OMSCS Human-Computer Interaction (6750): Assignment M2 (Summer 2021)

Susan Hutchinson

shutchinson31@gatech.edu

Abstract—Cameras on mobile phones have made taking pictures and videos a part of everyday life. Over time, people amass a large amount of content. The segment of targeted domain concerns the iPhone **Search** interface for the **Photos** app. This paper reports initial findings from needfinding exercises.

1 NEEDFINDING EXECUTION 1:

I primarily scroll the images on my camera roll and rarely use the iPhone **Search** interface. To gain some perspective, a **participant observation** was conducted. Five different photos from between5 years ago and within the last year were thought of. The amount of time it took to scroll versus the time it took to search were recorded for each selected image. Please refer to Table 1 for the results.

1.1 Results

Table 1 — The amount of time in mm:ss.ms to locate a specific
photo on my iPhone camera.

Image	Scroll	Search	Time Difference in Seconds
Image #1	2:35.35	:14.16	141.19
Image #2	1:26.67	:26.12	60.55
Image #3	:44.92	:23.61	21.31
Image #4	:31.78	:24.02	7.76
Image #5	:31.94	:13.13	18.81

1.2 Takeaways

Based on the results, the search interface is faster than scrolling through the camera roll, *especially* when the image is much older and the amount of content to

browse is large. In both cases, I would imagine the picture and think about characteristics to help me locate it. Characteristics include a time-frame the picture was taken in, an object within the picture, event, etc. I was very surprised at how accurate the searches were without me providing any underlying metadata. I have a particular image on my phone that takes me a long time to find, see Image #1 in Table 1. When I did the targeted search, I entered Halloween and cemetery and got the results quickly. I think it was the second fastest search I attempted.

Is everyone else like me? Do they scroll through thousands of images or do they perform a targeted search instead?

1.3 Controlling bias

1.3.1 *Confirmation bias*

Creating an exercise where I would locate the same 5 photos (from different time periods and contexts) and record the time it took, was one way for me to avoid confirmation bias.

1.3.2 *Recall bias*

Instead of relying on my past experience and memories around locating photos, I would gain fresh perspective and new insights I did not have previously.

2 NEEDFINDING EXECUTION 2:

A survey targeted at iPhone users was distributed by peersurvey.cc.gatech.edu and completed by twenty-five individuals.

2.1 Results

The users are mostly between the ages of 18 and 39 split down the middle between male and female. This group of people takes pictures of things they enjoy, including hobbies, as well as posting to social media. Almost three-fourths, 72%, of the users have more than 1,000 images stored on their iPhone with 16% having *more* than 10,000 images. More than half, 60%, of users have looked for a photo more than 11 times in the past year. Of those surveyed, 80% use scrolling as the method to find an image. About 12% of the users use *both* scrolling and the search capability to find an image. Out of 25 responders, 0%, **no one**, chose the Search capability as the *main* method to do a targeted search for images. Other than

scrolling and searching, 8% of the population use favorites and albums. Of the responders, more than half, 60%, were satisfied with the amount of time it takes them to find a specific photo and only 16% were dissatisfied. The **Photos** app groups photos into moments, people, places, and categories and 48% of the responders have *never* used the feature to find a specific image. Users were also asked if they have ever added a caption to a picture. Almost all, 92%, do *not* use this feature and 80% did *not* know this feature even *exists*. Only 16% of users say they are normally engaged in a conversation when trying to look for photos. When asked if locating a specific image requires their full attention, only 4% agreed. Please refer to Appendix 8.1 for a summary of the survey results.

2.2 Takeaways

Based on the survey results, people have a lot of image content stored on their phones. Due to the volume of photos, and the activities they engage in, they are expert users. The users choose to scroll through hundreds to thousands of images instead of doing targeted searches. They are mostly satisfied with the amount of time it takes for them to perform this activity and do not find locating images manding of their time and attention. The iPhone offers some interesting methods to assist users in performing a targeted search but does not do a good job communicating those ways to a user. Scrolling an iPhone's photo content does not yet seem to be of high concern to these users.

