

CS6750 HCI Summer 2021:

Assignment M2

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Abstract—LinkedIn is one of the most popular social networks for professionals. Many of us rely on LinkedIn to expand connections and find new opportunities after graduation. In this project, we are going to study one task of LinkedIn - the searching function. Previously, we defined the problem space, user types and 3 needfinding plans and possible biases in M1. In this paper, we will continue the needfinding execution, summarize the data inventory and define requirements drawn out of the data inventory.

1 NEEDFINDING EXECUTION 1 - PARTICIPANT OBSERVATION

1.1 Steps

In the first needfinding execution, I used the participant observation method to gather data. Through participating in the task - using LinkedIn search function, I gathered my observations about the current search function design. The steps are I'm searching for 20 people I know, and see how many times I can successfully accomplish my task.

1.2 Raw Results

In 18 out of cases, I can successfully find my target. ($18/20 = 90\%$) LinkedIn has already done a good job on ranking the search order to help you find the most likely person. But there are mainly 3 issues raised from my search.

First, as shown in Figure 1, I used the LinkedIn mobile app to search for a person's name, then on the result page I would like to further refine my search using company filter. I almost always click the "Companies" button and it is not the filter button I need. Second, I need to search both Chinese name and English name, and the combination of the two to find a Chinese co-worker. This is generally the case for those who work in China, Hong Kong or Singapore. LinkedIn is not specialized in dealing with multi-language search. Third, if a person is not on LinkedIn, which is quite often the case for academics, I would fail the task.

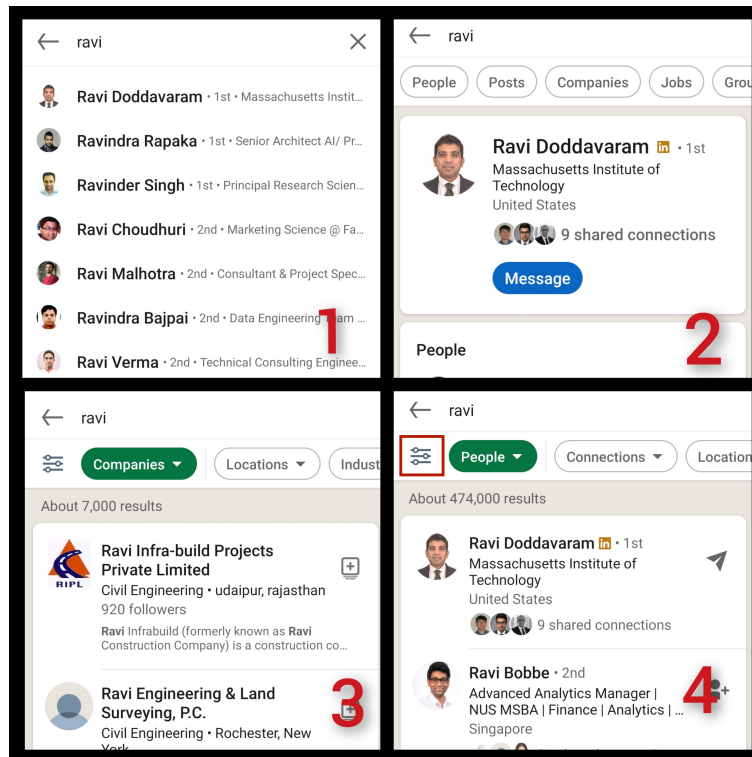


Figure 1— 1 - searching people's name, 2 - search result page, 3 - click company button, it will show you companies instead of filters 4 - click people button, then use filters on the left to specify a person's company

1.3 Takeaways

LinkedIn search function is good enough in common cases, though there are some room for improvements for the edge cases like I mentioned above. The search result page can be better designed for tasks under different context.

1.4 Biases Control

Participant observation can be biased if you overly represent your own experience. (Joyner, 2021) Through my own observation, I tend to have confirmation biases and ignore the useful information. The problem raised in my own participant experience may not be a general issue for people to accomplish the task. In order to avoid the confirmation biases from this exercise, I will ask the same question during the interview to verify it is a general problem.

