Online Privacy
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Lecture 14
Conducting (user, lab, online) Studies

Welcome back, NPTEL students. This is week 7. I hope you are enjoying the semester; it is already halfway down so; we are about fifty percent done with the content of the semester. So, I hope you are getting the excitement around the topic of privacy and able to relate to the real world and are also learning something that you have not learned before or know before. And I sincerely hope that you are connecting it to content, topics, discussion outside the class.

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What we have covered until now is generally knowing about privacy, privacy enhancing technologies, privacy policy, social media privacy a little bit. The last week we covered why anonymize or anonymization techniques. This gives you a sense of what all we are covering until now, hopefully this list will be pretty useful and impressive by the end of the semester.

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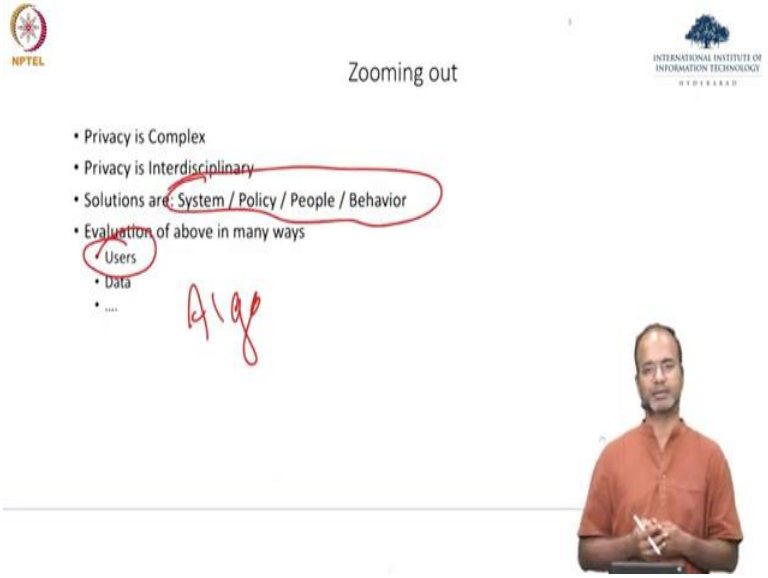

So, before we get into the content for this week let us just zoom out a little bit and look at broadly what is that is going on as a topic of privacy. Privacy is complex, I think we have kind of established that privacy as a topic is extremely complex in terms of knowing, in terms of understanding, in terms of studying, in terms of implementing solutions, all of that.

Privacy is also interdisciplinary, which is that it is just not computer, it is not just not computing, it is just not policy, it is just not people, it is kind of a combination of many topics that is also we have seen, we have established that. When you build solutions for privacy generally ends up being okay let us build a anonymization tool, let us build a browser plugin, let us build a tor kind of a system, all of that is system building, oh, let us put a policy saying oh any data that is shared from user to a social media service provider this is how the protection should happen all of that.

Or our solutions will be oh let us just go build a solution where it actually not just the user behaviour changes the user behaviour all that. So, generally that is what will end up happening in terms of solutions that you can think of. And I also think that majority of you or some of you are talking, working on projects that I propose, I am bringing it every week lecture so that you, even if you are thinking or wanting to do something I will nudge you to do it. Please do, I am happy to talk to you regularly about what project you are doing and try to see if there is anything interesting that you can do with it.

So, therefore, that the project that you can do can fit into all of this also, a system that you could build, you could just analyze some privacy policies and come up with a policy

recommendation or you could actually build something, put a solution out there to help change the user behaviour. Generally, these are the kinds of solutions that you can build.

Of course, when I said system there is also theoretical foundations like what we saw in algorithmic, in the differential privacy, in the L diversity, in the anonymization lectures, we saw very theoretical foundational work in terms of anonymization techniques, you could also do that.

What I am building the zooming out is actually the next point in the slide which is the evaluation of many solutions that you build can be done in a few ways. So, one is oh my, let us take in the algorithmic side, I can just say that we can do proofs, we can do actually implementation of it, show that it works, show that these algorithms are actually effective in anonymizing the data, in protecting the data, in providing confidentiality all that.

Another way is that you could actually have some data to show whether the solutions that you built is working or not, you put a browser plug-in, you kind of are collecting data about users, how many times users are actually, how many times users are changing their behaviour all that, this kind of a mix of user and data but data is collected let us take the browsing history of users that you are using that to make some choices.

So, in that sense you are using data to make choices. Data can be collected in many ways, let us take user clicks, let us take what are the, what is the search terms that the users are sending all of that, these are data that you can use to make choices or evaluate your solution. The other one is what I am going to focus for the next this week's content is actually the users.

Users become a big part in terms of privacy solutions, privacy evaluation, how effective privacy solutions are all of that, all the content that we have seen until now if you think about it, there is users involved in it. So, medical data sharing, users' data is there and once the solutions are built you want to actually see that how users react to these, how data is being protected using these algorithms.

We also saw earlier about nudges, how Facebook you can actually protect users to before they post, do some nudges for the users and they can stop posting or rethink before they post. All of this is what we are going to focus this week which is to build understanding of this user's behaviour, user studies, what kind of user studies are there, how to collect data, what data to collect, what kind of mechanisms are there available to do these kind of studies.

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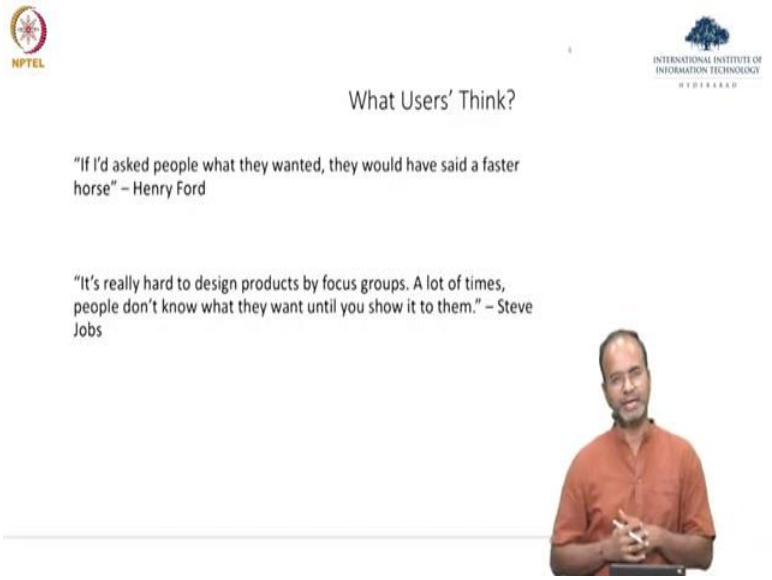

So, very key component is what users think, what users think. So, these are the two very popular quotes in that sense is if I would have asked people what they wanted they would have said a faster horse. So, user let us take you, when Henry Ford was arguing that look, I am building this car but "if I would have asked users what they want, they would have said that oh I just need, I just need to train horse to run faster" and that should be okay, because that is where Henry Ford was trying to say that look, we should move away from this and bring motor cars.

"It is really hard to design products by focus groups. A lot of times people do not know what they want until you show it to them." This is a very popular quotes, popular quote by Steve Jobs which argues that look users do not understand what they want. This is kind of contradictory in terms of oh users do not understand but getting users inputs actually makes a lot of sense in terms of designing solutions.

And of course, you have to be Henry Ford or Steve Jobs to have these kind of views I guess that users would not, what users would think. These two quotes should help you understand the user side of reactions also.

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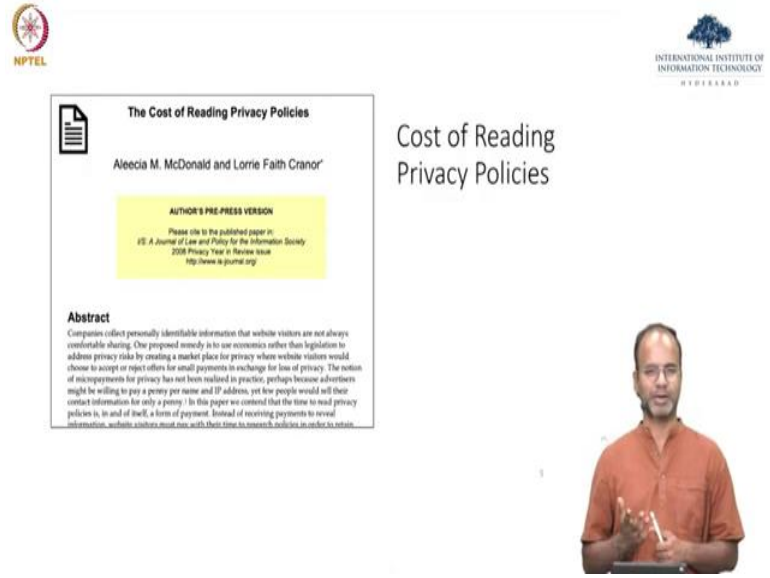

So, I have put together like seven or next seven or eight slides, it is just slides from the earlier weeks, I am using it only to connect to the topic of user's behaviour. So, this one if you remember this one was a study done to evaluate the cost of reading privacy policies. Here also they did, the major study was to try and understand the length of the privacy policy all that.

