Introduction [~2 minutes]

INTRODUCE SELF

We ask that you please turn your camera off for your privacy.
Are you still ok with me recording and transcribing our study session?
record/transcribe

The goal of this study is to understand how researchers work with different AI tools to generate research ideas. You'll use two different AI tools one-by-one. With each tool, you'll complete two tasks. You'll use one part of the tool for 20 minutes to come up with ideas, and then you'll use another part of the tool for 5 minutes to evaluate your two favorite ideas for novelty. And along the way you'll answer some survey and interview questions.

check in about research area

Instructions/Tutorial for Idea Generation Task [3 minutes]

repeat for each tool {
I'll now send a few things in the chat.

if treatment
Semantic Scholar: https://www.semanticscholar.org/
AI Tool: LINK

if baseline
Semantic Scholar: https://www.semanticscholar.org/
AI Tool: LINK

First, there is a link to Semantic Scholar, a scholarly search engine similar to Google Scholar that you can use as you'd like.
Next, there is a link to the AI tool you'll be using.

Please open both links.
For the second link, you'll be asked to sign in with an email account. Please do that.

send in chat
if HCI
Ideation Topic: human-AI collaboration in art
Paper Corpus IDs: 269750703, 264146869, 268733308
Ideation Topic: AI tools for education
Paper Corpus IDs: 268385198, 269747469, 269750914
if NLP
Ideation Topic: dealing with LLM hallucinations
Paper Corpus IDs: 267657805, 267028613, 275516060

Ideation Topic: LLM explainability
Paper Corpus IDs: 270559451, 265609843, 265221218

I'll now send the ideation topic and paper corpus IDs you'll use for this tool in the chat.
Please enter both the ideation topic and paper corpus IDs in the tool and press submit.

Now please come back to the meeting to focus on my shared screen.
While we wait for the tool to load, I'll go over the task instructions and tutorial on how to use the tool with an example ideation topic: [human-AI collaboration in data analysis / multi-modal LLMs].
Please feel free to interrupt with questions at any time.

if first condition
As it says at the top of the tool, you will use the tool for 20 minutes to come up with and save as many research ideas as possible that meet the following criteria:
1. The idea is at least somewhat relevant to the ideation topic: Human-ai collaboration in data analysis.
2. The idea is at least somewhat interesting to think about further. (You might find an idea interesting if it is imaginative, impactful, feasible, specific, and/or novel relative to prior work.)
3. The idea has at least somewhat significant differences from ideas you have thought of or encountered before the study.

if baseline The tool has three tabs at the top. We'll only focus on the first tab for this task.
Under the idea generation tab, there is a box where you can select or deselect the input papers that you want the tool to consider when generating ideas. If you do not select any papers, the tool will consider all three papers when generating ideas.
You can also open each paper by clicking the paper icon to its left.
click

You can also type any custom instructions you would like the tool to take into account when generating ideas, but you cannot change the number or length of ideas generated. As an example, you might say..." *type example*
TO COPY: Come up with ideas related to time-series data analysis.
TO COPY: Come up with ideas related to LLMs for text-to-image generation.
Note that the textbox will be scrollable if you type more than the space shown.

When you are happy with your paper selection and any custom instructions, you can click "generate more ideas." *click* The system will generate 4 ideas, 2 at a time, which will be added to the list of ideas below. While the ideas are loading, you can peruse existing ideas and your inputs.
So in the bottom half of the page, you can explore your ideas, including the ones that were already generated at the start.

You can save or unsave an idea by clicking the bookmark icon to the left. *click to demonstrate* In order to save an idea, you'll be asked to acknowledge that the idea is at least somewhat relevant to the ideation topic and somewhat interesting to think about further, as you can see here. You'll then be asked to rate the idea's difference from previous ideas you've had or encountered. Once you've finished rating the idea, you can click save at the bottom, and the idea will be saved. *click two checkboxes, very different*

You can see the expanded version of the idea by clicking expand on the right, and you can delete it by clicking the trash icon to the right. But you won't be able to delete ideas when new ideas are loading.

Any remaining questions?

if treatment The tool has three tabs at the top. We'll only focus on the first tab for this task. Under the idea generation tab, there is a box where you can select different facets to generate an idea. Any idea that you generate will have one facet from the green purpose column, one facet from the yellow mechanism column, and one facet from the purple evaluation column. You can select zero, one, or multiple facets in each column. If you do not select any facets from a particular column and click "generate more ideas", the tool will select facets from that column for you to include in its generated ideas. If you select one or more facets in a column and then click "generate more ideas", the tool will make sure that each generated idea includes one of the selected facets from that column.

