CLIP (COLLABORATIVE INTELLIGENT PAD)

CLIP is a collaborative thinking space that helps people to record, organize, and share their externalizations.

RESEARCH PROBLEMS

- How to support collaborative sensemaking?

- How to support externalizations?
  - organize, record, and share findings, hypotheses, and evidence.

- Evaluate the effect on awareness, communication & coordination?
CAMBIERA: FOR COLLOCATED VISUAL ANALYTICS OF DOCUMENT COLLECTIONS

Isenberg & Fisher, 2012
CONTEXT

- Task: VAST 2006 challenge, a mystery task
- Dataset: 240 documents
- Setting: Collocated collaborative analysis
LINKED COMMON WORK (LCW)

- **LCW**: automatically identifying and visually representing similarities between collaborators’ work
  - Partial merging
  - Full merging
PARTIAL VS. FULL MERGING
CLIP: A Collaborative Visual Thinking Space to Support Joint Sensemaking
EVALUATION OF LINKED COMMON WORK (LCW)

- Experimental comparison of CLIP to a baseline tool
- Baseline tool: CLIP without LCW
BASELINE TOOL

Laura | Alex | Mary

George Works

Club

Laura | Alex | Mary

George

Meetings

Member

ISPS

Plaza

Club
USER STUDY & DATA GATHERING

- 16 groups of 3, 8 groups in each condition
  - Worked for 90 minutes
  - Used CLIP or Baseline
- Followed by semi-structured interview
HYPOTHESES

- Linked Common Work will improve:
  - H1: Performance
  - H2: Communication
  - H3: Coordination
  - H4: Awareness
METRICS AND ANALYSIS

- Performance
  - Scoring scheme (from Isenberg et al., 2012):
    - Positive points for finding and connecting relevant facts
    - Negative points for incorrect hypotheses
  - Number of key documents found (out of 10)
METRICS AND ANALYSIS: DEVELOPING NEW METRICS

- Conversation analysis
  - Classified and counted statements of 7 different types
  - 2 coders, Krippendorff’s alpha = 0.91
- Spent around **520 hours** on data analysis
# METRICS SCHEME

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DH</td>
<td>Discussion / generating Hypotheses</td>
</tr>
<tr>
<td>RV</td>
<td>Referring to Visualization</td>
</tr>
<tr>
<td>CO</td>
<td>Coordination</td>
</tr>
<tr>
<td>SA</td>
<td>Seeking Awareness</td>
</tr>
<tr>
<td>VF</td>
<td>Verbalizing Findings</td>
</tr>
<tr>
<td>QF</td>
<td>Question about Findings</td>
</tr>
<tr>
<td>RU</td>
<td>Related but uncategorized</td>
</tr>
</tbody>
</table>
HYPOTHESES

H1: Better performance
HYPOTHESES

H4: Less reliance on verbal communications for awareness

![Bar chart showing comparison between BT and CLIP for QF, VF, and SA with p-values p<0.06, p<0.04, and p<0.01 respectively.]
FUTURE APPLICATIONS OF THIS PROJECT

▸ LCW for different domains, e.g. co-authoring documents

▸ LCW for different collaborative settings, e.g. distributed software development