But they also did studies with users whether they would actually pay a little bit more follow-up studies, whether they would pay a little bit more if you provide privacy in some services that you are using. To answer the question of are users willing to pay for privacy as a protection.

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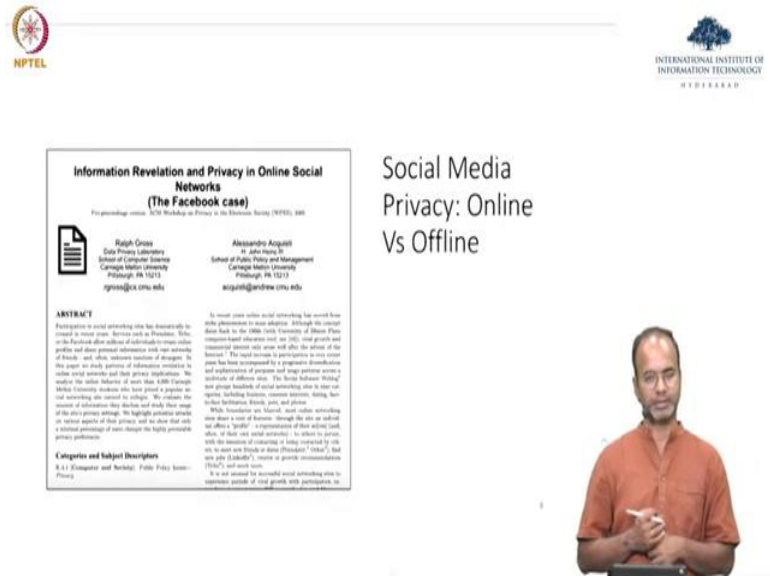

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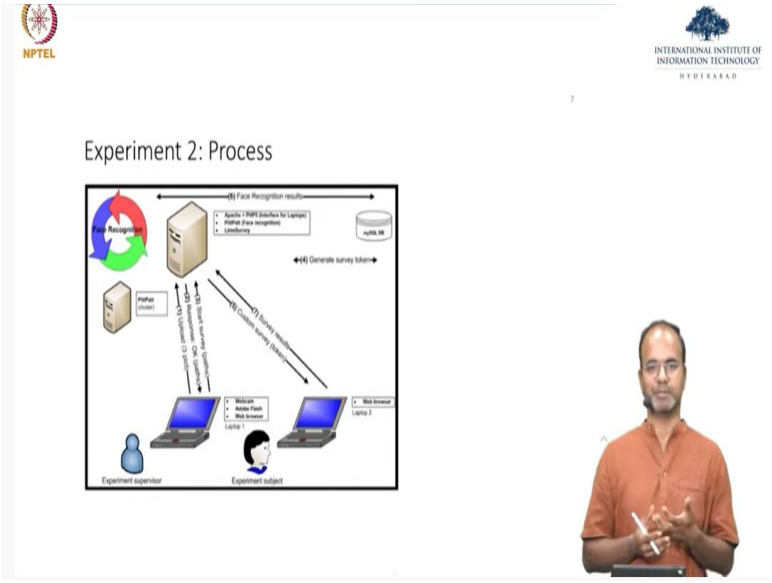

This study where they used Facebook to study. If you remember the study where they captured pictures of users on the campus and then used that picture to find out who they are from Facebook and show it to them and confirm saying that whether they are, whether this is the profile of theirs or not, so that is again user study, that is again some kind of data collection from users.

I have also put together all the studies that we have seen until now, in the process of looking at these slides again from the user study point of view, you will realize what are the different methods that are available.

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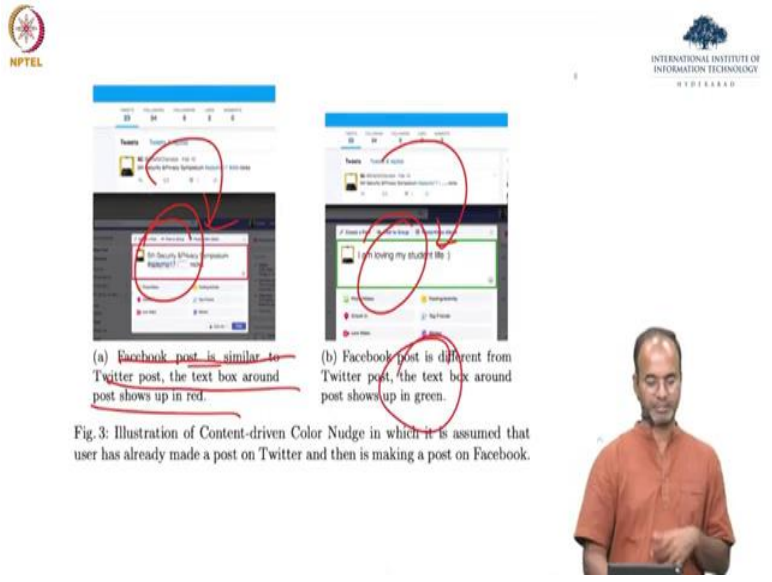

So, this one was a study done when users were posting on Facebook using the nudge idea either to stop them or to allow them to do the post, this is to say that look your profile twitter has some information that you have already posted, twitter has your location as Mumbai if you are going to go change the location and Facebook has Mumbai you could be resolved easily so do you really want to post it.

And in this particular example it is a Facebook post is similar to twitter post the text box around the post is red, because if the posts are very similar then there is a high chance that it could be actually resolved. This is from the deck of slides or content around identity resolution that we saw. And this side it is green because the content is different, again a user study content.

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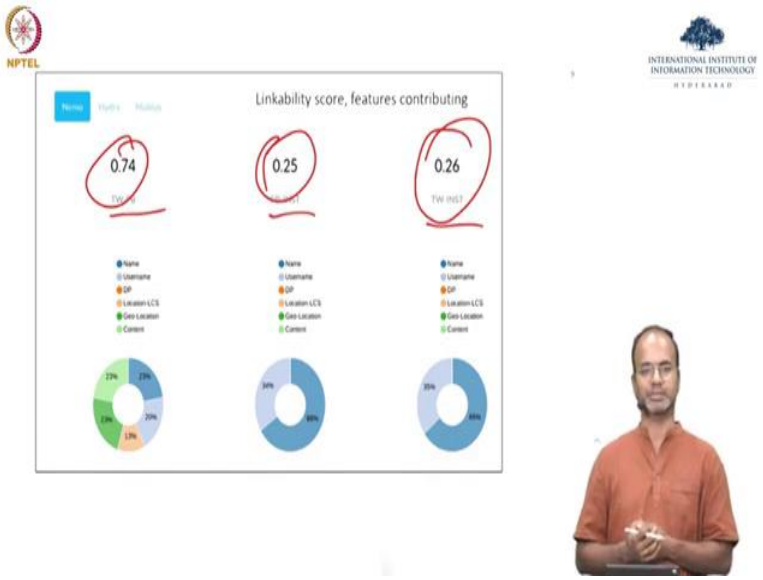

So, this is continuing on the nudges itself, we saw this data where users were shown on which method what is the linkability score in different networks that they have. This is Twitter and Facebook, Facebook and Insta, Twitter and Instagram. Again, user study to collect information about this is the data presented to the users and then in the post study users were asked whether this information was useful, whether they were able to make choices using this information.

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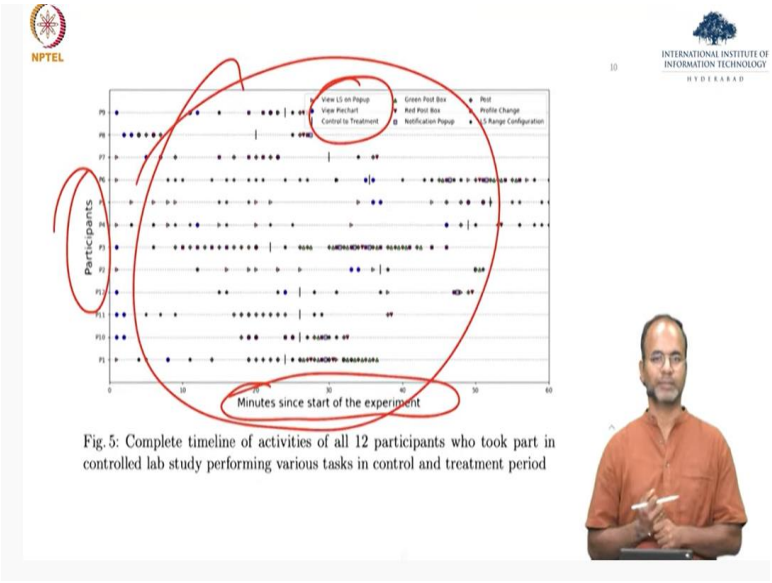