If you want to add your own purpose, mechanism, or evaluation, you can type it into the corresponding text box and then click "Add."
As an example, you might type the purpose [to support creativity in data analysis / to generate creative slide presentations]. *type example and click add*
And that facet will automatically be selected for you.

If you want to get more facet options related to a specific query, you can provide a query up to 5 words.
For example, I might want more facets related to [tabular data / text-to-image models]. *type example and click*
I then click the generate more facets button.
And the new facets will appear at the bottom of their respective columns.

You can also type any custom instructions you would like the tool to take into account when generating ideas, but you cannot change the number or length of ideas generated. As an example, you might say..." *type example*
TO COPY: Come up with ideas related to time-series data analysis.
TO COPY: Come up with ideas related to LLMs for text-to-image generation.
Note that the textbox will be scrollable if you type more than the space shown.

When you are happy with your facet selection and any custom instructions, you can click “generate more ideas.” *click* The system will generate 4 ideas, 2 at a time, which will be added to the list of ideas below. While the ideas are loading, you can peruse existing ideas and your inputs.

I’ll now explain the features for getting more information on the facets.
Each facet has a description that you can see by hovering over the question mark on the right. *hover*
You can also open the paper associated with each facet by clicking the paper icon to its right. *click*

If you scroll down through a column, you can see that each facet has a distance shown in the parentheses. An input facet comes directly from input you provide, such as the 3 input papers that I had you input or your own facet that you enter. Very near facets are meant to be very close to your input papers’ facets. A near facet is a facet that the tool selected to be near and analogous to the input papers’ facets. Similarly, far and very far facets are selected to be far or very far from but still analogous to the input papers’ facets.

In the bottom half of the page, you can explore your ideas, including the ones that were already generated at the start.
The facets associated with each idea are shown below it.
If you click the facets button to the left of an idea, the facets above will be filtered to show only those relevant to the idea. Click the button again to remove the filter. *demonstrate and remove filter*

You can save or unsave an idea by clicking the bookmark icon to the left. *click to demonstrate*
In order to save an idea, you’ll be asked to acknowledge that the idea is at least somewhat relevant to the ideation topic and somewhat interesting to think about further, as you can see here. You’ll then be asked to rate the idea’s difference from previous ideas you’ve had or encountered. Once you’ve finished rating the idea, you can click save at the bottom, and the idea will be saved. *click two checkboxes, very different*

Each idea can be expanded using the expand button to the right and deleted using the trash icon to the right. But you won’t be able to delete ideas when new ideas are loading.

Any remaining questions?

Idea Generation Task Prep [2 minutes]

stop sharing screen

Please share your window where you’ve opened those links. (click the share screen button at the bottom of Google Meet, click the window tab, and then select the window that has the links opened)

And just to make sure, can you switch back and forth between the tabs to make sure I can see if you switch tabs?

Before you begin the task, I've sent a document with the titles and abstracts of the three input papers for your ideation task in the chat. Please read over them to get a sense for your assigned ideation topic - [ideation topic]. I'll give you 2 minutes to do so but please let me know if you're done before then.

send link and set timer for 2 minutes
Human-AI collaboration in art papers:
LINK
AI tools for education papers: LINK
Dealing with LLM hallucinations papers:
LINK
LLM explainability papers:
LINK
times up Ok, time is up.

Idea Generation Task [20 minutes]

Please return to the tool.

if first condition Note that you are not required to use any particular features. It's up to you what you use.
There is no need to think aloud as you work.

The task instructions are at the top as a reminder.
To reiterate, you have 20 minutes to come up with ideas and save as many as you can that meet the criteria: at least somewhat relevant to the topic [topic], at least somewhat interesting to think about further, and at least somewhat significant differences from ideas you have thought of or encountered before the study.
Please remember that you are free to use Semantic Scholar and the input papers' document as you please. However, please do not utilize any other tools.
An important note is to please NEVER refresh the page or click the back arrow to go back to a previous page, as your history will not be saved.

if first condition
Feel free to let me know if any questions arise, and I will answer if possible within the study constraints.

Please go ahead and get started, and I'll let you know when you have 5 minutes left.
set timer for 20 mins and 15 mins

get log file link and note ID

undo tutorial

After 15-minutes There are 5 minutes left to save as many ideas as you can that meet the criteria.

Saved Idea Favoriting [4 minutes]

Time is up. Please go to the “Saved Ideas” tab.
Please star your two favorite ideas and answer the few additional questions about those ideas that appear.
Please do not look at any other tab, Semantic Scholar, or the input paper document while doing this.

I’ll give you 4 minutes for this. Please let me know if you’re done before then.
set timer for 4 minutes

time up Ok, time is up.
PLEASE SUBMIT YOUR RATINGS.