2.3 Controlling Bias

2.3.1 *Confirmation Bias*

Due to my own experiences, I assumed others would have the same issues I encountered. Utilizing the Survey was one way to counteract this type of bias. Gathering many opinions and structuring the questions so they did not sway the user allowed me to avoid this. The questions did not did not hint at the problem space and were worded neutrally to avoid negativity as well as positivity. I was actually very surprised that most users did *not* find what *I* thought to be a problem to be a problem for ***them***.

2.3.2 *Observer Bias*

In the previous assignment, I included Survey questions I was planning on using. The feedback I was given pointed out some possible observer bias which gave me an opportunity to re-word certain questions to attempt to reduce bias.

2.3.3 *Recall Bias*

Based on the survey results, trying to locate specific photos does not seem to be done on a regular basis. The users might not fully recall their experiences and perceptions. To counter-act this bias, I am conducting a *Think Aloud* Needfinding exercise to get user impressions as they are performing the activity.

3 NEEDFINDING EXECUTION 3

A "Think Aloud" exercise was targeted to iPhone users and was distributed by peersurvey.cc.gatech.edu. The think aloud exercise was completed by twenty-five individuals, comprising of both Georgia Tech students and non-Georgia Tech students. Users were asked to think of someone they haven't seen in over a year and locate their photo.

3.1 Results

Users in the think aloud group were on average older than the survey respondents with 76% older than age 40. When asked about familiarity, more than half, 68%, were *familiar* or *very familiar* with features on their phone. More than half of the users, 56%, did not think locating a photo required one's full attention. Refer to Appendix 8.3.1 for relevant comments on the actions they took and their thought process. Users comment on having a lot of photo content. A majority of users will use the scrolling method versus a targeted search to locate a specific photo. Refer to Appendix 8.3.2 for relevant comments and perceptions after performing the exercise.

3.2 Takeaways

The think aloud exercise brought to light issues which did not surface in the survey itself. Perhaps this is because the activity of locating a specific photo is not a common occurrence, so there may have been recall bias associated with the survey. When users were asked to do the task and think aloud, they had a fresh perspective. Users realize how much photo content they have and express some

of the frustration and the amount of time it takes scrolling through the content. Users also comment on things like wanting to tag photos and organize photos. One user was constantly interrupted by their children and commented on the frustration this caused. This type of information was not captured in the survey.

3.3 Controlling Bias

3.3.1 *Confirmation bias*

Performing a think aloud exercise with 25 individuals combats my own confirmation bias. I have different opinions and thought processes to compare with my own.

3.3.2 *Observer bias*

Because we can subconsciously bias users by interacting directly with them (Joyner, 2021), I conducted the think aloud exercise online. I could provide the users the freedom to comment without any undue influence by me.

3.3.3 *Social desirability bias*

In order to control social desirability bias, the think aloud exercise was conducted online with the understanding they would be anonymous. Therefore, the desire to help and to be nice should not impede providing honest opinions.

4 DATA INVENTORY

4.1 Who are the users?

Many users take photos of things they enjoy or post photos to social media. They have a lot of photos stored on their phones. These data points suggest the users are not novices. Users have been accumulating content for some time. The gender of these users is split down the middle of female and male. People, regardless of gender, take a lot of photos. The age of these users tends to be older than 30. Because users gather content over time, it is possible the older the user, the more photos they've taken.

4.2 Where are the users?

I did not do a good job identifying the environment users are in when searching for photos. I made the assumption the phone is a mobile device and will be with

the person in any environment. I focused on determining if a user was in a social setting when attempting to locate an image and on 16% of survey responses said they were. To improve this data inventory question, I would reword the question and ask, "When you are trying to locate a specific image on your phone, where are you normally located 1) at home 2) at work 3) place of business 4) restaurant 5) school 6) party or social setting 7) other?"

4.3 What is the context of the task?

Users were asked if they were in a social setting or engaged in a conversation while searching for photos. As mentioned before, only 16% were in this specific context. Again, the question could be reworded: "For the majority of the times you look for photos, what else are you engaged in 1) conversation with someone else 2) watching tv 3) eating 4) working 5) school work 6) other?"

