# Research Study on Interfaces for Exploratory Search

* Indicates required question

**Procedure of the Study**

In today's rapidly evolving landscape of academic research, finding relevant and timely information from publications can be a challenging task. This study aims to investigate different search interfaces for exploring scholarly publications.

If you decide to take part in this study, you will receive scenario descriptions of two search tasks (Scenario #1 and Scenario #2) in which you must interact with a Conversational and a Graphical Interface to explore publications from the field of Natural Language Processing (NLP). After completing the search scenarios, you will fill out an evaluation questionnaire about your experience.

1. **Informed Consent** *

   In this study, the collection and processing of the following data is lawful in accordance with the European General Data Protection Regulation (GDPR) on the basis of consent: age, gender, level of education, level of English, level of knowledge in natural language processing, dialogue data from the chat session, and evaluation questionnaire.

   By completing this form, you confirm that you have understood the information provided, that you have had the opportunity to ask questions, and that you wish to participate in this study voluntarily. You are free to withdraw your consent at any time.

   *Mark only one oval.*

   ◯ Yes

2. **What is your assigned participant group?** *

   *Mark only one oval.*

   ◯ Group A: Scenario #1 with Conversational Interface --> Scenario #2 with Graphical Interface

   ◯ Group B: Scenario #1 with Graphical Interface --> Scenario #2 with Conversational Interface

3. **What is your gender?** *

   *Mark only one oval.*

   ◯ Female

   ◯ Male

   ◯ Prefer not to say

4. **What is your age?** *

   _____

5.    What is your highest level of education? *

*Mark only one oval.*

- ( ) High school or equivalent
- ( ) Bachelor's degree
- ( ) Master's degree
- ( ) Doctoral degree

6.    **What is your level of English (CEFR)?** *

*Mark only one oval.*

- ( ) A1 or A2 (basic/beginner/elementary user)
- ( ) B1 or B2 (independent/intermediate/upper intermediate user)
- ( ) C1 or C2 (proficient/advanced/master user)

7.    **What is your level of knowledge in Natural Language Processing?** *

*Mark only one oval.*

- ( ) No knowledge
- ( ) Beginner knowledge (less than 2 years of experience)
- ( ) Advanced knowledge (2-5 years of experience)
- ( ) Expert knowledge (more than 5 years of experience)

**Scenario #1**

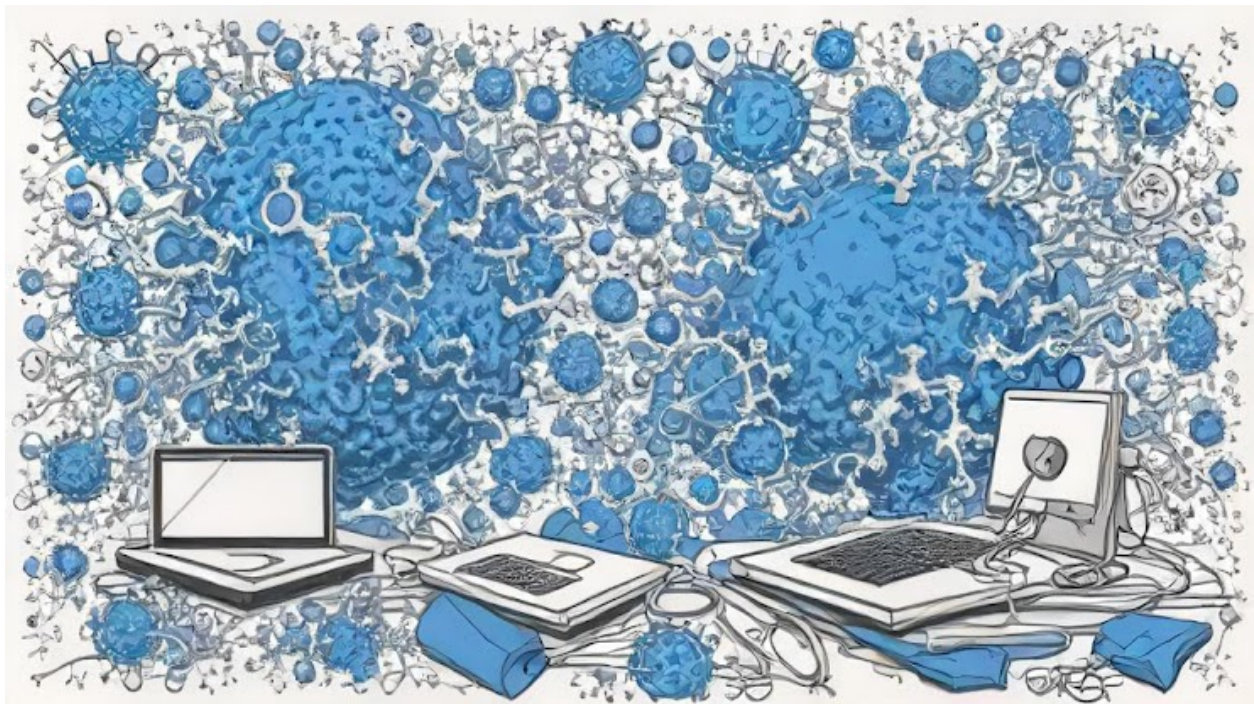Please read the following scenario description carefully.

