
Visual Conversation with Information for Creativity

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Abstract

Creativity comes in harmony with all aspects of human experience and knowledge. Just like putting together diverse information and digest them in your brain, collage enables you to assemble all different objects in your lives into one place to create new form of art. By juxtaposing various contents in a new way, you can converse visually with information and generate another creative story.

Keywords

Information Visualization, User Interaction, Creativity, Cognition.

ACM Classification Keywords

H5.m. Information interfaces and presentation: Miscellaneous.

Introduction

Many ideas, whether they are small or large, are created every moment. Some people create new recipes. Some people create new ways to wear their ties. Some companies create new games that change how people entertain with friends and family. As a researcher slash engineer, I mostly struggle a lot to create new project ideas or algorithms that support more efficient or accurate ways to solve problems.

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When I involve in developing and creating new ideas, I mostly wonder around physical, cyber, and mental space. I walk around the neighborhood to refresh my mind, and drop by colleagues' offices to discuss about ideas and gather information. I search the Web many times to find out how other people think about similar topic, and read papers, news, or blogs. I wonder around different parts of my brain too. I look back my previous experience, findings, or readings to analyze and refine my ideas. While I'm building the mental model, I write down findings and draw idea flows on the paper. I believe the creativity is a mentally, socially, and physically engaging process to generate new ideas or new associations of existing concepts. Creativity comes in harmony with all aspects of human experience to improve our quality of lives.

Background

A collage is a work of formal art made from an assemblage of different forms, thus creating a new whole. A collage may include newspaper clippings, portions of other artwork, photographs and other found objects, glued to a piece of paper or canvas. The collage technique, the art of reassembling fragments of pre-existing images in such a way as to form a new image, is one of the most important innovations in the art [3]. Found objects, chance creations, ready-mades (mass-produced items promoted into art objects) abolish the separation between art and life.

Confectionary designs are a similar gift to understanding. Like perspective, confections give the mind an eye. Confections place selected, diverse images into the narrative context of a coherent argument. And, by virtue of the architecture of their

arguments, confections make reading and seeing and thinking identical [3].

By means of a multiplicity of image-events, confections illustrate an argument, present and enforce visual comparisons, combine the real and the imagined, and tell us yet another story.

Position

In the creative process, we collect relevant background information. Some people search web to find information. Some people go to exquisite place and take pictures. Some people go to museums or art galleries.

When they have background information. They need to sum-up those all together to analyze. When analyze the data, it is important to see things differently. You may want to analyze things one by one or see them all together in large. Or, you may want to group them by your own preferences or standards. The way to visually juxtapose information even the textual information is important step to understand findings to create new ideas.

Is there any tool we can visually sum-up collected information or see and compare information in different ways? If people can visually converse with data adaptively with intuitive user interaction, it will support people building mental model more efficiently to create new ideas.

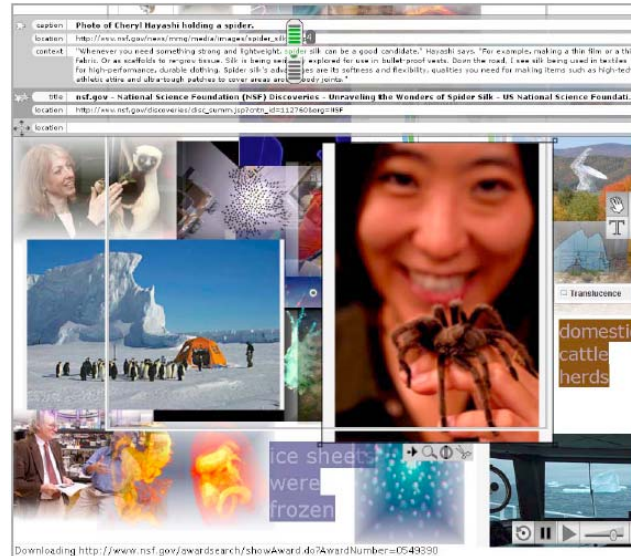
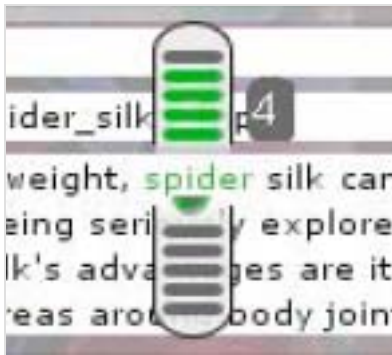
Application

combinFormation is a tool that supports creativity in education and research [1][2]. A student defined combinFormation as a place that you can make a

collage. When you just put in words (search queries), combinFormation brings all the images related to that, and then you can just move around and juxtapose them in any different way.

combinFormation

People start combinFormation by mixing multiple search queries. Each time a query is entered, another input box is dynamically displayed. For each search query, the user can select a search engine, such as Google, Yahoo search, Yahoo image search, Flickr, or Delicious. The system processes each search by sending the query to the selected engine, obtaining the result set, downloading the result pages, and extracting image and text information elements. The image and text elements function as semiotic and navigational surrogates that represent the result documents. The system agent generates these surrogates one at a time



into the composition space for users. Users can interact with the image and text surrogates in the composition space by rearranging, resizing and changing design. When they brush elements with mouse-over, they see *in-context* metadata details on demand. They can navigate to the source web pages using the navigate tool. While browsing the web, they can also drag and drop interesting information into the composition space, and make notes using the text edit tool. Users can also explicitly express interest in surrogates, to affect the choices of the agent.