The think aloud exercise provided me with some information around the context of the task. A user commented they were frustrated that their children kept interrupting them while they tried to execute the task of finding a photo. Another was sipping on a Pepsi. Users when asked if locating a specific image requires most of their full attention, overwhelmingly did not find finding a specific photo on their phone to require their full attention.

4.4 What are their goals?

The context of the survey and think aloud exercise is focused on locating specific photos. The goal is intrinsic to the problem space. The users were surveyed around what they take photos of and hints at posting pictures on social media, using photos in work and business, photography, and hobbies. In the think aloud exercise, users were asked to use the Photos App to find a picture of a person they had not seen in over a year. To improve the data inventory, the survey question can be re-worded to directly ask why users look for specific photos.

4.5 What do they need?

In all three needfinding exercises, users require an iPhone. As part of the think aloud and participant needfinding exercises, users require a memory or recollection of some image taken in the past. In the think aloud needfinding exercise, I was the collaborator and provided the context of the memory they needed to find.

4.6 What are their tasks?

Based on *participant observation* and the *think aloud* exercise, users first begin by thinking about a particular image and identifying characteristics. Users thought of the images in terms of time and season, that is, 2018, winter, summer, etc. They thought in terms of location such as beach and mountains. And they also thought of context like 'A bunch of people wearing jackets.' If users organized their photos, they think of the physical location where the photo might exist on their device.

Based on survey results, a very small percentage of users are engaged in conversation or in a social setting when searching for photos. Most of the time, this activity seems to be reserved when users are by themselves. One user did mention being interrupted during the execution of the task, so one might infer they were at home. The person will launch the **Photos** app on their phone and begin the phone finding exercise.

4.7 What are the subtasks?

Undeniably in both the *survey* and the *think aloud* exercise, users will access the images and use the scrolling method to browse images until they find the right one. In the think aloud exercise, users were given a time frame of a year or more. Some would filter the images by Year. It was surprising to learn users did not use the **Search** capability as the primary method to locate a specific photo. A small percentage uses both methods, possibly not finding the photo right away by scrolling and then turning to the Search capability.

5 DEFINING REQUIREMENTS

Based on the needfinding exercise, users seldom perform a targeted search and mainly scroll the vast number of photos on their phone. The interface should adjust to promote the **Search** interface and guide users to perform activities that will assist them in organizing and identifying photo content in the future. Most users do not know they can add captions to a photo. Metadata provided by **captioning** can be used to refine a targeted search. This ability should become more exposed within the interface. Once a picture is taken, many users **Edit** the photo. The option of adding **captions** is to be added to the **Edit** photo interface. Users

should be able to see the metadata and have the ability to update the information collected on the picture.

Photos are also organized into **Albums**, but most users don't spend the time putting photos into **Albums**. When taking or editing a photo, suggest an **Album** to place the photo within it.

The ability to tag a person within a photo and use facial recognition to identify that person in future photos.

These requirements will facilitate performing a targeted search versus scrolling the camera roll.

The success rate and speed of finding a specific picture will improve if users can control the metadata associated with their pictures. The majority of users scroll the camera roll, upon detecting a user engaging in this activity (perhaps after scrolling more than a few hundred images for example, perhaps the user can be asked if they would like to do a search or to continue scrolling to guide them to use the **Search** interface instead.

6 CONTINUED NEEDFINDING

The needfinding exercises determined how users locate pictures, primarily through scrolling *All Images*. While users in the survey did *not* express much concern or frustration performing this task, users in the think aloud *did*. They also expressed the wish to be able to tag and organize photos. I would take this information and focus on the actual **Search** interface and determine why it's not used more often. In a think aloud exercise, I would direct the user to use **Search** and get their thoughts and perceptions. If users could more easily access and edit captions, would they? Would they want to view the data stored with a picture?