2 NEEDFINDING EXECUTION 2 - INTERVIEW

2.1 Steps

10 working adults are interviewed for this LinkedIn searching function task. Because the way LinkedIn designed is for professional connections. 5 questions have been asked during the interview to gather the response of usability of LinkedIn search function.

2.2 Raw Results

4 out of 10 find LinkedIn search function easy to use. They are always able to find the person they need. 4 out of 10 find LinkedIn search function hard to use. The results are always not relevant. And 2 out of 10 do not use the search function at all. The normal use cases are to search newly joined colleagues, to search the upcoming interviewers and to search the target customers background. Raw questions are in the appendices.

2.3 Takeaways

As Joyner said, "You are not your user!" (Joyner, 2021b). The people I interviewed had many different experience comparing to mine. Through Interview we gathered richer and more holistic data comparing that through participant observation.

2.4 Biases Control

The confirmation biases are avoided here because the conclusion from participant observation are further verified here. One of the interviewees had the same issue, not able to properly use filter in the search result page. An interesting finding is that, despite 4 of them said the search function is easy to use, 3 of them were making the same mistake when asked to use company filter in the people search result page. By doing the task under this context, we avoid the recall biases that people tend to forget the difficulties they met after they finished the task for a while. Also, to avoid social desirability biases, most of the questions are formatted as open-ended questions. To have more confidence in the problems raised in interviews, we can further examine those problems using the survey methods to reach a larger audience base.

3 NEEDFINDING EXECUTION 3 - SURVEY

3.1 Steps

In this needfinding execution, 25 people are surveyed for 16 questions about LinkedIn Search Functions. Raw responses and questions in the appendices. Survey was posted in the peersurvey website for HCI course, and it closed after gathered 25 responses.

3.2 Raw Results

Raw response can be found in the appendices. We can see that most of the people in the age group 18-39, and most of the people are satisfied with existing search function. More than half of the people are using LinkedIn for finding jobs and about half are using LinkedIn to find people. Most of the people are not frequent users. About 2/3 of the devices are PC and laptops, so the website experience matters more. And people generally have the needs to search for co-workers.

3.3 Takeaways

We can see a variety of goals when people are using LinkedIn and what they are searching for. They tend to be OK with the existing search function design. But through the last experiment we can see that, even interviewees OK with the existing design can make the the mistake and fail the task.

3.4 Biases Control

In order to avoid social desirability biases, survey questions are phrased in a neutral way. Since in HCI peersurvey website generally people are more willing to help other students to finish the survey, voluntary response bias is avoided. But this survey will certainly suffer from recall biases. For the complex task like using company filter in people search result, we cannot have a good response from survey. We need to gather that type of data through other needfinding methods. Also, this survey suffers from the biases that most of the responses are from OMSCS HCI students. More responses from other channels may be needed.

4 DATA INVENTORY

These are the questions we want to answer though our needfinding exercises: (Joyner, 2021a)

- Who are the users?
- Where are the users?
- What is the context of the task?
- What are their goals?
- What do they need?
- What are their tasks?
- What are their subtasks?

Now we will go through each question and see if our needfinding executions have answers.

4.1 Who are the users

First type of users are the power users of LinkedIn like myself. I don't have many power users in the interviews or surveys. Second type of users are working adults who occasionally use LinkedIn, which are the most of my interviewees and survey participants.

4.2 Where are the users

Since this is a website or an mobile app, people are either using phone, laptop or PC in the workplace to access LinkedIn. There are scenarios when people using LinkedIn app in other places, but chances are those would still be some professional occasions. In the survey questions, we can see most of the people are using desktop or laptop, meaning most of the time it is used in workplace or professional occasion.

4.3 What is the context of the task

From the above finding, we understand that most of the time people using LinkedIn in workplace, so their priority would still be the daily work. The users will be distracted, so the process is better to be easy, fast and accurate.

4.4 What are their goals

Through the survey we can see the the appendices that, most of the goals are finding jobs and find people they know. Also, near half of the people would like to search about companies as well. Their goal is to have the correct result in the search result page. We can see from the survey that most of the time people are

not using it for searching posts.