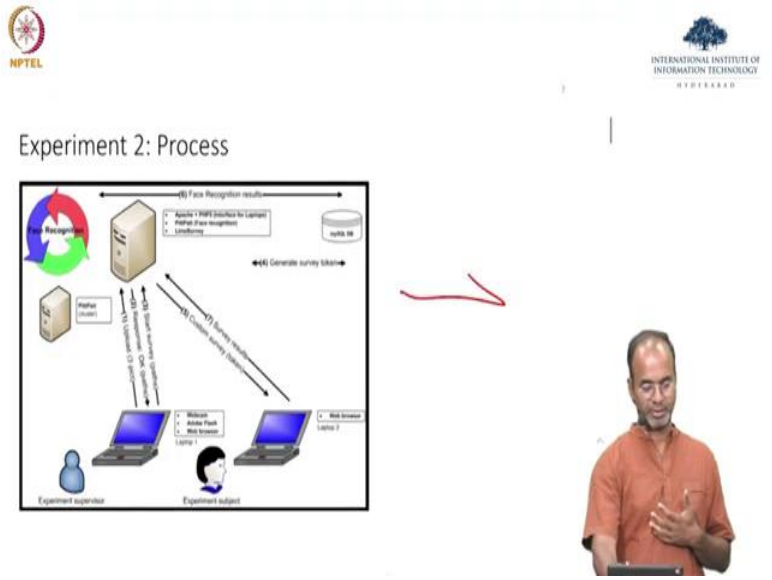

In the another study that we saw if you remember this one is where there are participants here and this is minutes in start of experiment the same study of nudges, this once graph shows you a lot of details about minutes and start of the experiment which is to show that how many of them viewed the pie chart, how many of them actually went and changed the settings, how many of them actually decided not to post that is what is shown here.

Again, user data from the users using the browser extension and collecting this data. So, this is browser extension, this is a user study on campus collecting data, this was doing again when you are, when you are purchasing something, can would privacy be more important for you to pay more.

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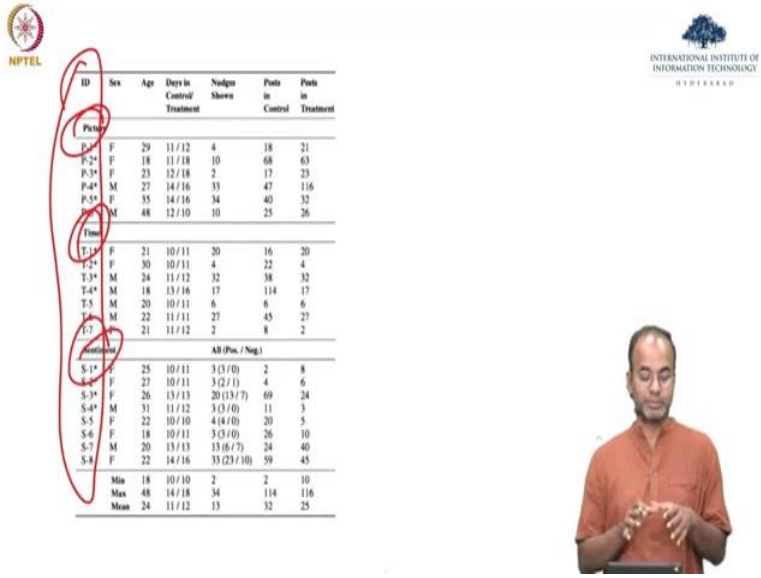

ID	Sex	Age	Days in Control/ Treatment	Nudges Shown	Posts in Control	Posts in Treatment
Picture						
P-1*	F	29	11 / 12	4	18	21
P-2*	F	18	11 / 18	10	68	63
P-3*	F	23	12 / 18	2	17	23
P-4*	M	27	14 / 16	33	47	116
P-5*	F	35	14 / 16	34	40	32
P-6*	M	48	12 / 10	10	25	26
Timer						
T-1*	F	21	10 / 11	20	16	20
T-2*	F	30	10 / 11	4	22	4
T-3*	M	24	11 / 12	32	38	32
T-4*	M	18	13 / 16	17	114	17
T-5	M	20	10 / 11	6	6	6
T-6	M	22	11 / 11	27	45	27
T-7	F	21	11 / 12	2	8	2
Sentiment				All (Pos. / Neg.)		
S-1*	F	25	10 / 11	3 (3 / 0)	2	8
S-2	F	27	10 / 11	3 (2 / 1)	4	6
S-3*	F	26	13 / 13	20 (13 / 7)	69	24
S-4*	M	31	11 / 12	3 (3 / 0)	11	3
S-5	F	22	10 / 10	4 (4 / 0)	20	5
S-6	F	18	10 / 11	3 (3 / 0)	26	10
S-7	M	20	13 / 13	13 (6 / 7)	24	40
S-8	F	22	14 / 16	33 (23 / 10)	59	45
	Min	18	10 / 10	2	2	10
	Max	48	14 / 18	34	114	116
	Mean	24	11 / 12	13	32	25

Here is another one, this one was a lab study where these are participants and the study was about, around the nudges that we saw where we had the three types of nudges and users could, three types of nudges picture, timer and sentiment nudge where users could actually decide on whether they want to do the post, whether they want to delay the post, all of that, you go and look at the privacy settings. So, this is again a browser extension nudges were presented on a user's data. This is more like a lab study.

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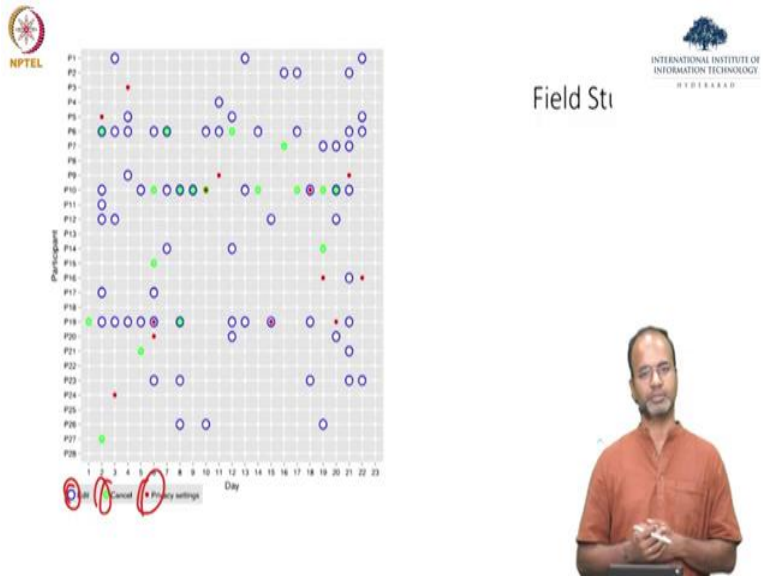

Privacy nudges field trial, field trial again this one is at the level of no lab study, nobody is watching what the users are doing and then you are collecting data from the users about what all changes did they make. So, we have seen this before again in detail which is edit the post, cancel the post and go look at the privacy settings. Again, data from real world to show the effectiveness of nudge the researchers had developed.

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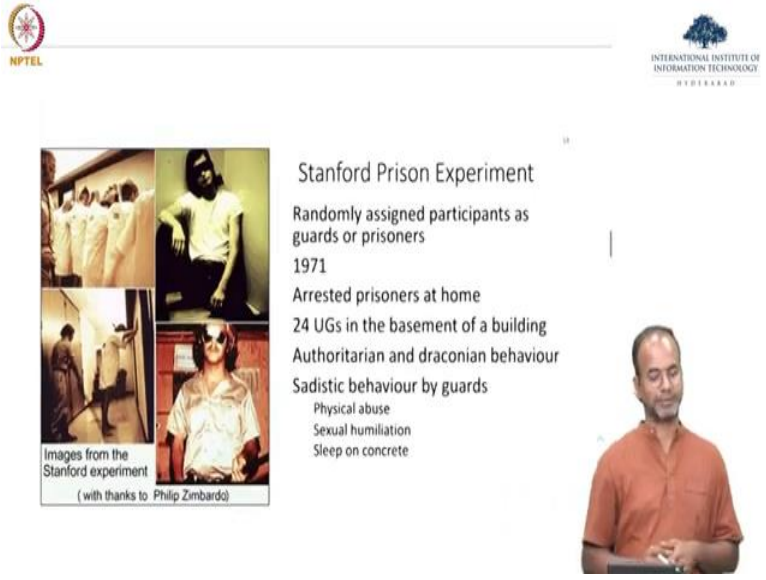

We have also seen other types of experiments in the class until now, which is this one a Stanford experiment where students were asked to play some roles and they saw the behavioural change among the users.