Idea Generation Task Survey + Interview [8 minutes]

We’ll now go through some survey and interview questions.

Please keep the tool open.
Feel free to look back at the tool, Semantic Scholar, and the input papers’ document for your reference while completing the survey and interview questions, but please don’t generate or search for anything new.

Great, now I’ll send a link in the chat to the survey regarding your experience.
Treatment:
LINK
Baseline:
LINK

I’ll give you 3 minutes to complete it, but please let me know if you finish before then.
set timer for 8 minutes and 3 minutes

check log for rating submission while waiting

time up Ok, time is up.

I’ll now ask you a few interview questions about your experience.

Questions:

1. Please describe how you generated ideas. What was your process?
2. How, if at all, did the tool help or hinder you in generating interesting ideas?
3. **if finished using both tools* Do you have any thoughts on how the two tools compare in supporting idea generation?*
4. *Did you tend to gravitate towards ideas related to a consistent [few facets, paper], or were you open to [many facets, different papers or beyond the papers]? If so, why?*
5. *Did you encounter concepts that you hadn't heard about before or hadn't thought about in the context of the ideation topic? If so, can you tell me a bit about what concepts you encountered and how?*
6. *How often did you select [facets, papers] yourself versus let the tool select for you? Why?*
7. ****if treatment**** *How, if at all, did you utilize the facets' distance labels?*

time up Ok, we should move on to the next task.

Instructions/Tutorial for Idea Novelty Evaluation Task [2 minutes]

Please go to the idea novelty evaluation tab in the tool so that I can give you a quick overview of that. Let me know if any questions come up.

You will have 5 minutes to evaluate your favorite two ideas for novelty.

if baseline
For each of your favorited ideas, you'll see questions about the novelty of the idea and your confidence in your novelty assessment.

if treatment
For each of your favorited ideas, you'll see questions about the novelty of the idea and your confidence in your novelty assessment. The tool has also found related papers to each idea, and the tool notes if the idea appears novel or not novel relative to the related papers as well as provides a reason for its novelty classification.

if first condition
Underneath that, there is a gray box where you can chat with an AI if you'd like additional help evaluating your ideas for novelty. You can think of it like chatGPT, so IMPORTANTLY you will need to provide it with any specific information that you want it to have. (For example, it won't be aware of the ideas above.) And note that the AI will remember your conversation after you start chatting with it. To get a response to your instructions, simply click "generate response." The response, like the other text boxes, is scrollable, so there may be more content to scroll through than what you initially see. A history of your instructions and responses is available via the back and forth arrows at the bottom there.
else
There is a box where you chat with an AI as before.

if first condition
Underneath that, there is a box where you can keep any notes you'd like on your novelty evaluations.
else
There is a box where you can keep notes as before.

Idea Novelty Evaluation Task [5 minutes]

The task instructions are at the top as a reminder.
To reiterate, you have 5 minutes to evaluate your two favorite ideas for novelty and answer the relevant questions.
Please remember that you are free to use Semantic Scholar and the input papers document as you please. However, please do not utilize any other tools.

if first condition
And again an important note is to please NEVER refresh the page or click the back arrow to go back to a previous page while using the tool.

Please go ahead and get started, and I'll let you know when you have a minute left.
set timer for 5 mins and 4 mins

monitor for issues with scrolling in ai response
check if reasons are weird if treatment

when 1-minute left You have 1 minute remaining.

time up Ok, time is up.
PLEASE SUBMIT YOUR ANSWERS.

Idea Novelty Evaluation Task Interview [3 minutes]

Great, I'll now ask you a few interview questions about your experience.

if first condition
Again, feel free to look back at the tool, Semantic Scholar, or the input paper document for your reference, but please don't generate or search for anything new.

set timer for 3 minutes

Questions:

1. Please describe how you evaluated your two favorite ideas for novelty. What was your process?
2. How, if at all, did the tool help and/or hinder you in evaluating ideas for novelty?

3. **if finished using both tools* Do you have any thoughts on how the two tools compare in supporting idea novelty evaluation?*

time up Ok, we should move on to the next task.

check for eval submit

Please close out of the tool now and the input paper document.
if first condition You can keep Semantic Scholar open.

}

Conclusion [1 minute]

That's everything! Thanks so much for participating.

PLEASE DO NOT ATTEMPT TO ACCESS THE TOOLS OUTSIDE OF THE STUDY, as it could impact the study.

You should receive your gift card by mid-April. If you don't, please let me know.
And please feel free to reach out with any questions.

FAQ

1. What does one of the immersion questions mean in idea generation survey?
    a. Asking how much was able to focus on activity without distraction from tool