

Flow- An Interactive AJAX-based Internet Information Requesting System

Yu-Chuan Tseng
National Chiao Tung University,
Institute of Applied Arts
1001 Ta Hsueh Road, Hsinchu 300, Taiwan, (R.O.C.)
t.yuchuan@gmail.com

Chia-Hsiang Lee
National Taipei University of Technology
Graduate Institute of Mechanical and Electrical
Engineering
No. 1, Sec. 3, Chung-Hsiao E. Rd., Taipei City 106,
Taiwan, (R.O.C.)
jasonlee2357@giga.net.tw

ABSTRACT

“Flow” is an interactive art work that indicates the chaotic state when we receive too much information from the medium. When the Internet becomes our major resource of information, we try to acquire as much news as possible from the net. That is the reason why we attempt to integrate web AJAX (Asynchronous JavaScript and XML) technology, Text-To-Speech (TTS), images analysis and presentation, and multichannel sound play, to create a context of flowing information which is unable to be hold but in a state of intermix.

Categories and Subject Descriptors

J.5 [Computer Applications]: Arts and Humanities: Fine arts. D.1.7 [Programming Techniques]: Visual Programming. H.5.m [Information system]: Information Interfaces and Presentation : Miscellaneous. H.3.5 [Information system] : Online Information Services: Web-based services. H.3.4 [Information system]: Systems and Software: Information networks. H.4.3 [Information system]: Communications Applications : Information browsers.

General Terms

Experimentation

Keywords

Interactive Installation, Digital Art, Information, TTS, AJAX

1. INTRODUCTION

1.1 Artistic Motivation

In our work, we concentrated on the influence of technology in the digital era. People are currently in a profound change in human culture and ways of living. The increasing digital technology brings us into a new ways of perception. The World Wide Web is not only a medium tool but also a space for social, culture, and political activity. Life becomes a dramatic shift in our

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notion of self, machine and world. The virtual ways of living has affected the knowing of the people's experience in different ways.

On the Internet, time, location, and identity are no longer matter. The Internet also is a medium in which human fetches and creates contents. The Internet service company provides us with the convenient tool to search for the content through the net. We get the information from all over the world just by a simple click.. We immerse ourselves in the large communication nets struggling to grab all the information to prevent from being isolated behind the world stream and try hard to fit in the global village.

1.2 Medium and Representation

We receive information in a remote side of different locations. We pick and read information. According to our own geographic location and culture background, we conceive the meanings of information. The meaning of information is uncertain and changeable in different viewpoints. The meanings of information are perceived with different manner according to the viewers' culture background. The representation of medium is not in the imagery and no viewer can hold the whole. We are in the dilemma of believing or denying the authenticity of information. It is in a state of chaos. Artists facing the technology revolution are not only treating information as a medium but as an element for creativity. In Flow, we have created a context of flowing information which is unable to be hold but in a state off intermix.

2. FLOW

2.1 Subject Matter

The practice aims to represent a chaotic state of information. We utilized world news as the subject. We picked the information from news portal sites with the availability of RSS feeds. The selected news portal sites were from different countries such as CNN (USA), UDNnews(Taiwan) and BBC(Britain). We grabed hot news photos with messages in different categories, such as politics, entertainment, digital life, and economy etc. The news showed a congested information status nowadays.

2.2 Interactive Process

The installation consisted of a room connected to network, mounted video projections and a camera. Entering the exhibition space, the participants would be shot and transformed into a mosaic figure. In the projection, the news photos printed out in blur. The content read out to the audience in mix. The participants

were represented in the screen superimposing with news images. (see Figure 1) The images of information from different geographical distribution and participants in the exhibition space showed a unity in the virtual world.

The flashlight, as a metaphor of conductor, was an interactive tool. The flashlight lighted the way to information. Participants could pick to view the photos and heard the narration clearly by waving the flashlight.(see Figure 2) Participants waved the light wobbling, the images and audio response to interaction right away cascaded.



Figure 1.: The news flow out and blur in the screen.

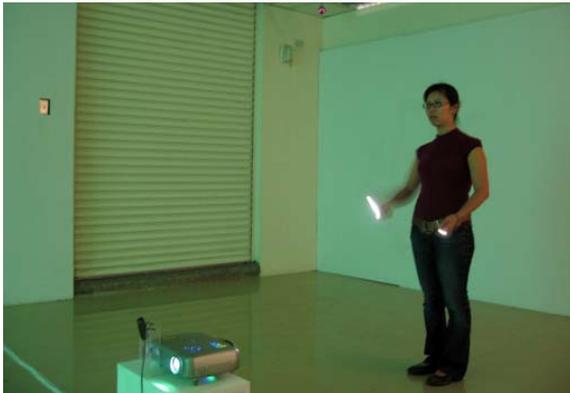


Figure 2.: The participant interact with the work by waving the flashlight.



Figure 3.: The exhibition space.