4.5 What do they need

What they need in this task is normally the names of the person or company. But it can be challenging when it involves multi-languages. One thing missed in my survey is people with multi-language needs, since majority of the responses come from US. If the name is too common, people need to add filters to refine the search. This data is gathered through participant observation and interviews, and it can hardly be addressed through surveys. The data needs to be collected through the process of performing the task.

4.6 What are their tasks

The tasks are tightly connected with the goals. To search a person, one needs to key in the person's name to search, same for searching companies. Searching jobs is a bit different, you need to provide both the name of the job and a location. For all three goals, the tasks are relatively the same - key in the names and find the results in the search result page. There are multiple other tasks they can perform in the LinkedIn interface, and there are other distractions in the workplace environment. A good design should be capable to let the user accomplish the task given those contexts.

4.7 What are their subtasks

The data for collection subtasks are mainly from participant observation. The needfinding methods that can help with subtasks inventories are participant observation, ethnography and naturalistic observation. It is not feasible to do naturalistic observation for the task using LinkedIn application. And ethnography may be suitable for more complex task like video editing. Through participant observation, I found the issue on one of the subtasks - the filter in search result page is hard to use. Also, from the interviews, we understood that often the search result it not relevant. The cluttered result interface contains people, companies, and posts results. It violates the tip that "Emphasizing essential content while minimizing clutter" (Joyner, 2021d) as well. But the issue of collecting subtasks through participant observation only is that it overly represents my own experience. In the next iteration of needfinding, I need to examine the subtasks by observing other participants doing the same tasks.

5 DEFINING REQUIREMENTS

Based on the result of our needfinding exercises, we can define the requirements for our interface. It turns out most of the users are novice users (less frequent users), the interface should be guide the user though the task. But also people in workplace have limited resource and time in this task, so efficiency is as important as learnability. Also, since people are using the interface both on mobile and desktop/laptop, the interface should be catered for both app and website. All requirements are summarized in below Table 1.

Table 1—Requirements from Needfinding

	Functionality	Usability	Learnability	Compatibility	Efficiency
Requirements	User can find target in the search result	It is easy for the user to search	It takes little time for user to learn interface	The interface works on both mobile and website	The interface can also help expert user to accomplish task efficiently
Evaluation	How many times user can find target in result	Interface is rated as easy to use for most users	How fast user start to use the interface	Users can accomplish task on both mobile and website	Users can finish task faster with shortcuts

6 CONTINUED NEEDFINDING

Through this needfinding exercise I found the needfinding exercise is very likely to be an iterative progress. We do not know much about our users in first place. Multiple needfinding methods work together can give us a more holistic view about the task and the context of the task.

"What remaining questions are there that would benefit from additional needfinding investigation?"

As mentioned in section 4.7, conclusions from participant observation need to be further verified through other needfinding methods like interviews or surveys. Also, we do not have enough data inventory for the task that people are searching jobs instead of people. We can have more questions to understand that

task.

"What new questions arose during this initial round of needfinding?"

Problems raised from interviews can be formatted as survey questions, then we can refine our survey to have better understanding about whether the problem of the interface is really affecting people to accomplish the task. Also, we will ask more questions about problems when people using LinkedIn search function to find jobs or companies.

"What types of exercises would you do next to address these remaining or new questions?"

All three needfinding exercises will be done with new questions. Through participant observation we can find subtasks and issues for the companies and jobs searching task. New questions in survey and interviews can further verify the issues in these 2 tasks and refine the needs when people are using LinkedIn search function.

7 REFERENCES

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8 APPENDICES

8.1 Interview Questions

1. Do you use LinkedIn search function?
2. Under which scenarios you are using LinkedIn Search function?
3. Do you think LinkedIn search function is easy to use?
4. What do you think LinkedIn search function can be improved?
5. How much do you satisfy with current LinkedIn search function?