**Description of Scenario #1**

Imagine you are interested in <u>mental health and emotional changes</u> during the COVID pandemic. You want to analyze how people express their <u>feelings on social media platforms</u> during the pandemic. Your goal is to study their emotions to learn how they handle stress and anxiety. To deal with the enormous volume of data available online, you are looking for ways to <u>automate the analysis process using NLP</u> techniques.

Your task is to use the provided search interface below to <u>discover papers related to the described scenario</u>. You have up to 8 minutes for your exploratory search. You are encouraged to "think out loud". Afterward, you will fill out an evaluation questionnaire to provide feedback on your search experience.

Participants in <u>Group A</u> use the [Conversational Interface](#).
Participants in <u>Group B</u> use the [Graphical Interface](#).



**Evaluation Questionnaire for Scenario #1 - Usability**

To evaluate your experience, please rate each of the following statements on a scale from 1 (strongly disagree) to 5 (strongly agree).

8.    1. I think that I would like to use this system frequently. *

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

9.    2. I found the system unnecessarily complex. *

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

10.    3. I thought the system was easy to use. *

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

11.    4. I think that I would need the support of a technical person to be able to use     *
this system.

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

12.    5. I found the various functions in this system were well integrated. *

*Mark only one oval.*

|     | 1 | 2 | 3 | 4 | 5 |                |
| --- | - | - | - | - | - | -------------- |
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

13.    6. I thought there was too much inconsistency in this system. *

*Mark only one oval.*

|     | 1 | 2 | 3 | 4 | 5 |                |
| --- | - | - | - | - | - | -------------- |
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

14.    7. I would imagine that most people would learn to use this system very quickly. *

*Mark only one oval.*

|     | 1 | 2 | 3 | 4 | 5 |                |
| --- | - | - | - | - | - | -------------- |
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

15.    8. I found the system very cumbersome to use. *

*Mark only one oval.*

|     | 1 | 2 | 3 | 4 | 5 |                |
| --- | - | - | - | - | - | -------------- |
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

16.    9. I felt very confident using the system. *

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

17.    10. I needed to learn a lot of things before I could get going with this system. *

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

### Evaluation Questionnaire for Scenario #1 - Information Quality

Please rate each of the following statements about the information provided by the search interface on a scale from 1 (strongly disagree) to 5 (strongly agree).

18.    **Readability**                                                                                    *

Considering the presented information, the provided text is easy to read and understand in terms of fluency, clarity, and readability.

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

19. **Correctness**                                                                    *

Considering the presented information, the provided text seems accurate, reliable, and aligned with the content of the publications.

*Mark only one oval.*

|       | 1 | 2 | 3 | 4 | 5 |                |
|-------|---|---|---|---|---|----------------|
| Stro  | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

20. **Usefulness**                                                                     *

Considering the presented information, the provided text is helpful in achieving my exploration goal and shows relevant publications for completing the search task.

*Mark only one oval.*

|       | 1 | 2 | 3 | 4 | 5 |                |
|-------|---|---|---|---|---|----------------|
| Stro  | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

21. **Overall Satisfaction**                                                           *

Please rate your overall satisfaction level with the search experience on a scale from 1 (very unsatisfied) to 5 (very satisfied).