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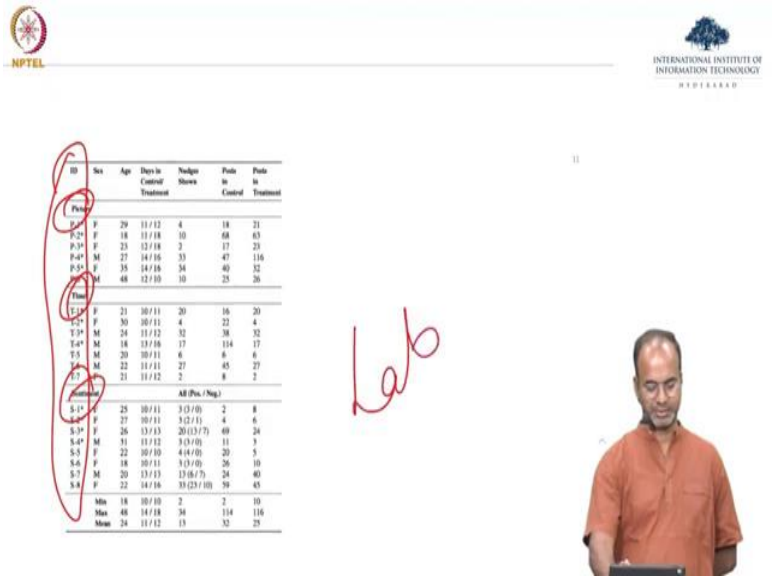

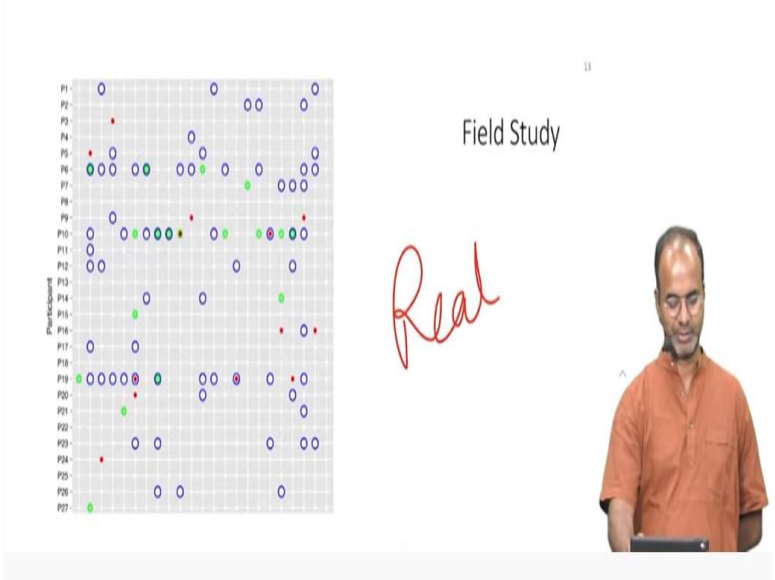

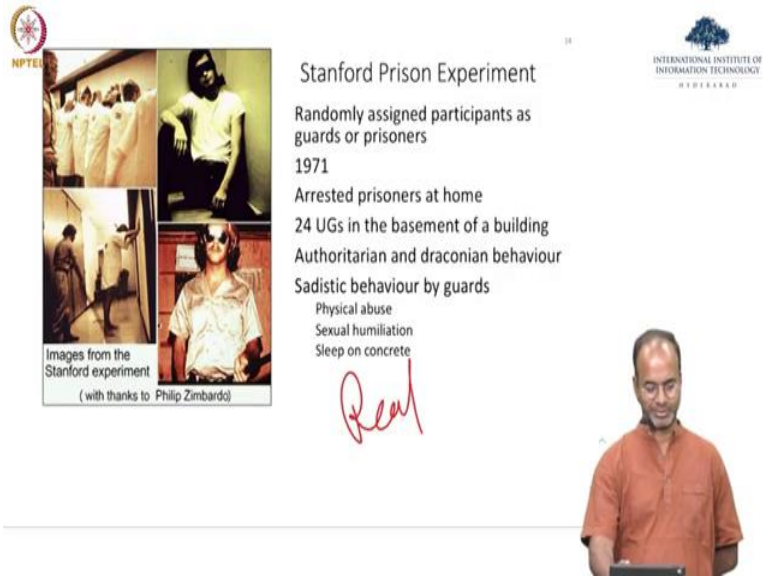

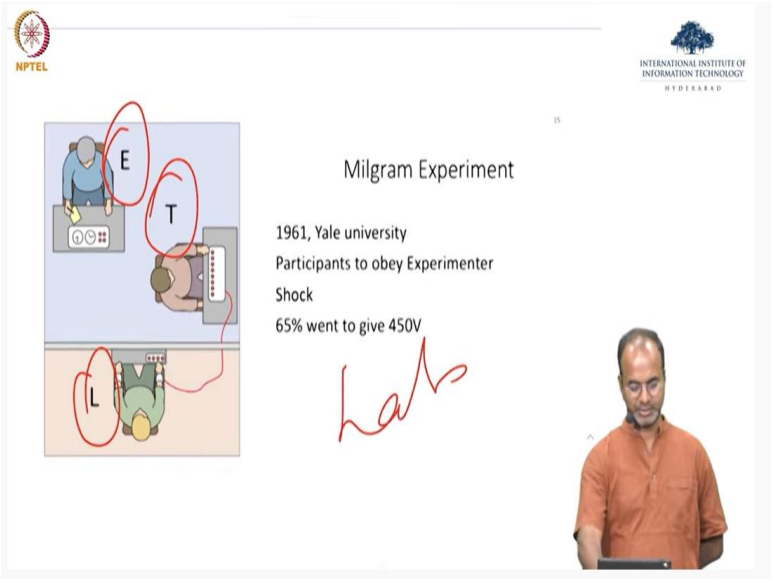

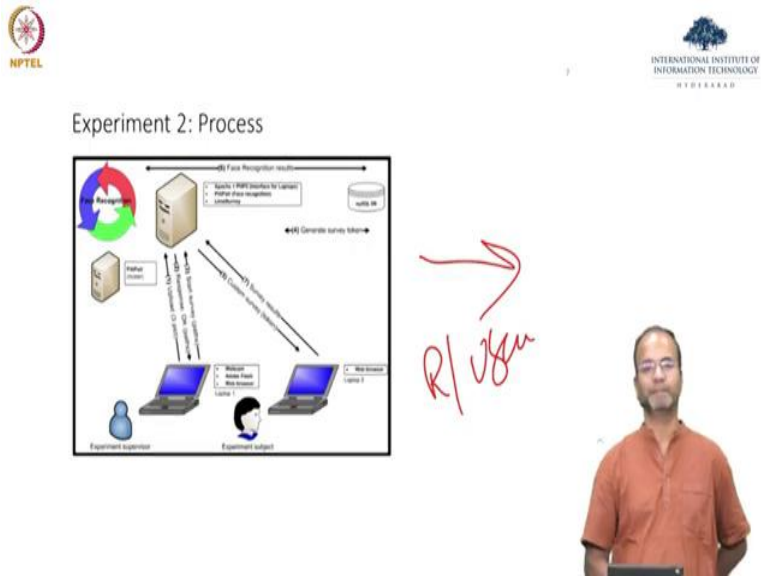

We saw this one also Milgram experiment where again users were this was experimenter, teacher, learner, where a teacher was giving a shock if the learner did not answer correctly. Again, a user study, lab study where users came in, sat in the lab, did something and then researchers captured that information.

So, you could clearly see this is lab study, this is a real-world study close to, this is a real-world study, so this was lab study. We will see what lab study and all of that is, again this is a real-world slash user study. So, different words are used, let us go look at what are these words mean and how can you decide which ones which methods to use in which context.

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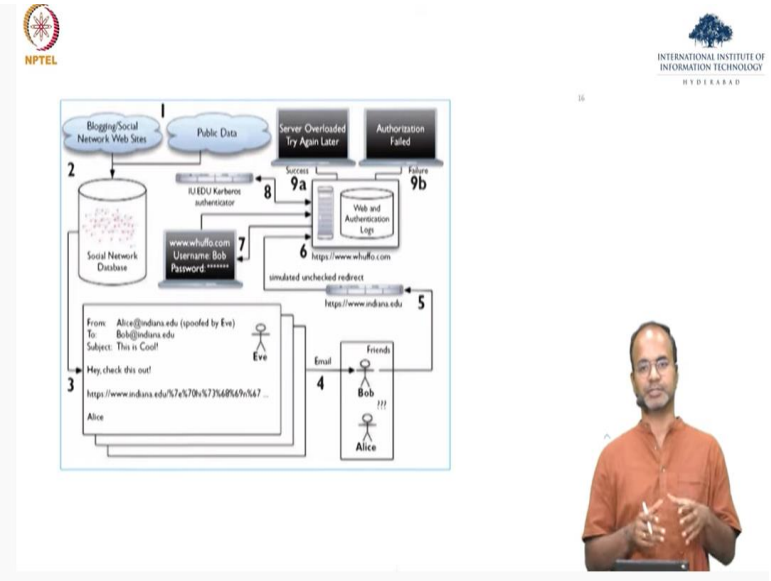

Before we get there here is another user study that we saw also, which is sending out a phishing email looking at the social network connection already you have and the email is sent to us, so it is coming from one of them, again a real-world study where these emails were sent out in the wild nobody is watching, no administrator is sitting next to you, researcher is sitting next to you and recording is happening, none of that is happening in this study also. This study we saw around phishing.

