# System Performance

Table : System Performance

|  |  |  |
| --- | --- | --- |
|  | **Precision@10** | **NDCG10** |
| **TaskSieve** | 0.862 | 0.917 |
| **VIBE** | 0.914 | 0.963\* |
| **VIBE+NE** | 0.890 | 0.948\* |

p < 0.05, compared to the baseline



Figure : Precisio@10



Figure : NDCG

There was not a significant difference between the baseline and the VIBE visualizations in terms of P@10, but differences were found when used NDCG, which means the VIBE visualizations could select more relevant documents in the higher ranks.

Even though the above measures compare the top 10 documents from the traditional ranked list, they are still visually emphasized using different colors. At the same time, the top 10 documents were placed closer to the user models; especially as time passed and user models were improved.



Figure : Horizontal positions of Top 10 documents (overall)



Figure : Horizontal positions of Top 10 documents (after UM built)



Figure : Location change of Top 10 documents by time



Figure : Precision change of Top10 documents by time

# System + User Performance – open precision

Table : Open Precision

|  |  |
| --- | --- |
|  | **Open Precision** |
| **TaskSieve** | 0.950 |
| **VIBE** | 0.875 |
| **VIBE + NE** | 0.875 |

The baseline was better than VIBE visualizations in terms of the precision of the open documents. It is due to the following reasons.

1. Very high performance of the baseline, which is adaptive. Moreover, the subjects were given document snippets, so they can get better results from the already-good ranked lists.
2. The nature of the visualization. Because VIBE shows more than 100 documents, there is higher chance to include irrelevant documents.

However, there was no significant difference. At the same time, VIBE visualizations made users to explore wider range of documents.

Table 3 shows the mean rank of opened documents, where the subjects checked the documents around rank 3, whereas they did the ones far below rank 10 using the visualizations.

Table : Rank of open documents

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Open Rank** | **Open Rank (Relevant)** | **Saved Rank** | **Saved Rank (Relevant)** |
| **TaskSieve** | 4.00 | 3.96 | 3.63 | 3.60 |
| **VIBE** | 21.76 | 13.26 | 10.73 | 9.44 |
| **VIBE + NE** | 24.40 | 10.77 | 11.43 | 11.49 |

Table 4 and 5 show the number of topic clusters (out of 10 per topic), where visualizations found more clusters than the baseline.

Table : Topic cluster of open documents

|  |  |  |  |
| --- | --- | --- | --- |
|  | **40009** | **40021** | **40048** |
| **TaskSieve** | 7 | 8 | 9 |
| **VIBE** | 9 | 9 | 9 |
| **VIBE + NE** | 9 | 9 | 8 |

Table : Topic cluster of saved documents

|  |  |  |  |
| --- | --- | --- | --- |
|  | **40009** | **40021** | **40048** |
| **TaskSieve** | 5 | 7 | 8 |
| **VIBE** | 7 | 8 | 8 |
| **VIBE + NE** | 8 | 9 | 7 |

# User Performance – note precision





|  |  |  |
| --- | --- | --- |
|  | **Sum of Precision** | **Count of High Precision Notes (>= 0.9)** |
| TaskSieve | 362.98 | 343 |
| VIBE | 397.86 | 379 |
| VIBE + NE | 366.17 | 355 |