

Plant Post: Visualizing Temporal Aspects of Message Postings

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ABSTRACT

We present a visualization for a message-board system, where postings are metaphorically represented by a plant. We focus on visualizing the different temporal aspects of the postings such as the length of time a message has been posted, the time between message postings and the rate at which a message is entered. The temporal analogy we use is the changing of colours we see in plants as the seasons change throughout the year to give a visual impression of time passing for each message. In contrast to the traditional linear timelines, we explore the concept of a growing plant and seasonal colour change of the leaves to represent time passing. This visualization not only reveals the temporal patterns of messages in a conversation, but also portrays an overview of the whole conversation.

CR Categories: H.4.1 [Office Automation]: Groupware, I.3.6[Computer Graphics]: Interaction Techniques

Keywords: Social Visualization, Temporal Data, Plant Metaphors Aesthetics, Postings, Textual Conversations

1 INTRODUCTION AND RELATED WORK

Our real world conversations are full of informative and enriching temporal cues. For instance, we notice how fast someone speaks or how quickly one person responds to a comment. Similarly, digital text-based conversations also come into existence over time. However, the minimal visuals of digital text can make the conversation drier and less interesting. Many types of temporal information are present in text postings, but this information tends to get ignored in the simple text list that is commonly displayed as a representation. The temporal data associated with the posting can be made more apparent if it is mapped into a graphical representation.

There are several different text-based conversation visualizations. BubbaTalk [4] visualizes a transcribed conversation tracing social connections and the amount of participation by each individual in the conversation. Comic Chat [3] visualizes a graphical chat space that uses the partially representational style of comics. While both these visualizations enrich digital communication, the temporal aspects of the typed conversation are not revealed.

Chat Circles [5] and Babble [1] both reveal temporal information in an online chat room through a separately shown timeline. Chat Circles uses several vertical timelines, where each vertical line represents a user and the placement of each horizontal bar on the line indicates when a message was typed. Babble has a horizontal timeline which represents each user in a different coloured row. Here the positioning of the vertical lines indicates the time at which a particular message was entered. ThemeRiver [2] uses a river metaphor to visualize thematic variations over time and across a collection of documents. The river flows through time, and the width of the river at any point in time reflects the thematic correlation of documents that are temporally collocated. Similar to PlantPost, PeopleGarden uses a flower to represent data portraits for each user. Each flower represents a

person and each pedal represents a posting. Here time is reflected for each individual but not for the message itself. We present Plant Post as a new visualization to represent several temporal aspects of data from messages in a conversation.

2 PLANT POST SETUP

Plant Post was created to visualize a text-based conversation for a message-board environment. This message-board environment is similar to the writings on the walls of bathroom stalls: a single user posts a message, and later, other users can reply to the message or start a new conversation.

The underlying motivation for our work is twofold. First, we explore the visualization of time in text-based conversation in an attempt to make viewing text-based conversation more graphically informative. Second, we are interested in how nature-based metaphors, such as plant growth and decay, can be used to visually express temporal aspects of conversations. In addition, we also incorporated visualizations of word and reading complexity.

Plant Post, as an installation, was displayed in the Nickle Art Museum at the University of Calgary, allowing different individuals to interactively post a message one at a time, and to reply to previously posted messages or add in new postings (Figure 1). This setup allowed audiences at the art show to type in comments about the rest of the art show.



Figure 1: Plant Post Installation at the Nickle Art Museum

3 THE TYPED POSTING DATA

The data originates from an individual typing a message in the text box at the bottom of the screen and then hitting the enter key. Later, another message will be typed in response to the previous message and so on. This is a continuous process and eventually the combination of all the messages becomes a conversation. At any point in time, an individual may decide to start a new conversation by clearing off the old conversation and typing in a new first message.

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Text-based postings in a conversation have various time components that are addressed in our visualization. These include:

- Length of time during which a message is typed.
- Time between message postings.
- Rate at which a message was entered.

In addition to these time components, two measures of message complexity are used:

- Flesch reading index – measures on a scale from 1-100, with 100 being a message that is easiest to read.
- Grade level of message – measures from 1-12, with 12 being the most complex end of the scale

The different types of visual cues used to represent the time components and message complexities are described in the next section and are created using different attributes of the plant.