I would also refine and correct missing or barely-there data inventory information by asking more direct questions instead of making assumptions.
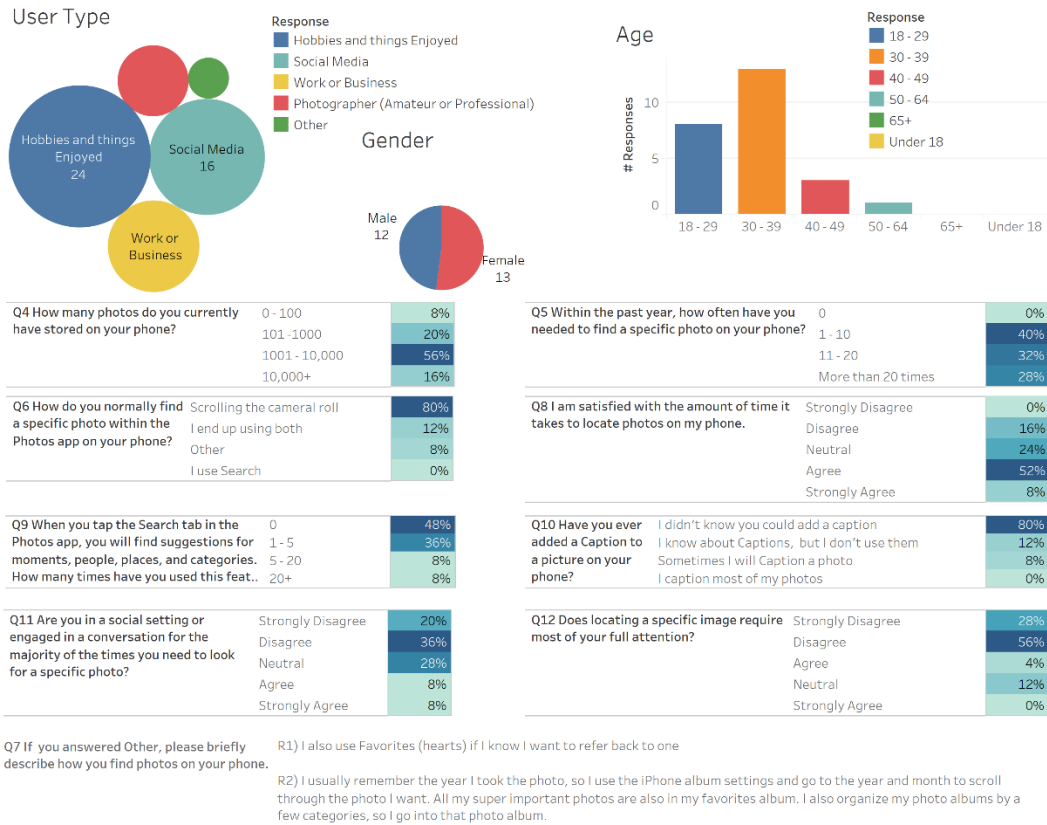
7 REFERENCES

1. Joyner, D. A. (2021) 3.3.5 5 Tips: Avoiding Bias in Needfinding [Slides]. ED. CS6750 - Lessons (edstem.org)

8 APPENDICES

8.1 Survey response summary

User Type

Response
- Hobbies and things Enjoyed
- Social Media
- Work or Business
- Photographer (Amateur or Professional)
- Other

Hobbies and things Enjoyed 24
Social Media 16
Work or Business

Gender

Male 12
Female 13

Age

Response
- 18 - 29
- 30 - 39
- 40 - 49
- 50 - 64
- 65+
- Under 18

Q4 How many photos do you currently have stored on your phone?		
	0 - 100	8%
	101 - 1000	20%
	1001 - 10,000	56%
	10,000+	16%

Q5 Within the past year, how often have you needed to find a specific photo on your phone?		
	0	0%
	1 - 10	40%
	11 - 20	32%
	More than 20 times	28%

Q6 How do you normally find a specific photo within the Photos app on your phone?		
	Scrolling the camera roll	80%
	I end up using both	12%
	Other	8%
	I use Search	0%

Q8 I am satisfied with the amount of time it takes to locate photos on my phone.		
	Strongly Disagree	0%
	Disagree	16%
	Neutral	24%
	Agree	52%
	Strongly Agree	8%

Q9 When you tap the Search tab in the Photos app, you will find suggestions for moments, people, places, and categories. How many times have you used this feat..		
	0	48%
	1 - 5	36%
	5 - 20	8%
	20+	8%

Q10 Have you ever added a Caption to a picture on your phone?		
	I didn't know you could add a caption	80%
	I know about Captions, but I don't use them	12%
	Sometimes I will Caption a photo	8%
	I caption most of my photos	0%

Q11 Are you in a social setting or engaged in a conversation for the majority of the times you need to look for a specific photo?		
	Strongly Disagree	20%
	Disagree	36%
	Neutral	28%
	Agree	8%
	Strongly Agree	8%

Q12 Does locating a specific image require most of your full attention?		
	Strongly Disagree	28%
	Disagree	56%
	Agree	4%
	Neutral	12%
	Strongly Agree	0%

Q7 If you answered Other, please briefly describe how you find photos on your phone.