While users are interacting with surrogates, the system agent proactively engages in processes of gathering relevant information resources and forming image and text surrogates based on users' interests. The composition space is divided into the Cool Space and the Hot Space. The Cool Space is the center rectangle, while the Hot Space is in the peripherae of the composition space. In the Cool Space, only the user can collect and control information; the agent cannot interrupt. The system agent brings relevant information temporarily and dynamically into the Hot Space. Users can control information in by dragging it into the Cool Space, or latching to make it persist in the Hot. They can pause the agent's generative information composing to make the Hot Space static, and hit play again to make the system agent once again generate information over time. The reset tool clears all the elements from the Hot Space, except for latched ones. The user can also control the speed of the agent generating the elements and the ratio of image and text elements.

combinFormation also enables users to engage directly in visual composition. Transparent borders that create

visual connection can be turned on and off. The color of text shading and the font can be altered. The agent also affects these visual characteristics, in a mixed-initiative architecture.

User Experience

There was a student in Texas A&M University who created portfolio cover using a combination and won the one of best portfolio cover award.

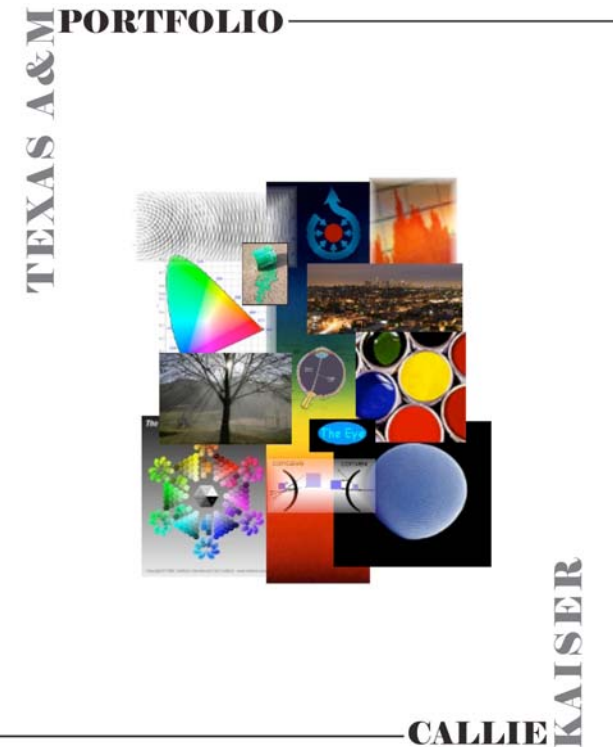
Her portfolio consists of computer-generated models, menu design, pictures of buildings, paintings, and drawings. It was very broad kinds of arts that encompass everything. Thus, for her portfolio cover, one photo or image couldn't represent her entire portfolio. She needs something that summed up.

Her field was visual studies, so she did search and compose images about visual studies with combination. So, her combination composition just really embodied her entire portfolio.

She used combination for around two hours to design around the idea of visual studies. She did search with color, paint, light and vision. The things that come up with were very colorful and vibrant, having to do with spectrum, eye, the diagram of all different things, and city of all lights on.

She didn't know what images she would get or she would want in advance. She didn't think about it. She didn't have any idea until she had spectrum images to start with. She was thrilled when she was getting images all together.

After she got all her images, she focused more on designing. She was trying to get good balance of images and covering up things that she didn't want to see. Her entire thing was focus around spectrum. She had a color spectrum down the center, and everything kind of goes off of there. Everything comes from spectrum. Every picture she had was either touching it or wrapping it.



Conclusion

The inferences and resulting decisions and actions are based on various visual representations of the data.

The quality of the representations differed enormously, and in ways that governed the ultimate consequences.

Thus, to promote creativity, it is important to provide people a personalized way to visualize data interactively and adaptively.

References

[1] combinFormation

<http://ecologylab.net/combinFormation>.

[2] Kerne, A., Koh, E., Smith, S. M., Webb, A., Dworaczyk, B., combinFormation: Mixed-Initiative Composition of Image and Text Surrogates Promotes Information Discovery , ACM Transactions on Information Systems (TOIS), 27(1), Dec. 2008, 5:1-45.

[3] Tufte, E., Visual Explanations. Graphics Press, 1997.