The images and audio would appear layer by layer and compound with each other. Participants had the control power over those images and sound, but were not able to control the final appearance and caught the subject matter. The perceptions of participants got into a state of chaos. (see Figure 3)

3. Experience of the Participant

During the interactive process, participants would be forced to face a flood of information including images and sounds. When participants waved the flashlight trying to pick the image to view the photos and heard the narration clearly, he/she would get into scrapes. Participant picked one of the images and then started the audio message; the new images would come in quick succession. New image would replace the one picked and new audio message would play simultaneously. Participants could only hear noise created by multiple channels of audio. In the controlling process, participant would try hard to catch up with the content of images. He/she would practice how to wave in order to pick the chosen one. However, he/she would find out that the message was unable to control. Participants would lost in the information stream.

4. SYSTEM FRAMEWORK

4.1 AJAX

The system requests and downloads the hot news images and texts in the certain news portal site every other hour automatically. The web links with the image and texts are gotten by parsing different RSS (Really Simple Syndication) files. AJAX, short for Asynchronous JavaScript and XML, is a Web development technique for creating interactive web applications. The intent is to make web pages more responsive by exchanging small amounts of data with the server behind the scenes, so that the entire web page does not have to be reloaded each time when the user makes a change.[1] There is a RSS file retrieved from the news portal site. (see Figure 4)



Figure 4.: A RSS file retrieved from the news portal site

4.2 Using XMLHttpRequest Object

The system uses Microsoft.XMLHTTP as an XMLHttpRequest object for requesting RSS file from the News website which provides RSS service. When the system starts up, it opens a webpage in which a XMLHttpRequest object is created in the web browser. The XMLHttpRequest object requests the RSS file, and

parses it in order to get daily news items that include title, description, and link.

Further, we use the XMLHttpRequest object again with the link of the news item to get the original page of the news and parse the HTML code to get image link of the news and downloads the image.

The system also installs a web server in the local host PC. The XMLHttpRequest object can get a news link from the news website, and send the link to the local web server to execute the image download procedure and save it in the local host.

4.3 Text-To-Speech (TTS) Convert

And then The XMLHttpRequest object sends the description text to the local web server to execute Text-To-Speech (TTS) convert and get the voice sound file with wave format. We use the Tomcat server, a Java-based web server, and use FreeTTS API[2], a Java-based speech synthesizer, to do the TTS process.

On the other hand, the XMLHttpRequest object can also send the description text to the Internet website which provides online TTS service and get the voice file link and download the sound file to the local file.

Finally, we collect all the news item elements, title, description text, image and sound. Because of using AJAX method, we can collect these news items automatically and communicates with the local host on the same webpage without refreshing the webpage. The news item requesting flow chart and the system architecture are shown as below. (see Figure 5, 6)

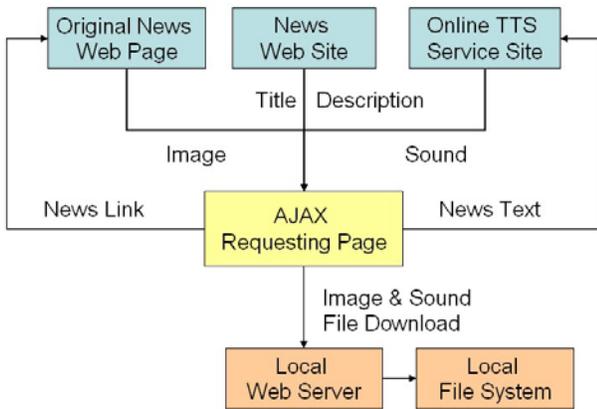


Figure 5.: News items requesting flow chart

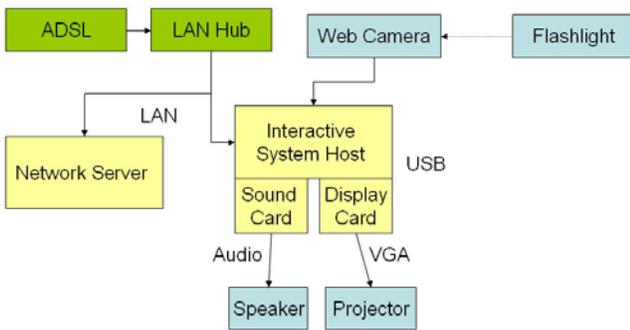


Figure 6.: System architecture

For the performance, we use two computers to balance the loading of each other. One is responsible for the new items element requesting and downloading, the other one is responsible for executing interactive program and playing voice sound

4.4 News Image Display in a Flying-like Blur Mode

After collecting the entire news item element, the system starts up the main interactive program. When no one is present, the system randomly selects 10 images form the local file directory and displays them on the screen. The images are analyzed with a tint[3] method into a blurry effect and darted off with the velocity of flying. The system presents these news images in a color flying-like blurry mode. The system also selects a voice sound from the local file directory as background sound. The sound made by a special sound revert effect is playing with loops in the background. Every 15 minutes, the system randomly selects other 10 images again to keep the news items in the latest status.

The system displays these images and moves them from right to left on the screen. When the image moves into the screen, the y-coordination of the image is set with a random number from 150 pixels to 350 pixels in order to let the image always display in the middle area of the screen. And the x-coordination of the images is set within a separate division of the screen in order to let the image move side by side.