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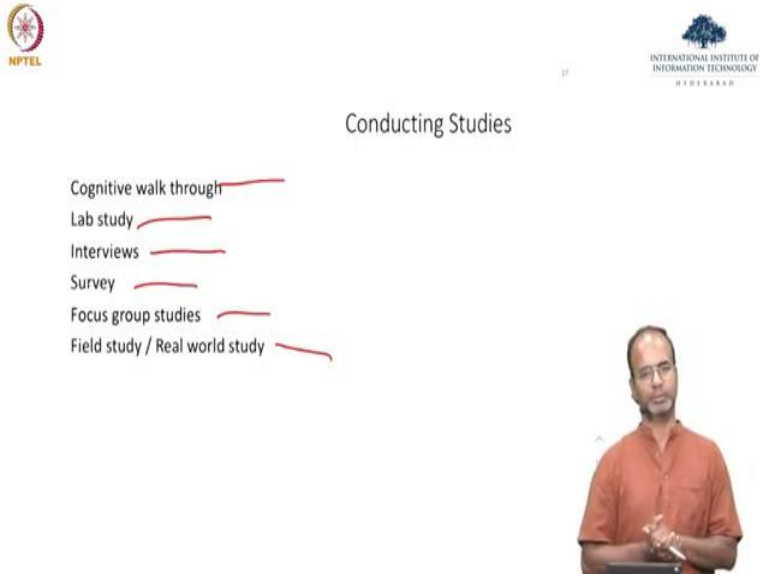

So, just putting all the content that we have seen until now here which is to list down different types of studies that you can conduct. Cognitive walkthrough, lab study, interviews, survey, focus group discussions and field study. I will go through each one of them to

describe them in little detail and also give you an understanding of when you should pick these methods, in what context. And let us keep the discussion around privacy itself, I think all the studies that we would like to look at will be around privacy.

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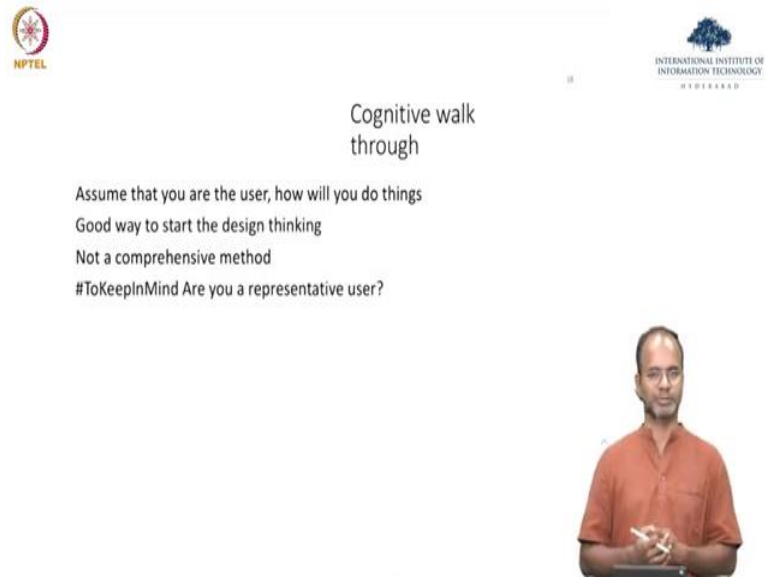

Cognitive walkthrough. So, cognitive walkthrough is a method which is let us say if I want to build a solution where I could stop users from getting the recommendations on YouTube, these are projects that students have done in the class that I am teaching on campus this semester. So, one project was looking at can you actually remove all the recommendations that users have on the YouTube. Why?

Because this would actually help YouTube, help users not to give any sort of user behaviour to YouTube. If there is no recommendations you are not going to go click any next video that you want to watch, if you are not going to click any videos and watch the YouTube recommendations, YouTube cannot profile you and therefore it is actually privacy protecting.

Interesting project, probably what I should do is I will prepare for next lecture on looking at the projects that students have done in the course and giving you an understanding of the projects also, which will give you a sense of what kind of projects the students have done. There is going to be online blogs, online videos which are going to be available for the projects also, I will post it in the class at some point in time. So, let us keep that as one of the projects that you can think of, let us use that as a running example.

So, in this case what I would do is I would go a cognitive walkthrough study would be I would go to YouTube and then look for how a user behaviour normally happens and why this

privacy is there, privacy expectations is there. And in this case, you are doing it yourself, you are thinking, you are assuming that you are the user and trying to do this so that you understand what a user expectations are.

Assume that you are the user how will you do things, a good way to start is start the design thinking, finding out the solution, it is the one of the basic design user study method that you can follow to understand what to design, what solutions to build.

Not a comprehensive method because one I think the biggest problem in this method is that you are never a user, if you are building a solution only for people like you or you then I think it is not at all, it is not going to scale, it is not going to be generalizable. That is cognitive walkthrough which is thinking about, thinking as a user yourself and going through the user behaviour, going through what users should do.

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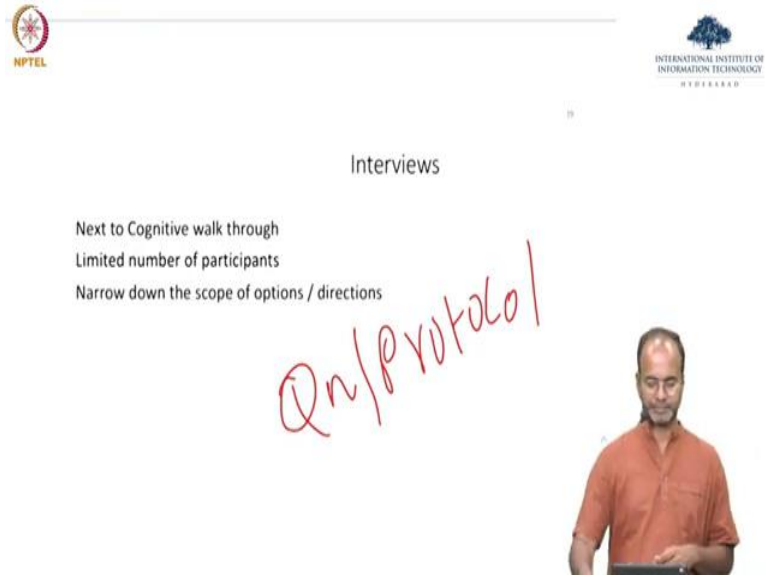

Interviews. The cognitive walkthrough is done, next method you could think of is interviews which is with the limit let us take 12, 13, 15 participants, you create a questionnaire, we will actually talk about questionnaire, protocol, different words are used for the same and then you go talk to these users' participants to get inputs about these questions.

So, for the YouTube recommendations example the questions could, the questions that you could generate or I mean would you, how do you think YouTube is actually figuring out what to present to you on recommenders, recommendation system, do you, questions from basic questions to be, do you use YouTube, do you watch YouTube videos. Yes sir, or no?

If yes, oh so how do you, do you search for videos or do you actually click on the recommendation videos? Why do you think the YouTube has these recommendation videos? How do you think YouTube is actually using the information that when you watch a video A and then there is a recommended video B, you click on the recommended video B, how do you think YouTube is using that information? So, those are the kinds of questions that you can actually have to have a conversation with the participant to understand what they think.

Interestingly in the interview study you can, it is kind of a little free-flowing, you do not have to ask all the questions to all the participants to get the answers to it, it can be free-flowing, so you could actually change the questions a little bit, but try and get as much as questions covered that you already have, but it is better also to let go through the path that the participant is suggesting.

Some ways if the user is saying something that is not directly captured in the questionnaire feel free to continue with the user's response, ask some questions, probe the idea is to get a sense of what the user is thinking on this topic, that is what it is. Narrow down the scope of options and direction.

So, clearly if you do let us take a five, seven participant, you will also start converging, the variance among the users generally if you keep the user sampling all that little similar you are after three, four participants, five participants the responses that you will get will converge and that is what you want.

And the variance of the responses that you get should be small, will be small most of the times, they will be one off always so the answers that you get are very different and as a researcher you have to decide which directions to go, which solutions to actually pick, which directions to use in the solutions that you are building.

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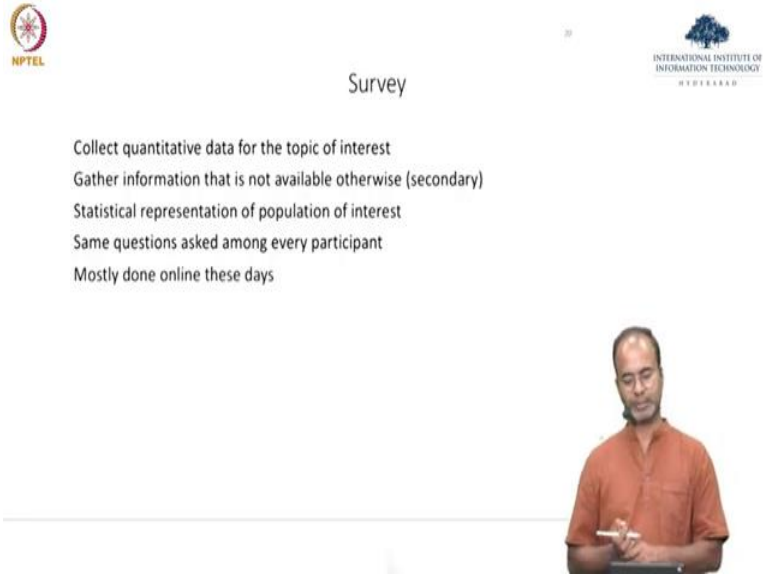

The big difference between a survey and an interview you can think of it as an interview is a very, very qualitative method. You may have heard this; you heard this word before which is two types of data collection qualitative and quantitative. The interview is a very, very qualitative method. Survey is a quantitative method.

