EmailTime: Visual Analytics of Emails

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1. Introduction

PROBLEM:
Discovery and analysis of communication patterns in large complex email datasets are difficult tasks

GOAL:
To find out interpersonal social activities in email datasets such as:
- Changes of activities and roles of email addresses in the network
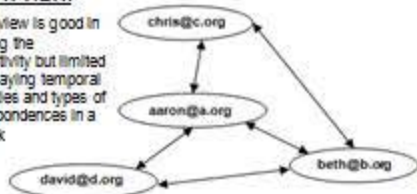- Correspondence patterns between email users

EMAILTIME [1]:
- Is a visual analysis of email correspondence patterns over the course of time
- Interactively portrays personal and interpersonal networks using the correspondence in the email dataset

2. Visualization Design

GRAPH VIEW:
Graph view is good in showing the connectivity but limited in displaying temporal properties and types of correspondences in a network

chris@c.org
aaron@a.org
david@d.org
beth@b.org

EMAILTIME PLOT VIEW:
- A message draws multiple circles in different colors
- Size of a Sent node represents the number of recipients

Ex) Aaron's mailbox

Sent
Received as To
Received as Cc

#1 #2

aaron@a.org
beth@b.org
chris@c.org
david@d.org

Time

References

[1] Minoo Erfani Joorabchi, Ji-Dong Yim , Christopher D. Shaw, "EmailTime: Visualization of the Temporal Email," Grace Hopper Celebration 2010.
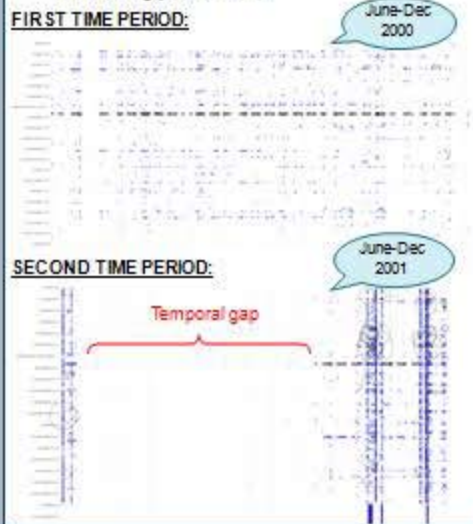
[2] W. W. Cohen, CALD, CMU. October 2004, from http://www-2.cs.cmu.edu/~enron/

Crowded area, end of 2000   Crowded area, mid of 2001   Crowded area, end of 2001
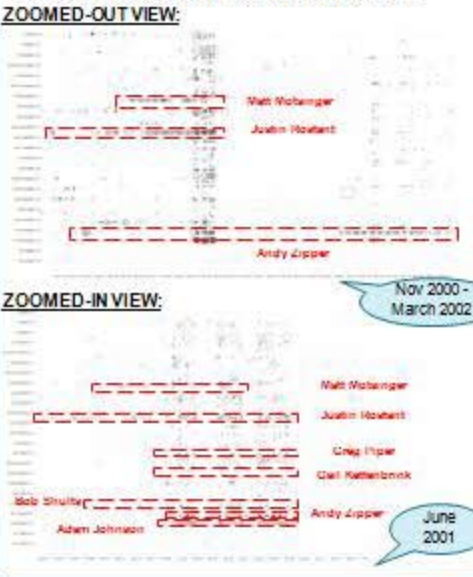
Active senders

3. *EMAILTIME* Capabilities

3.1. Time Comparison

enables users to:
- Compare the activity of one or more email addresses in the particular time periods
- Identify temporal gaps in email addresses' activities
  - if the analysts/users know some events, they can easily relate those gaps to the events

FIRST TIME PERIOD:

June-Dec 2000

SECOND TIME PERIOD:

June-Dec 2001

Temporal gap

3.2. Top Frequent Correspondents

- enables users to:
- Recognize top frequent correspondents
  - who have sent/received relatively a large amount of emails to/from the selected one
- See types of correspondence (general or private messages) based on the size of sent messages

ZOOMED-OUT VIEW:

Matt Motsenger
Justin Rostant
Andy Zipper

ZOOMED-IN VIEW:

Nov 2000 - March 2002

Matt Motsenger
Justin Rostant
Greg Piper
Carl Kettenbrink
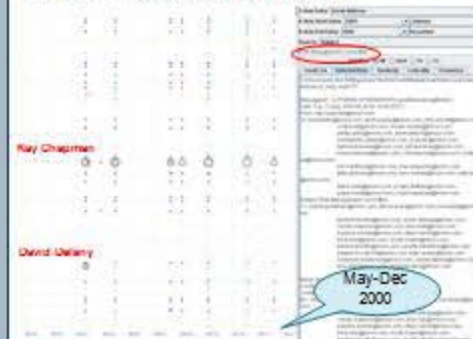Bob Shultz
Adam Johnson
Andy Zipper

June 2001

3.3. Email Comparison

- enables users to:
- Compare the email addresses of one individual
- Identify some changes such as switching from one email address to another one
- See type of each email address (sender, receiver, both)
  - And other information such as start and end time, activity level, etc

Jeffery.w.shankman@enron.com
Jeffery.shankman@enron.com
w..shankman@enron.com

4. Insights and Conclusion

- Using the mentioned capabilities, we learn to recognize changes of activities in the network, roles (secretary, leader, etc.) of email addresses and correspondence patterns between email users
- Scenario; finding out about an event and role of people in the event when searching for a particular subject such as "ENA Management Committee"

Kay Chapman
David Delany

May-Dec 2000

4. Future Work

- To investigate the effect of executive (organizational) positions on email behaviour of organizational people

Contact Information

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