*Mark only one oval.*

|       | 1 | 2 | 3 | 4 | 5 |                |
|-------|---|---|---|---|---|----------------|
| Very  | ◯ | ◯ | ◯ | ◯ | ◯ | Very satisfied |

**Evaluation Questionnaire for Scenario #1 - Strengths, Weaknesses & Preference**

Please answer the following questions briefly in around 3-5 bullet points.

22.   What are the main strengths of the used search interface? *

_____

_____

_____

_____

_____

23.   What are the main weaknesses of the search interface?  What improvements    *
      or additional features would you suggest?

_____

_____

_____

_____

_____

**Scenario #2**

Please read the following scenario description carefully.

**Description of Scenario #2**

Imagine you are an instructor teaching a programming course in Python. You want to ensure that the exam questions reflect the learning progress of the students. Your goal is to generate multiple-choice exams according to their knowledge level. To achieve this, you are looking for ways to automatically create exam questions based on the course materials using NLP techniques.

Your task is to use the provided search interface below to discover papers related to the described scenario. You have up to 8 minutes for your exploratory search. You are encouraged to "think out loud". Afterward, you will fill out an evaluation questionnaire to provide feedback on your search experience.

Participants in Group A use the Graphical Interface.
Participants in Group B use the Conversational Interface.



**Evaluation Questionnaire for Scenario #2 - Usability**

To evaluate your experience, please rate each of the following statements on a scale from 1 (strongly disagree) to 5 (strongly agree).

24.     1. I think that I would like to use this system frequently. *

*Mark only one oval.*

|   | 1 | 2 | 3 | 4 | 5 |   |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

25.     2. I found the system unnecessarily complex. *

*Mark only one oval.*

|   | 1 | 2 | 3 | 4 | 5 |   |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

26.     3. I thought the system was easy to use. *

*Mark only one oval.*

|   | 1 | 2 | 3 | 4 | 5 |   |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

27.     4. I think that I would need the support of a technical person to be able to use     *
this system.

*Mark only one oval.*

|   | 1 | 2 | 3 | 4 | 5 |   |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

28.    5. I found the various functions in this system were well integrated. *

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

29.    6. I thought there was too much inconsistency in this system. *

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

30.    7. I would imagine that most people would learn to use this system very quickly. *

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

31.    8. I found the system very cumbersome to use. *

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

32.   9. I felt very confident using the system. *

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

33.   10. I needed to learn a lot of things before I could get going with this system. *

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

## Evaluation Questionnaire for Scenario #2 - Information Quality

Please rate each of the following statements about the information provided by the search interface on a scale from 1 (strongly disagree) to 5 (strongly agree).

34.   **Readability**                                                                                    *

Considering the presented information, the provided text is easy to read and understand in terms of fluency, clarity, and readability.

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

35. **Correctness**                                                                                  *

Considering the presented information, the provided text seems accurate, reliable, and aligned with the content of the publications.

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

36. **Usefulness**                                                                                   *

Considering the presented information, the provided text is helpful in achieving my exploration goal and shows relevant publications for completing the search task.

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Stro | ◯ | ◯ | ◯ | ◯ | ◯ | Strongly agree |

37. **Overall Satisfaction**                                                                         *

Please rate your overall satisfaction level with the search experience on a scale from 1 (very unsatisfied) to 5 (very satisfied).

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Very | ◯ | ◯ | ◯ | ◯ | ◯ | Very satisfied |

**Evaluation Questionnaire for Scenario #2 - Strengths, Weaknesses & Preference**
Please answer the following questions briefly in around 3-5 bullet points.

38. What are the main strengths of the used search interface? *

_____

_____

_____

_____

_____

39. What are the main weaknesses of the search interface?  What improvements    *
or additional features would you suggest?

_____

_____

_____

_____

_____

40. Based on my experience with both scenarios, I prefer the following search    *
interface:

*Mark only one oval.*

⬭ Conversational Interface

⬭ Graphical Interface

41. If you have used the conversational interface for comparing papers, how would you rate the quality of the generated comparison (readability, correctness, usefulness) on a scale from 1 (very poor) to 5 (very good).

*Mark only one oval.*

|  | 1 | 2 | 3 | 4 | 5 |  |
|------|---|---|---|---|---|------|
| Very | ◯ | ◯ | ◯ | ◯ | ◯ | Very good |

**Thank you for your participation!**

This content is neither created nor endorsed by Google.

Google Forms