4 MAPPINGS OF THE VISUALIZATION

The nature-based visualization metaphor we have used is that of an abstract stylized plant. The plant is designed in a simple form to avoid complexity and clutter.

Our mapping is as follows. Beginning with the first typed message, an animated branch will grow with leaves attached. The speed at which the branch grows is determined by how fast the message is typed. Each leaf, drawn as a circle, will contain a word inside and the diameter of the circle is proportionate to the length of the word (Figure 3). Each branch is drawn as a Bezier curve, representing a single posting. The length and shape of the branch is determined by the length of message, so that short messages will appear as a straight line, longer messages will curve downwards, and very long messages will grow into an S-curve (see Figure 2). The next message typed will cause a new branch to grow from this previous branch. The position at which the branch starts to grow will depend on the amount of time between the two messages (the longer the time, the further down the branch). Initially each branch will start off as green and, as time passes, will age through the fall leaf colours of green, yellow, orange, red and then brown. Eventually, the decaying leaves will start to fall off the branch with the shortest words falling first, leaving the longer words (more informative ones) to fall last. When all of them have dropped, the leaves on the next branch will begin to fall.

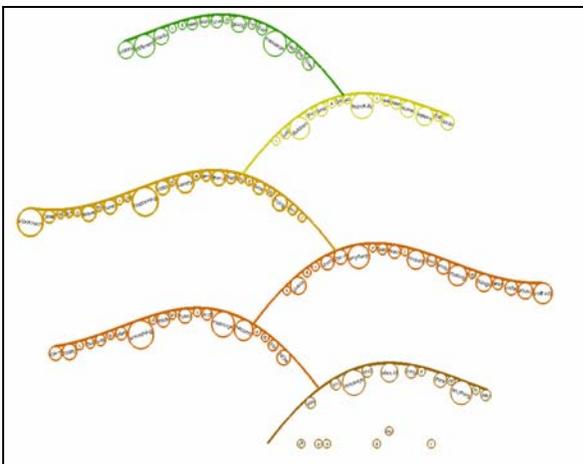


Figure 2: The colour of each branch changes depending on the age of each posting. The location at which the branch starts to grow will depend on how fast the message was posted after the previous message

The reading complexity of a message is also visually reflected in the plant. The text font used is mapped to the Flesch reading index, where a more difficult message to read is italicized and the less difficult message is written in regular fonts. The thickness of the circles is mapped to the grade level, with a higher grade level being the thicker circle.

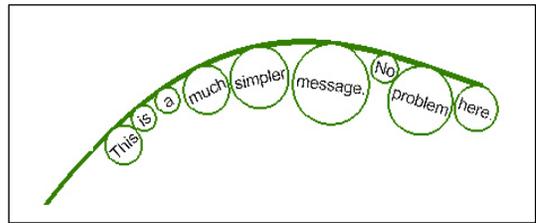


Figure 3: Close up view of words in the leaves

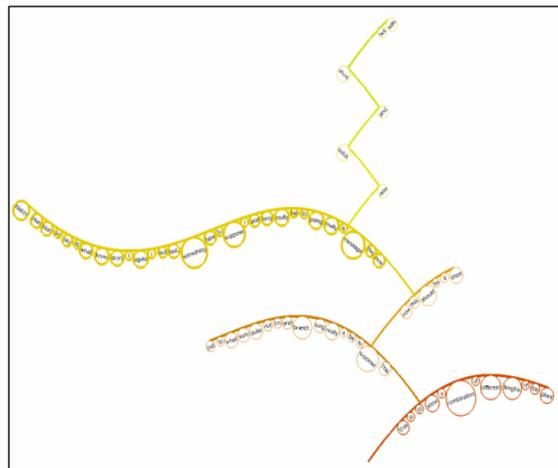


Figure 4: Different length of postings creates different shapes and lengths of branches

From this overall design, it is possible to get a glimpse of the unique flavor of different conversations based on the shape of the resulting plant (see Figure 4). For instance, conversations with short messages appear more linear, and in a sense, more straight forward. In contrast, conversations with longer messages appear more visually complex due to the increased curvature of the branches. Conversations with messages that vary between these two extremes look quite different.

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