

# A Geographic 3D Visualization and Browser of the World Wide Web

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**A Web browser is a tool used by everyone that want to access the information flow of the World Wide Web. However, little depth and perspective of the vast digital network do they give. By visualizing the Web in 3D and revealing its entirety the user will be able to navigate, browse, explore and get a completely other perspective of the Web.**

The World Wide Web is the digital network of websites that the users can *surf* in a Web browser by clicking themselves through links that get them from one page to another - sometimes never knowing where they might end up next.

Beneath the surface of this great network exist multinational massive cultures formed over social media that spread breaking news, music, videos, trends and pictures of puppies at lightning speed. Traditional web browsers lack to give an immediate overview of the web's activity unless the user have thoroughly searched through the seemingly endless amount of links of the Web and found the important sites or feeds where the information flows the greatest. That is a hindrance for new Web surfers who want to synchronize and be updated with the rest of the world.

The Web can be thought of as a library. Where every page on a website is a page in a book. Each page containing information that's supposed to grab a reader's attention - may it be funny pictures, videos or news articles. Each website usually keeps a theme or genre - much like books have their genres. So why don't we show the library of the Web and the huge hallways of bookshelves that it has? Perhaps it could create equal functionality to that of a real library?



FIGURE 1: A SUBSET OF THE WEB AS A CITY OF BUILDINGS

## How can you make an overview of the Web in 3D?

I believe the foundation of such an overview is to show every website of the Web as an object. That is the premise of my library analogy as well.

But these objects need variance in their character so that a user can recognize their importance or popularity from a distance. How can we create this variance?

And how can we sort them into their related "bookshelf" - how and by what categorizing factor can we do that?

And how can we show an overview of the activity in this 3D world?

And how can we render 1 billion objects without burning up the computer?

My vision clearly sparks a lot of questions and technical challenges. My project focuses primarily on a way to gather a geographical property from the interrelations between the websites so that we can both sort and display the most popular websites to the user.

The first step was to make a program that could traverse the Web, jumping from one website to the next, counting the number of outgoing links each website had. Doing so enabled us to calculate - what is commonly known as the importance/popularity value -

the PageRank. Google uses this value to index the Web, so that you may find exactly the page you were looking for by typing in a few keywords in their search engine.

In the project I used the PageRank value to determine the attraction that one website had to another. Meaning that I could use this to iteratively position the website objects so that two websites that were highly attracted to each other were put close to each other. Perfect! So now we can create our bookshelves? I guess we could... but no!

## The Web as a huge city of skyscrapers

I chose to visualize the website objects as buildings, which height reflected the popularity (the PageRank value), together forming a large widespread city which entirety stretched across the inside of a majestic spheric world as can be seen in Figure 1 below.

User testing provided knowledge if the geographically positioned websites helped to give a better perspective of the Web. But feedback pointed towards that geography need more variance other than just building height.

Future work will be aimed at exactly that, and visualizing web traffic, and also further expanding the vision to create a massive game with the casual surfer being a user, flourishing in a culture based on the Internet and the content it provides