CS498-SOCIAL VISUALIZATION

READING 11—ARTIFACTS OF THE PRESENCE ERA: USING INFORMATION VISUALIZATION TO CREATE AN EVOCATIVE SOUVENIR; PAINTERLY RENDERING WITH CURVED BRUSH STROKES OF MULTIPLE SIZES

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Artifacts of the Presence Era: Using Information Visualization to Create an Evocative Souvenir

by Viegas, Perry, Howe, and Donath

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This paper presents a digital installation named artifacts of the present era that captures video and audio from museum’s gallery – as well as the reactions observed from the end users and media - that is applying a geological metaphor to visualize chronology of events within certain physical spaces. In this work, in contrary to the most of the works that are done in visualization of large achieves of video footages, historical record of the chronology inside the museum is captured and therefore it has allowed the authors to convey historical essence of the piece in a very compelling way. This works is special in two certain manners: (1) instead of analyzing the video footage over time, long-term temporal patterns in the data are being focused; (2) no scientific measurement is conducted over the data. Rather the work is guided through the visual metaphor of the visualized geological layers.

One of the very interesting issues in this work is the selection of geological layers metaphor. This metaphor allows the different phenomena captured over time to be presented in different layers, it has a compact and abstract representation and most importantly as new layers shape and form, the older layers are pressed and represented as thinner lines. Meanwhile potentially fossils can form within these geological layers and that for itself creates a new possibility for visualizing another set of data. Another interesting issue in its implementation (in my opinion) was the notion of only utilizing those moments that people were present in the space as opposed to empty scenes and also synchronizing the audio and video. Also the fact that in order to make the visualization more appealing to the viewers, the formation was being visualized by associating layers with 5 minutes of time – while the shape was being extracted based on height of the audio wave resulting in a wave form, while the difference of luminance as a sign of presence was being used within each five minutes time interval and also these layers were being pressured and merged as the time passed by. Also the notion of making the layers less bumpy by simply normalizing and putting thresholds for the audio intensity and as a consequence video captures was really interesting.

In my opinion, the metaphor used is really powerful and rich. Not only it provides the users with the mentioned benefits, but also it allows different layers representing accumulation over time to be geologically be “excavated” and “bore holed out”. One of the major powers of this visualization system, in my opinion, is the real-time component of it that allows people to quickly see their own imageries over the projected screen. Unfortunately the audio part – perhaps as expected- was less perceived by the audience and most people perceived that the number of people present in the room is associated with the thickness of different layers. The good thing was that the privacy of capturing audio as well as video in this work was not much of a concern to its audience. Perhaps the visualization was powerful enough to dim that aspect of privacy.
Painterly Rendering with Curved Brush Strokes of Multiple Sizes

by Aaron Hertzmann

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This paper presents a non-photorealistic expressive rendering method for artists and animators that not only can express and articulate scenery through better visuals, but also can watercolor or oil-point a whole video footage or even facilitate the labor-intensive work of non-realistic rendering. From a photograph, a hand-painted image is rendered which creates visual emphasis on spatial energy on the source photograph – curved brush strokes aligned to normal of image gradients. In my opinion, one of the very interesting issues associated with this work is the notion that it does not permeate the creativity of the user; rather it provides the user with the possibility of selecting a composition and/or a rendering style and allowing computer to automatically produce an image for those choices.

The algorithm presented is somewhat similar to a wavelet concept where a pyramid representation of image (this case progressive refinement of brushes on coarse-to-fine representation of image) is used. Over these images, Gaussian blurring kernels or non-linear diffusion kernels are used to blur out the image though performing reasonably well along the sharp edges. The only issue with this algorithm is the choice of emphasis or in other words identifying the most important visual information. Here it is assumed that high frequency information (usually edges within a photograph) is more important and therefore many small brush strokes are used in these regions. However as stated in the paper of “The artists as neuroscientists” (2005) of Cavanagh, both high frequency and low frequency are important, though each for different purposes. This is something that I believe this paper is lacking. I also do not think the statement of “There is no one right algorithm for non-photorealistic rendering” is factual. Rather I believe a right non-photorealistic rendering is a type of rendering that emphasizes on particular visuals of an interest to the user. In my opinion, the properties identified for style parameters are very useful.

Overall I think the idea presented in the paper is really interesting as it can potentially convey the important visual information of an image, especially if the brush strokes are carefully chosen. It also helps to minimize the labor-intensive process of manual painting for specific animation/productions. Certainly the presented algorithm can be effectively used (which is currently used in some commercials) for real-time processing of video footage and models with different styles.