederland, beautiful landscape, winding, I saw real reeds swaying on the bank of river. Those windmills are like children playing with them ! This view is really like the background story and the name of Kinderdijk. Some of them are babies still learning to walk. Some are children who are starting to run and playing with partner. Some are rebellious adolescents who want to take

adventure fighting each other. Anyway, they are happy there and I was as well.

Rotterdam/Kinderdijk
windspeed:4.1

Rotterdam/Kinderdijk
windspeed:6.2

Rotterdam/Kinderdijk
windspeed:...