So, surveys are generally questions that are developed and their questions that are presented to the users, all questions have to be presented to the users and we expect the participants to answer all the questions, unless you have some questions which are kind of dependent on the answers the users gave for the previous questions.

Quantitative study of a topic of interest. Gather information that is not available otherwise it is usually secondary information you want to actually ask, for example, the survey questions could be for the YouTube project, we understood that this users are interested in figuring out or not letting YouTube know their profile. So, now the survey questions could be how many hours do you, how many videos do you watch in a day?

And do you, as per the recommendations that you have seen how many times have you clicked probably in the last 10 days? How many times do you think you have actually clicked the recommendations provided by the YouTube? Things like that, now it is getting quantitative. So, the numbers become a big thing in an interview.

Statistical representation of a population of interest. Hopefully you want to collect data in the interview, interview is a smaller pool of people, survey is a slightly larger pool of people. So, the larger pool of people, if you can find them being a little representative of the population

that you want to study that will be always good. Same questions asked among every participant which I already said, mostly done on online these days because I think that is an easier way of collecting data. So, that is surveys. So, we have seen until now cognitive walkthrough, interviews and surveys.

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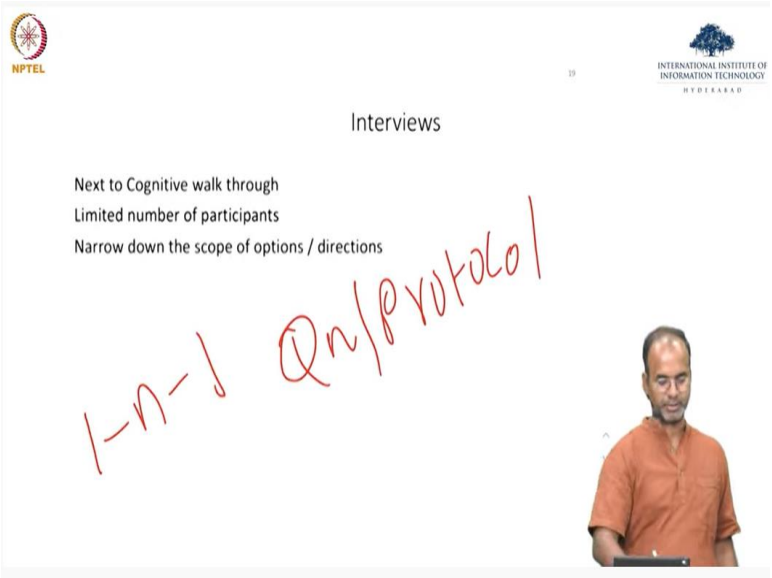

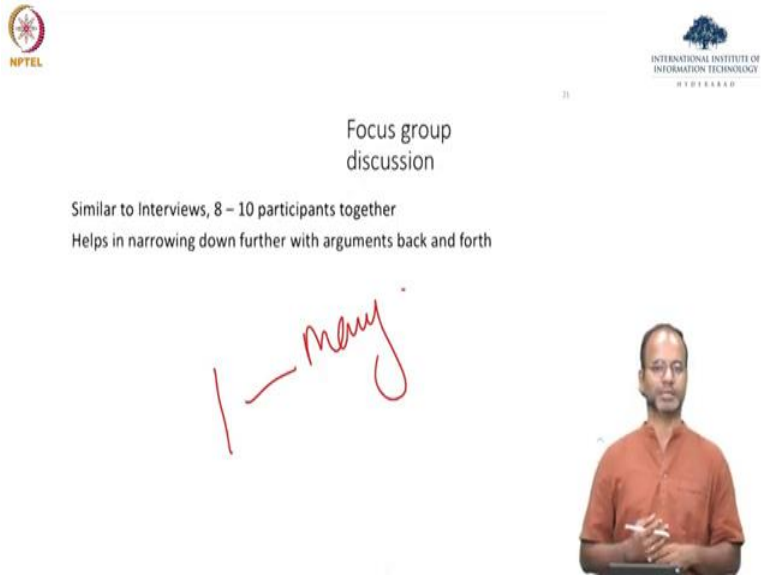

Next method is focus group discussion. So, here the method is very similar to interviews but instead of interviewing one-on-one. So, the interview method you do one-on-one. So, I sit with a participant and I do the data collection. Whereas here it is one too many, many participants let us take you sit in a room with seven, I am guessing if you would have seen the sort to say interviews in some companies also have started doing these kind of focus group

discussion, discussions where you have six, seven people who are applying for the job together, a topic is given and people speak, that is what it is.

But here focus group discussion where there is an administrator who is also moderating the discussion also for keeping the discussion around the data that he or she wants to collect. So, that is focus group discussions. And why is this useful, helps in narrowing down further with arguments back and forth.

What happens in the interview state is that, let us take for again for the focus group discussion for the YouTube project that I was mentioning you get like seven, eight people into the room and you present this YouTube solution where there is a browser plugin which allows you to actually disable the recommendations.

There could be people in the room who says look I think recommendations are necessary. For example, recommendations only I mean majority of the people I am guessing would use YouTube from the recommendations that YouTube is providing. Because I go there some random recommendation videos are provided by YouTube, I click on it and then kind of keep looking at similar content that it is, that is very, very useful.

So, now within the focus group there could be people who are actually arguing for and against the recommendation and it becomes very, very interesting data, interesting for the researcher also to understand slightly in more detail what users are thinking, instead of this one-on-one conversation where you are only asking them questions to collect data, you are not having really an argument with them. That is focus group discussion. Again, I have done, I have probably done studies in all models of this that I am presenting, focus group discussions are super fun.

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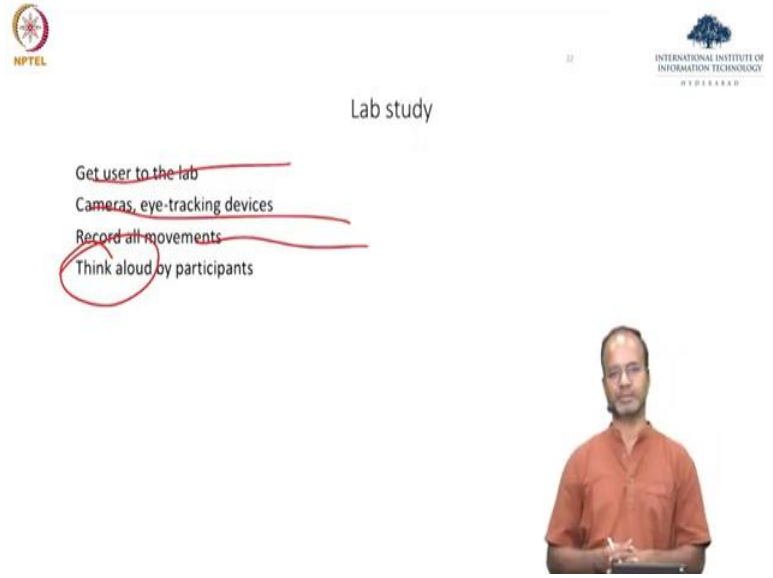

Then then the lab study. Lab study is slightly more intense than the other studies. Again, for the YouTube what I would do is I would get a user to the lab to somewhere where you have a machine and you ask them saying that oh can you actually use YouTube. And then you see them how they do YouTube, if you want to keep it more context you can actually set up a context saying that look you are a user, you are a student who is studying online privacy on NPTEL, now can you go look at privacy lectures of PK on this topic.

They would do, probably go search for PK or privacy on YouTube and then it would provide search results, they would click and then you would see that there may be some recommendations of my videos otherwise on the right and then you can pick it up from there. You see how the users are behaving, how, whether they are clicking on the link or not.

More specific you could even ask them to get some specific answers to questions from the lectures and you will see whether they are clicking on the recommended video or doing something else. You could do the studies in many different ways. So, what I just now described is actually a lab study which is get a user, give them a task, see what they do and when they are doing this task you kind of also capture whatever they are doing which is either probably all their clicks on the browser but you can also do sort of say recording of the whole session, voice recording of what they are speaking.

So, one another thing that is very critical in a lab study is also think aloud, which is what I just now did, which is I as a user oh now I want to, I am the student of NPTEL, you tell the participant to speak what they are thinking when they are doing the study, that is the idea of a think aloud.

So, if I was a participant in a study I would, when I am looking at the browser, I would say okay now I have been asked to look for Online Privacy lectures by PK, I am going to YouTube, youtube.com I am doing a search for PK on online privacy, oh I see like seven lectures that are already there, I am going to click on the first one, I am clicking on the first one. One of the questions that I was asked to answer is that what are the three different ways of anonymization of data, that is the user study question.