R1) I also use Favorites (hearts) if I know I want to refer back to one

R2) I usually remember the year I took the photo, so I use the iPhone album settings and go to the year and month to scroll through the photo I want. All my super important photos are also in my favorites album. I also organize my photo albums by a few categories, so I go into that photo album.

8.2 Survey response raw data

8.2.1 *Questions 1 – 5*

response	Q1	Q2	Q3	Q4	Q5
1	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains pictures of my hobbies and things I enjoy;I consider myself a photographer (Amateur or Professional)	40 - 49	Male	0 - 100	1-10

2	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains photos for use in work or business;My phone contains pictures of my hobbies and things I enjoy	30 - 39	Male	101 - 1000	11-20
3	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains pictures of my hobbies and things I enjoy;I consider myself a photographer (Amateur or Professional)	30 - 39	Female	1001 - 10000	More than 20 times
4	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains photos for use in work or business;My phone contains pictures of my hobbies and things I enjoy	30 - 39	Female	10000+	More than 20 times
5	My phone contains pictures of my hobbies and things I enjoy	30 - 39	Female	1001 - 10000	11-20
6	My phone contains photos for use in work or business;My phone contains pictures of my hobbies and things I enjoy	18 - 29	Female	1001 - 10000	1-10
7	I post pictures to Social Media like Facebook and Instagram from my phone;Other	18 - 29	Female	1001 - 10000	More than 20 times
8	My phone contains pictures of my hobbies and things I enjoy	18 - 29	Female	1001 - 10000	1-10

9	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains pictures of my hobbies and things I enjoy;I consider myself a photographer (Amateur or Professional)	30 - 39	Male	101 - 1000	More than 20 times
10	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains pictures of my hobbies and things I enjoy	40 - 49	Female	101 - 1000	1-10
11	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains photos for use in work or business;My phone contains pictures of my hobbies and things I enjoy	18 - 29	Male	101 - 1000	1-10
12	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains pictures of my hobbies and things I enjoy	18 - 29	Female	1001 - 10000	More than 20 times
13	My phone contains photos for use in work or business;My phone contains pictures of my hobbies and things I enjoy;I consider myself a photographer (Amateur or Professional)	30 - 39	Male	10000+	1-10
14	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains photos for use in work or business;My phone contains	30 - 39	Male	0 - 100	11-20

	pictures of my hobbies and things I enjoy				
15	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains pictures of my hobbies and things I enjoy	18 - 29	Female	1001 - 10000	More than 20 times
16	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains photos for use in work or business;My phone contains pictures of my hobbies and things I enjoy	40 - 49	Male	101 - 1000	1-10
17	My phone contains pictures of my hobbies and things I enjoy	30 - 39	Female	10000+	1-10
18	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains pictures of my hobbies and things I enjoy;I consider myself a photographer (Amateur or Professional)	30 - 39	Male	10000+	11-20
19	My phone contains photos for use in work or business;My phone contains pictures of my hobbies and things I enjoy;I consider myself a photographer (Amateur or Professional)	50 - 64	Male	1001 - 10000	11-20

20	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains pictures of my hobbies and things I enjoy	18 - 29	Male	1001 - 10000	1-10
21	My phone contains pictures of my hobbies and things I enjoy;Other	18 - 29	Male	1001 - 10000	1-10
22	My phone contains pictures of my hobbies and things I enjoy	30 - 39	Male	1001 - 10000	11-20
23	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains pictures of my hobbies and things I enjoy	30 - 39	Female	1001 - 10000	More than 20 times
24	I post pictures to Social Media like Facebook and Instagram from my phone;My phone contains photos for use in work or business;My phone contains pictures of my hobbies and things I enjoy	30 - 39	Female	1001 - 10000	11-20
25	My phone contains photos for use in work or business;My phone contains pictures of my hobbies and things I enjoy	30 - 39	Female	1001 - 10000	11-20