8.2 Survey Raw Data

response	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
1 30 - 39	3	Find jobs;Talk with recruiters		4	Top right	5	2	5	5	5	3	3	2	Phone	1	1
2 30 - 39	3	Just see posts;Find jobs;Che		4	Top left	4	4	4	4	4	3	5	3	Phone	3	4
3 30 - 39	5	Just see posts;Find jobs;Finc		5	Top left	4	5	4	4	4	5	4	2	Phone	5	5
4 18 - 29	4	Just see posts;Find jobs;Finc		4	Top left	3	4	4	3	2	5	2	2	Laptop	4	5
5 18 - 29	5	Just see posts;Find people ir		3	Top left	4	4	4	4	4	3	2	1	Phone	5	5
6 30 - 39	4	Just see posts;Find jobs;Finc		3	Bottom left	4	4	3	4	4	2	4	3	Phone	5	4
7 18 - 29	4	Just see posts;Find jobs;Kill i		3	Top right	3	3	4	4	3	3	4	1	Laptop	3	3
8 30 - 39	3	Find jobs;Find people in wor		4	Top right	4	4	3	4	4	4	4	1	Phone	5	4
9 18 - 29	3	Find jobs;Find people in wor		3	Top right	3	3	3	2	3	3	4	2	Laptop	4	4
10 40 - 49	3	Just see posts;Find people ir		4	Top left	3	4	2	3	3	3	3	3	PC	4	4
11 18 - 29	2	Find jobs;Find people in wor		3	Top left	3	4	3	3	2	4	3	1	Laptop	4	4
12 30 - 39	3	Just see posts;See connectiv		2	Top left	5	3	5	5	5	2	2	1	Laptop	4	4
13 18 - 29	3	Just see posts;Find jobs;Finc		3	Top right	3	3	3	3	4	4	3	4	PC	5	5
14 18 - 29	4	Just see posts;Find people ir		3	Top right	4	4	4	4	4	4	3	3	PC	4	4
15 30 - 39	3	Just see posts;Find jobs		2	Top right	4	2	3	3	4	2	2	2	Phone	4	4
16 18 - 29	4	Just see posts;Find jobs		4	Top left	5	3	4	3	4	3	5	1	Phone	3	2
17 18 - 29	4	Find jobs;Check companies'		4	Top left	4	3	3	3	3	4	5	1	Laptop	4	3
18 18 - 29	2	Just see posts;Find jobs;Che		3	Top right	4	3	4	4	4	3	3	1	Laptop	4	4
19 50 - 64	4	Find people in work/school/		3	Top left	4	4	4	3	4	3	1	2	Phone	5	5
20 30 - 39	4	Just see posts;Find people ir		3	Top left	3	3	4	4	3	3	2	1	Laptop	4	4
21 30 - 39	3	Find jobs;Check companies'		3	Top right	3	3	4	3	3	3	3	1	PC	2	3
22 40 - 49	5	Find jobs;Talk with colleagu		4	Top left	4	2	3	2	2	2	4	2	PC	4	4
23 18 - 29	5	Find jobs		3	Top right	4	3	4	3	3	2	4	2	Laptop	3	4
24 18 - 29	4	Find jobs;Find people in wor		3	Top left	4	3	4	4	4	3	2	2	PC	4	4
25 30 - 39	3	Just see posts;Find jobs;Finc		3	Top right	4	3	4	4	4	3	3	3	Phone	4	4

Figure 2—Raw data from Survey

8.3 Survey Questions

1. Select your age
2. How often do you use LinkedIn
3. What do you mostly do with LinkedIn
4. How often do you use LinkedIn Search box
5. Where would you prefer to see the Search box on the screen
6. It is easy to use the current LinkedIn Search Box
7. How often do you use Search Box to find people
8. It is very easy for me to search for people on LinkedIn

Goal	Number of People
Find jobs	18
Just see posts	15
Find people in work/school/social	13
Check companies' openings and connections	11
Talk with colleagues	6
Talk with recruiters	6
See connections' updates	5
Kill time	4
Find courses to study	2
Find events to attend	2
Find old-time schoomates	1

Figure 3—Why people using LinkedIn Search Function

9. It is easy to filter the people search results
10. It is easy for me to search for people using LinkedIn mobile app
11. How often do you use Search Box to find companies
12. How often do you use Search box to find jobs
13. How often do you use Search box to find posts
14. Which is the device you are mostly using LinkedIn app on
15. I would like to check my colleague's background on LinkedIn
16. I would like to know the event speaker's background on LinkedIn