Now, I am going to look at lecture one, oh, lecture one does not seem to have this content, the description does not have it, YouTube is actually providing me a recommendation of lecture two, three, let me click on lecture two and see what is covered in the lecture two. That is what a think aloud session is to speak what you are thinking as you are doing the study.

So, you could have get user to the lab, cameras, so more sophisticated could be eye tracking devices also, which is when I am looking at the browser you could also have a tool to understand where I am actually looking at, these are very useful data points, where you want to keep the important piece of information.

Like for example, studies have been done on Wikipedia to see when somebody goes to a Wikipedia page which part of the page do they look at, do they start from left to right, do they start from right to left, do they look at the images that are presented, do they look at the left-hand side sidebar that is presented, are they looking at the top advertisement that were present there, all that information you could actually capture using this eye tracking tool.

Record all movements in terms of using video cameras, using audio recording tools, you could also record the movements of the user also. Think aloud session, lots and lots of studies happen on privacy using a lab study method where data is collected to see how users behave in a given context.

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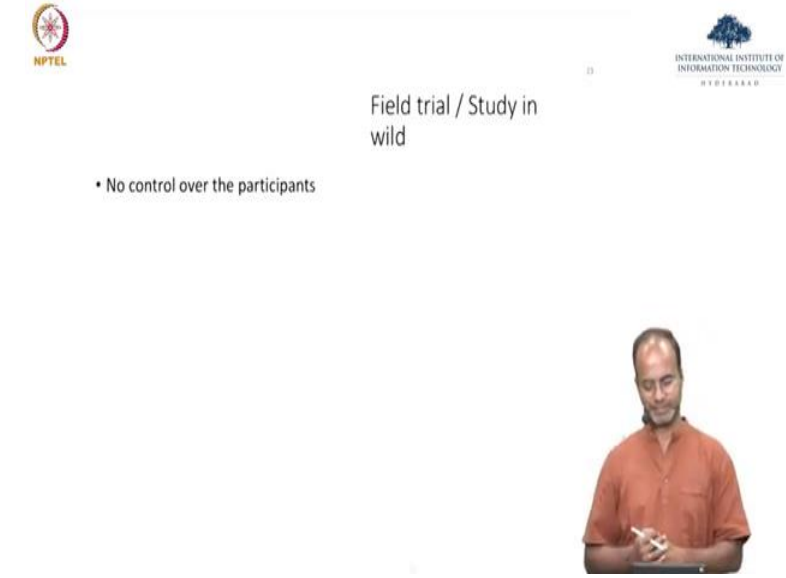

The last method and also very time consuming, very resource intense method in that sense is a field trial. Field trial study in the while real world study all of these words you can use for the same thing. So, in the browser extension example, extension is created, put it on Google play store, see how many people actually download on Chrome and then do, I mean when you are doing this real-world study collect some information before they get on using the browser extension, after they finish the browser extension you can collect some data.

Even if you do not want completely in real world just put the browser extension on the play store and see how many people downloaded and use potentially the click throughs in the, inside the browser extension, use that to make decisions on how users used it. You will see some of this being captured in the field trial study for not just that we saw, very, very laborious, very hard to set it up, resource intense and also you want to also get it right, field studies given that it is expensive if you want to do it a couple of times it can actually take a lot of resources, yeah so field studies are very hard.

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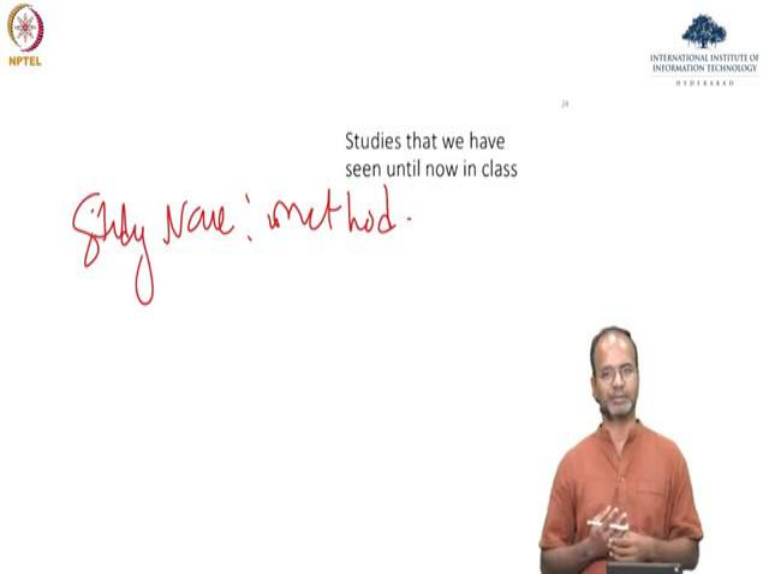

So, what I would recommend you doing now even though I showed some, I showed all the list of studies that we had done, we had seen in the semester until now, I would request you to please go back to the lectures, go back to this recording in this week itself and look at each of the study.

So, study name, what method did they use. If you can put this and send it on a mailing list that will be super nice, which is study name, you can say that oh Facebook not just study: field trial, why did you think that it is a field trial or you can go look at the paper, look at the work that they have done and mention it. Again, these would just give you a better understanding of the content that we are seeing in this course.

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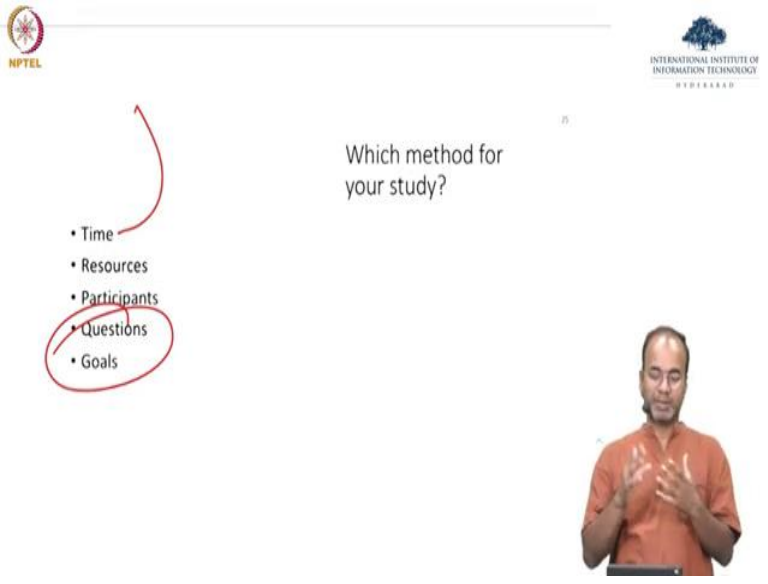

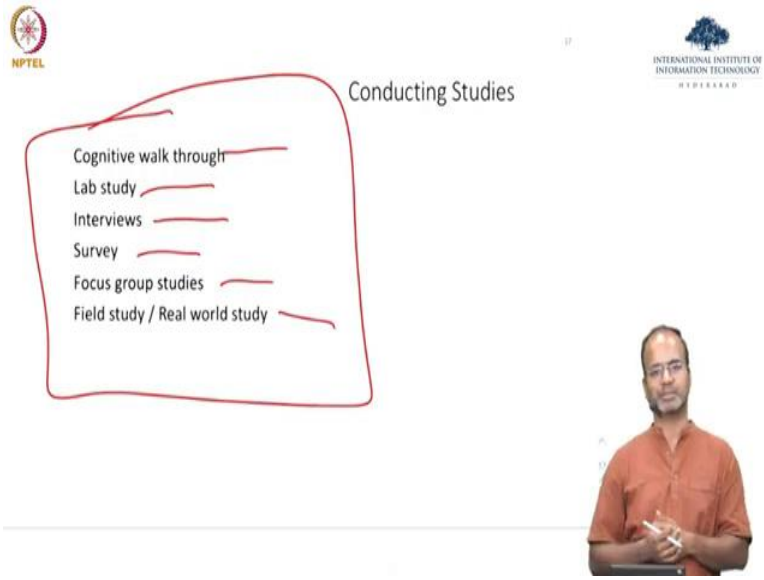

Which method for your study? So, given that I have also asked you to try out some projects if at all if you are trying or I can tell you for the projects that students did in the semester here on campus is that it is very, very subjective in terms of every study that you want to do, what method you want to follow.

For example, it depends on time, how much time do you have, depending on the time you can say look let me just do a survey and collect some data, let me just do an interview with some 10 people, collect some data, narrow it down, then do a survey with 50 people, collect data, build the system, then do a lab study, then do a field study to get a conclusion.

So, if you just do the entire path that is going to take a lot of time. So, depending on the time you have, depending on the commitments for the solution that you want to build or for the services that you want to build you will decide. Again, resources also if you just do the whole spectrum, it is very, very expensive.

Participants to get is also very hard in all of these lab study, field study. Why would somebody download this browser extension for not showing the recommendations on YouTube? What is the incentive for somebody to do that? What questions you want to study also?