8.2.2 *Questions 6 – 8*

response	Q6	Q7	Q8
1	I scroll the photos on my camera roll until I find the picture		4
2	I scroll the photos on my camera roll until I find the picture		2

3	I scroll the photos on my camera roll until I find the picture		2
4	I end up using both	I also use Favorites (hearts) if I know I want to refer back to one	2
5	Other	I usually remember the year I took the photo, so I use the iPhone album settings and go to the year and month to scroll through the photo I want. All my super important photos are also in my favorites album. I also organize my photo albums by a few categories, so I go into that photo album.	3
6	I scroll the photos on my camera roll until I find the picture		4
7	I scroll the photos on my camera roll until I find the picture		2
8	Other	Albums	2
9	I scroll the photos on my camera roll until I find the picture		2
10	I scroll the photos on my camera roll until I find the picture		2
11	I scroll the photos on my camera roll until I find the picture		3
12	I scroll the photos on my camera roll until I find the picture		1

13	I scroll the photos on my camera roll until I find the picture		3
14	I scroll the photos on my camera roll until I find the picture		3
15	I scroll the photos on my camera roll until I find the picture		2
16	I scroll the photos on my camera roll until I find the picture		2
17	I scroll the photos on my camera roll until I find the picture		2
18	I end up using both		4
19	I scroll the photos on my camera roll until I find the picture		2
20	I scroll the photos on my camera roll until I find the picture		3
21	I scroll the photos on my camera roll until I find the picture		3
22	I scroll the photos on my camera roll until I find the picture		4
23	I scroll the photos on my camera roll until I find the picture		2
24	I scroll the photos on my camera roll until I find the picture		1
25	I end up using both		2

8.2.3 *Questions 9 - 12*

response	Q9	Q10	Q11	Q12
1	1 - 5	Sometimes I will Caption a photo	4	5
2	1 - 5	I didn't know you could add a Caption	4	3
3	1 - 5	I didn't know you could add a Caption	3	4
4	20+	I didn't know you could add a Caption	4	4
5	0	I didn't know you could add a Caption	1	4
6	0	I didn't know you could add a Caption	4	3
7	0	I didn't know you could add a Caption	5	5
8	1 - 5	I didn't know you could add a Caption	3	4
9	1 - 5	I didn't know you could add a Caption	4	4
10	0	I didn't know you could add a Caption	5	4
11	0	Sometimes I will Caption a photo	4	4
12	0	I know about Captions, but I don't use them	2	4
13	20+	I didn't know you could add a Caption	5	5

14	0	I didn't know you could add a Caption	3	5
15	0	I didn't know you could add a Caption	5	5
16	0	I didn't know you could add a Caption	3	5
17	1 - 5	I didn't know you could add a Caption	4	4
18	5 - 20	I know about Captions, but I don't use them	3	4
19	1 - 5	I didn't know you could add a Caption	3	5
20	0	I didn't know you could add a Caption	4	4
21	0	I know about Captions, but I don't use them	2	2
22	1 - 5	I didn't know you could add a Caption	1	4
23	0	I didn't know you could add a Caption	5	4
24	1 - 5	I didn't know you could add a Caption	4	3
25	5 - 20	I didn't know you could add a Caption	3	4

8.3 Think Aloud Summary

8.3.1 *Summarizing the thoughts and actions the users had while performing the think aloud exercise for finding a specific picture.*