We use a tint method to make a flying-like blurry effect. The principle of the tint method is to control the alpha value of each image, and move the image pixel by pixel, so that the efficiency of the CPU operation is higher; the effect of the flying-like blur is smoother. The best alpha value of each image is 20 (max. 255).

When participants standing in front of the screen, they will be shot by the web camera and become background of the drifting vision. For the effect of the drifting vision, we set the size of the shot image from the web camera is 80 x 60 pixels and enlarge the image into 800 x 600 pixel as a background image. Then we also use tint method and set the alpha value of the background image to 20 and get a mosaic motion effect present. In fact, according to the alpha value of the image, we can get different motion effect, flying-like blurry effect as needed by the artwork.

4.5 Flashlight Detection

Participants control the light dot of flashlight into an input coordination signal. The signal mapping into the position is the cursor controlling images and sound to appear clearly. The coordination of the light dot is detected by analyzing the highest brightness area of the image captured from the web camera. We use a blobdetect[4] API to analyze and search the brightest light dots, and arrange the dots by the brightness value, and pick up the first 5 dots for the input coordination signal.

The x, y coordination we detect is the center of the light dot. Therefore the contrast value between background brightness and flashlight brightness is larger; the coordination detection of the light dot is more accuracy. For the best detection, the contrast threshold value of brightness is 0.6 (range from 0.0 to 1.0). There is a test of 2 flashlight detection. The blue dot as a cursor is the detected flashlight by blobdetect API. (see Figure 7)

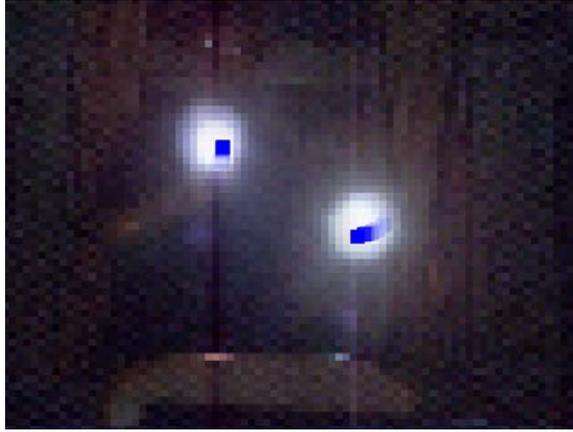


Figure 7.: Blue dots show the cursors mapping of the flashlights

4.6 News Image Viewing Trigger and Sound Play

When the light dot is detected and mapped to the cursor on the screen, the light dot is triggered to enlarge, stop moving and view the image clearly. The system does a loop to check whether the cursor is in the news image, once the image is triggered to enlarge, the same cursor will not be able to trigger other image until the cursor is out of the area of the triggered image. Difference detected cursors trigger difference images. When the cursor moves out the image, the image reduces and moves again in a flying-like blur mode.

When the images pop up from time to time on the screen, the related voice sounds play once in amalgamation. The sound will be played in different channels according to the image on the screen, left image to left channel, right image into right channel. The more images are triggered, the more sounds are played. The system can deal with multi-users at the same time.

4.7 Online Service Integration

There are many different kinds of online services on the Internet, for example: blog, search, map, dictionary, translation, text-to-speech, and so on. It is very interesting to integrate these online services to help us to get some useful information automatically with the huge information flow on the Internet. Therefore we try to achieve this goal by using AJAX and website technology. We search for data, information and online services on the Internet. Further we integrate these websites and their services to meet many different information requirements.

4.8 Future Work

In our next plan, we will implement “Flow” with an “Interactive System Platform of Display by Eyes View” in collaboration with the institute of Mechatronics Engineering, National Taipei University of Technology. A panorama display set will be created to perform a surrounding information disorder. The audio and images will dash from different locations randomly. The participant has to turn his/her head to control the projector and to figure out the coming direction of objects.

5. Related Works

In 1998, Martin Wattenberg created “Map of the Market” presenting a performance of hundreds of stocks information in real time [1]. Carlo Zanni, an Italian artist, utilized the Internet information to create a series of work representing the net information in different visual forms. The landscape of eBay stock market charts titled “eBay Landscape” presented in 2004[2]. AVERAGE SHOVELER, the commission by Rhizome in 2004, is an online game in which user have to keep the way cleaned by shoveling flakes of snow. But, each snow contains an image taken live from web channels of news/politics/sport/ [3]. Mauricio Arango and his team presented “Vanishing Point” in 2005. It is a map of the world connected by database fed by international news sources, to represent the visibility of a country by the news coverage not by the size of territory [4].

6. CONCLUSION

In Flow, we want to indicate a situation in which we face. People confront with the huge amount of information. We conceive differently toward the same information in a matter of opinion. We assume that we understand without question. But, how can we really firmly believe that our cognition is correct. Do you really know the meanings behind the appearance or just being caught in a condition of maze? We drift with the information flow to receive reality; however, what is reality? “Flow” offers a unique feeling to the audience. Using the flashlight, a completely new experience of viewing is gained. In the process of interaction facing the confusing information, participants get an unpredictable controlling outcome and go through a ? moment.

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