Because I think questions that I mean you do not want to have a survey study for a question where you want only a qualitative input, you are not even clear what you want you should not get into a survey methodology. What are the goals also? This and this probably are connected, which is what are the goals that you have for collecting data, what data do you

want to collect, what problem are trying to solve. So, that hopefully that helps you to understand what are the different ways to collect data, what data to collect, what methods?

Again, this let us go to the list, if you really look at this the methods that you want to use are actually quite exhaustive, you can actually use all the methods for a single project that you are doing, absolutely there is no problem. But you also want to make sure that you do the, you optimally use these methods to get the best output that you are looking for. So, those are the methods that we saw.

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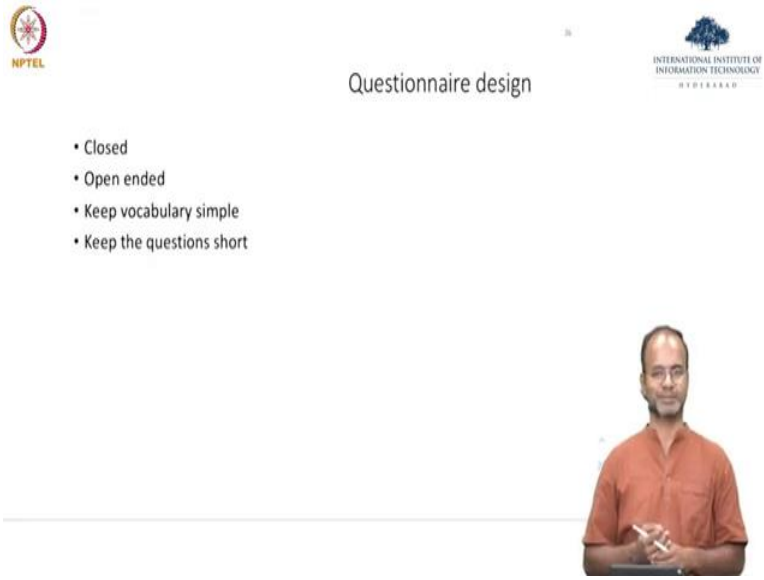

So, I only have two three slides on questionnaire design. So, there I used to teach a course on NPTEL called HCI “Human Computer Introduction to Human Computer Interactions”, feel free to go look at the lectures there, I think lecture four or five, week four or five there will go into detail of what I am going to be presenting in the next three slides. Just to give you an indication of the complications of creating questions, how difficult it is to set the questioner, why it is important to have the right set of questions all of that.

Closed questions versus, so I think the next three slides or four slides are just guidelines, keep this in mind when you are building these questions. Closed questions versus open-ended questions. Close questions are meaning, do you use YouTube, yes or no? Open-ended question is, why do you think YouTube is personalizing? What is the importance of personalization in YouTube? That is an open-ended question people can answer whatever they want.

Keep the vocabulary simple, keep the question short, I think these are very, very critical points for keeping in mind while you are designing questionnaire, unfortunately you will see lots and lots of questionnaire floating around, studies floating around which does not follow some of these very simple methods, simple guidelines.

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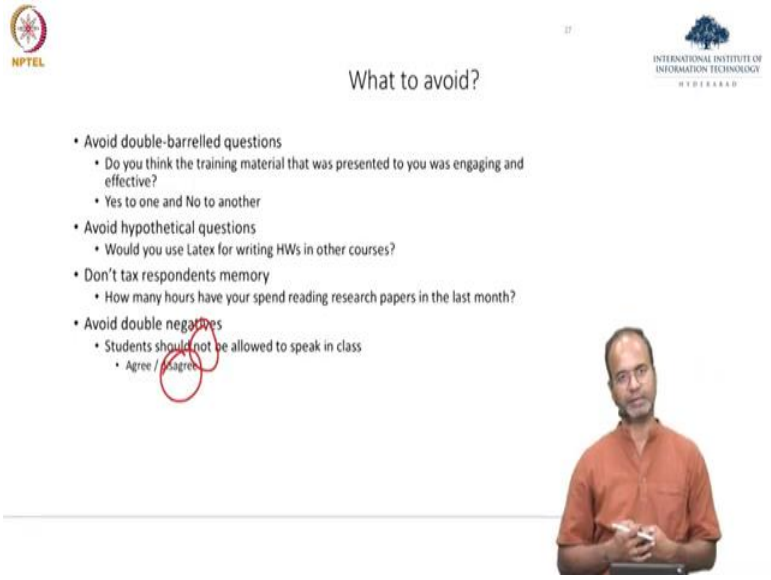

So, here is a list of what to avoid. I think I just have two slides on what to avoid and these are, meaning if you look at content that is there, as like books written on how to write questions in a survey and an interview. So, I cannot do justice in just doing two, three slides. But these are very critical ones that I have seen important for students at least when you think of creating questions.

Avoid double barrelled questions. Which is, do you think the training material that was presented to you was engaging and effective? Let us take if somebody wants to answer this question is yes it was engaging, but it was not effective, you cannot answer that, if it was a closed question and if the options were yes or no.

Avoid hypothetical questions. Which is, would you use latex for writing HomeWorks in other courses? No context, no scenario, somebody could answer this in any ways and I do not know what kind of information that you will get. Do not tax respondents' memory. I think this is something that you will find it repeatedly being done, which is, how many hours have your, have used spend, do you spend reading research papers in the last month?

So, this is like anybody asking these kind of questions you are going to think okay I do two hours per day and then so, 20 days I read so probably 40 hours things like that. So, that cognitive overload you want to avoid a little bit.

Avoid double negatives. Here is an interesting another problem. Students should not be allowed to speak in the class, agree or disagree? So, this, this has concerns, you, which ones, what does it mean to have agree and then you will have to think about, okay, students should not be allowed to speak in the class, now if I agree what does it mean, they should not be allowed to speak, if I disagree, they can be allowed to speak, so it is kind of a complicated when you have these double negative questions, double negatives so to say.

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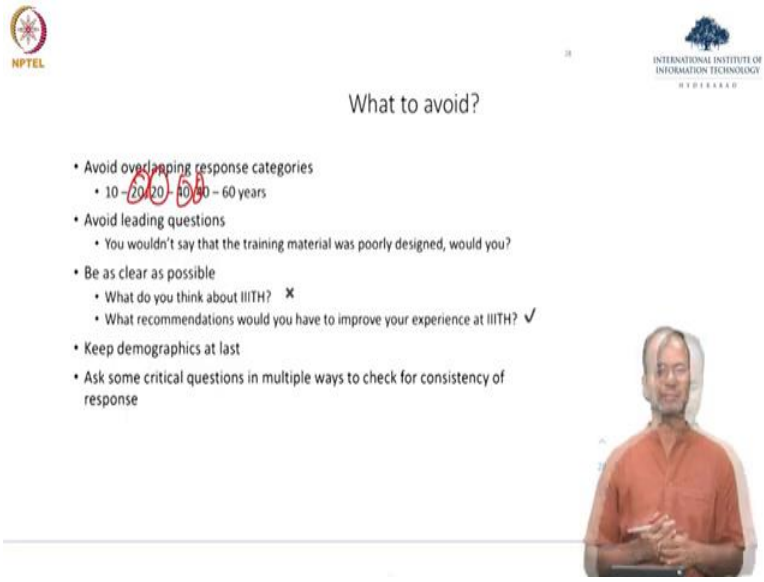

Avoid overlapping responses. So, this is a common error I think you will see again. Which is, I do not know if I am 40 which one should I fill? Avoid leading questions, you would not, so this is a leading, priming all that. You would not say that the training material was poorly designed, would you?

It is already pushing the user to think about, oh, it is poorly designed, at least using those words. So, it is kind of very directed, primed enoughly for the users to think about yeah, I think it was poorly designed.

Be as clear as possible. What do you think about IIIT Hyderabad? That is probably not a great question to ask. But a better question could be what recommendations would you have to improve your experience at IIIT Hyderabad? Just keeping the focus on what you want to get.

Keep demographics at last. Because I think generally demographics and things like that, distract also users if you set it up very early in the questionnaire users get distracted probably you ask some questions which they do not like or want to answer and they are already kind of little agitated about the question or not happy about giving you the answer the answers can change. That is just explanation for why do you want to move demographics at the last.

Ask some critical questions in multiple ways to check for consistency. This is a very common thing that people do when they do surveys is that you want to ask the same question sometimes or similar questions in different ways, same theme of the question in different ways, so that you can also validate that users are, I mean it is not for example in the online study, it is not like a bot which is clicking.

If I asked you what is your age and then your category of at one place is let us say 20 to 30 and then in another place is actually 31 to 40, then I think there is some problem here, you probably are those responses you have to throw it away. So, those are the questions, those are the guidelines that you want to keep in mind.

So, what did we see? We saw that different types of user studies, different types of studies that you could do, different type of data collection that you could do from users and some guidelines around questions.

Again, these are more topics around the so to say human computer interactions and other social science research, social science courses, but I brought this only to keep it in the privacy context itself and some of the studies that we have seen use it, if you go back and read the full paper of some of the papers that we have already read, some other work that we have already seen, you will find that they use some methods, some of the methods that we have, that I have highlighted here in collecting data.

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