All photos, then filter by date	I need to delete these work pics I took for our badges	Search on person's name. Usually doesn't work so start looking at photos filtered by date starting at time of year I last saw the person.	Sip of diet pepsi and scrolling…'I know exactly where this is at'	Swipe, Swipe, I got a lot of photos	Where were we when I took that picture? What was that date? It was a group of people. It was winter. Look for a group wearing jackets.
Click on home, click on photography folder, photos folder, click on albums, click on recent. Scroll up for a bit and look for beach type pics.	I really need to clean out my photos!				
Did I even take them or did my kid do this?	I take a lot of pictures.	Wow my pictures don't appear to be in chronological (or any kind of) order at all		squint while I scroll through all my photos (I don't have them organized other than by time, and the preview images are small) - keep scrolling until I find a photo of this person	I also take a lot of pointless screen shots…Why did I even take some of these pics?
I get frustrated at the constant interruptions from my kids while trying to do this	I wonder how far back I'll have to scroll to find them	keep browsing		I can't find the photo! Where is the damn folder? I'm going to give up looking for this photo.	
I have way too many photos	I wonder if this person is tagged	scrolling by date		My photos automatically show all photos so I need to decide if I should just scroll possibly forever to find it or should I try to remember when I might have taken the picture and search by month.	

8.3.2 Summarizing the perceptions and after thoughts after completing the think aloud exercise.

Find the photo was too difficult because I don't remember when I took the photo.	I went back to the date of over a year ago.	Takes you back through a lot of old memories looking at all of the photos.	Thank goodness I use folders and man I save a lot of pics of food and jokes	This is a pain!	so much scrolling
I have too many pictures on my phone. I wish I could tag people or events to make searching easier. I have albums but not everything is in albums and they aren't organized in any way so the more you have, the	It seems to take a while, but maybe I'm missing some native application to tag people in photos (I don't have Instagram)?				
I needed to know roughly when that picture would have been taken, so I can scroll through my photos and make sure I haven't gone back too far.	It was fairly easy.	I take/keep way too many pics	Maybe I should have searched in the places folder instead of recent but it's habit. Also, I wonder if there's a way to search by date. There might be...		None - Easy Peasy
		I wish my photos were better organized, but it's too time consuming to keep them organized.			
I think I would do better having the ability to have tags on the photo first.	Still looking for a picture.	If the person is not tagged by name it's a bit like searching for a needle in a haystack	Usually not tagged very well.		

8.4 Think aloud raw data

8.4.1 Responses Q1

response	Q1
1	It's a bit tough to find the photo. I can remember a general season that I took the photo, but I cannot remember exactly when so I have to keep browsing a little bit.
2	Who the hell would I still have a photo of on my phone that I've not seen in over a year?Well.. start scrolling by date of at least a year ago..
3	Where is the dang icon? Swipe, swipe, I got a lot of photos.
4	Hmmm....who haven't I seen in over a year? I don't think there's anyone alive that I haven't seen this year. Maybe this could be someone that's passed away? Okay, that would be my dad. He died in 2018 in March so let me go to photos, then click All Photos, then filter by date and then go to March 2018 and there he is with my son Jacob.

5	I opened the google photos app and searched for my friends name and all their pictures immediately showed up.
6	I wonder if this person is tagged in my photos app, if not I wonder how far back I'll have to scroll to find them
7	I recently removed photos from my phone and uploaded them to google photos to free up space, I had to try to remember who I may have a pic of for someone I hadn't seen in that time frame.
8	I don't take pictures of other people, just of my cats, nature and/or work things.
9	I miss this person and wish we'd talked more often. Now that he's gone I won't get that opportever again - at least not this side of heaven.
10	I have way too many photos on this app. I know there's one of our niece
11	Sip of diet pepsi and scrolling...'I know exactly where this is at'
12	Trying to think of someone that I have not seen in over a year, that I would have a picture of/
13	Have the image of the person in my mind, unlock the phone screen and open the phone app, squint while I scroll through all my photos (I don't have them organized other than by time, and the preview images are small) - keep scrolling until I find a photo of this person
14	happy
15	Wow, I really enjoyed hanging out with Riley that day.
16	Have to recall date I last saw them. Could take time
17	Search on person's name. Usually doesn't work so start looking at photos filtered by date starting at time of year I last saw the person.
18	I can't find the photo! Where is the damn folder? I'm going to give up looking for this photo.
19	Why do I have so many old photos saved on my phone!
20	Who haven't I seen in over a year. Oh... my friend, Jeff that lives in Panama City. Click on home, click on photography folder, photos folder, click on albums, click on recent. Scroll up for a bit and look for beach type pics. There among the pics at the beach is a pic of me and Jeff.
21	There isn't a lot of people that I have not seen in a year. Most of the people are my family.

22	Where were we when I took that picture? What was that date? It was a group of people. It was winter. Look for a group wearing jackets.
23	Struggling to think of someone that I have not see in over a year that I would possibly have a photo of.
24	It's a shame that it has been so long since I've seen this person
25	My photos automatically show all photos so I need to decide if I should just scroll possibly forever to find it or should I try to remember when I might have taken the picture and search by month. I start wondering if I actually have a picture of him in the last year. I get frustrated at the constant interruptions from my kids while trying to do this. Wow my pictures don't appear to be in chronological (or any kind of) order at all. I take a lot of pictures. I'm now positive I'm over a year ago because these pics are pre-COVID. I also take a lot of pointless screen shotsâ€¦Why did I even take some of these pics? Did I even take them or did my kid do this? Awww I don't remember taking this pic of Stewie, he was so little. This is definitely more than a year ago. I'm beginning to question if I actually have a pic of him now. I know I have a pic from our beach trip though. I need to delete these work pics I took for our badges. I'm now in Dec 2018. Found one! It isn't the one I was thinking about but there he is in the background! Whew, I really need to clean out my photos!

8.4.2 Responses Q2

response	Q2
1	It's difficult without labeling or having a search for the type of picture. I think I would do better having the ability to have tags on the photo first.
2	Thank goodness I use folders and man I save a lot of pics of food and jokes
3	I wish my photos were better organized, but it's too time consuming to keep them organized.
4	It was fairly easy.
5	I thought the experience was great specially using Googles AI searching capabilities.
6	If the person is not tagged by name it's a bit like searching for a needle in a haystack

7	Last night I had downloaded some photos for an upcoming family reunion and found a pic of my aunt who I haven't seen in 2 years. :)
8	I couldn't think of a picture of any one person that I took and it being over a year ago, so I went back to the date of over a year ago.
9	None
10	That was a fun day. A good memory.
11	None - Easy Peasy
12	Still looking for a picture.
13	It seems to take a while, but maybe I'm missing some native application to tag people in photos (I don't have Instagram)?
14	so much scrolling
15	I needed to know roughly when that picture would have been taken, so I can scroll through my photos and make sure I haven't gone back too far.
16	Yay!!!
17	Usually not tagged very well.
18	Find the photo was too difficult because I don't remember when I took the photo.
19	This is a pain!
20	Maybe I should have searched in the places folder instead of recent but it's habit. Also, I wonder if there's a way to search by date. There might beâ€¦
21	Wow! I really need to make an effort to visit my family more.
22	I have too many pictures on my phone. I wish I could tag people or events to make searching easier. I have albums but not everything is in albums and they aren't organized in any way so the more you have, the harder I'd it to find a specific album.
23	Takes you back through a lot of old memories looking at all of the photos.

24	There are so many people that I wish I could see more often
25	I take/keep way too many pics

8.4.3 *Responses Q3 – Q5*

response	Q3	Q4	Q5
1	18 - 29	Somewhat Familiar	5
2	50 - 64	Familiar	3
3	40 - 49	Neutral	4
4	50 - 64	Very Familiar	4
5	18 - 29	Very Familiar	4
6	30 - 39	Somewhat Familiar	4
7	40 - 49	Very Familiar	2
8	50 - 64	Familiar	2
9	50 - 64	Familiar	3
10	50 - 64	Somewhat Familiar	4
11	50 - 64	Very Familiar	2
12	50 - 64	Familiar	4
13	18 - 29	Somewhat Familiar	5
14	18 - 29	Somewhat Familiar	5
15	18 - 29	Familiar	3
16	50 - 64	Familiar	2
17	50 - 64	Familiar	4
18	40 - 49	Familiar	3
19	50 - 64	Very Familiar	4
20	40 - 49	Neutral	4
21	40 - 49	Very Familiar	3
22	50 - 64	Familiar	4

23	50 - 64	Familiar	1
24	50 - 64	Familiar	3
25	50 - 64	Somewhat Familiar	5