Was This Helpful?
Yes or No

Design Explorations Of Ethics And Agency In Social Media

By

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Abstract

This thesis project focuses on exploring the ways in which designers can facilitate agency and ethical understanding in social media users. My research began with the investigation of how consent forms for online platforms are designed, the rules that govern them, and the amount of user information collected through these forms. At the same time, I investigated the definition of true informed consent on these platforms. I conducted various data visualization experiments, using both simple and complex data, to learn the ways in which information design can make data understandable. Using quantitative methods and design action research, I expanded my investigations to interrogate concepts of data exhaust, inferences, and behavioral modification, with the aim to empower users to understand and control the use of their personal data. Throughout these investigations and research projects, I understood that information design can be a useful tool to uncover ethical, political, and corporate structures which affect the privacy and agency of social media users. Uncovering these structures also assist future designers in understanding their own contributions to these spaces.

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I - INTRODUCTION

Context and Framing

This thesis project focuses on exploring ways in which information design[1] can facilitate agency for data ownership and develop transparency and ethics[2] in informed consent. My studies started with a critical response on the reading Ethics in Design by Clive Dilnot. Throughout the article Dilnot tries to understand the role of ethics in design. He does this by referencing the work of other designers like Victor Papanek and Kenneth Frampton. He establishes similarities in the views of these designers and concludes with considering design's role as serving the wider interests of subjects rather than the narrow interests of private profit. Dilnot writes about the role of design capabilities in creating a human world. "Capitalist culture organizes people as buyers of commodities and service [and]... transform[s] information and knowledge into commodities. The corporate conglomerates of the culture industry have created a global public sphere which does not offer any scope of discussion of the social and cultural consequences of the 'free flow of information' organized by them" (Troon). "Incorporating ethics in design will counter our culture and social inability to designate the dimensions of human good beyond that of the market, bring absolute primacy of the interest of human beings in a human future and open up ways of making and remaking a sustainable world" (Dilnot 2009).

1. Practice of presenting information in a way that makes it most accessible and easily understood by users (Tomboc 2019)

2. Moral principles that govern a person's behavior or conducting of an activity

Meanwhile in January 2021, mobile messaging platform WhatsApp announced that it will be updating its Privacy Policy starting February 8, 2021 after it was bought by Facebook. This update would allow WhatsApp to share more user data including their private messages with Facebook. It also stated that users would

have to agree to these terms if they wished to continue using the app. ‘This led to a widespread backlash from confused users, resulting in various legal challenges and regulatory investigations’ (TechCrunch 2021). Users immediately started fleeing to other messaging apps like Signal and Telegram. The effect was such that ‘WhatsApp in the UK fell from being the eighth most downloaded app to the 23rd in just a few weeks. By contrast, Signal, which was not even in the top 1,000 downloaded apps, jumped to being one of the most downloaded apps’ (AppAnnie 2021). In order to clear the air around this confusion WhatsApp rolled out a few in-app banners explaining the new terms visually and announced a three month delay to the new terms and conditions which then went into effect in May 2021.

Formulating the Problem Space

Figure 1: Tweet by Jake Tapper, March 21, 2018

Social media platforms that have become a part of our lives and help us ‘stay connected’ to the world never charge us for the services they provide because they sell our data as the product. Sharing user data in the name of customized experiences and targeted ads can sometimes prove to be disastrous. In the past there have been cases of online fraud and financial losses because someone’s personal data was leaked. In a time where everything is linked to your email account, the need to be vigilant while giving out personal data has increased manifold. Everything on an online platform is aesthetically pleasing but the consent page which is black and white and undesigned. The most important page, where users agree to share their data, but most users are not aware of what the terms of sharing this data are. So, this left me with a question of whether the consent is truly informed or not.

I realize that neither social media platforms nor the internet can function without the user data, but the entire process of collecting this data and then processing it to make our lives better could be more transparent. This research aims to explore, how the experience of giving consent to share user data be made transparent, inviting and ethical?

Initial Investigations Into Understanding Consent on Digital Platforms

User agreements are typically ignored by people using online services, therefore users are not aware of the potential harms[3] associated with the sharing of their personal information. 'The biggest threat to personal security in the online realm is the unregulated accumulation of data by numerous social media companies' (Zuboff 2019). 'The emergence of social networks like Facebook or disclosure platforms like WikiLeaks have shown that there is a need to go beyond the scientific habits and legal standards of sharing knowledge and distributing information to understand and govern communicative space and exchange of information' (Stalder & Sützl 2011).

Even after all of this, some might argue that there are certain rules and regulations in place to keep check on how companies use and store user data. A good example of this could be the General Data Protection Regulation (GDPR)[4], which is 'a regulation in EU law on data protection and privacy in the European Union and the European Economic Area General Data Protection Regulation' (gdpr-info.eu, 2018).

3. The potential harms of misuse of personal data is an entire subject by itself and is not part of this research work

4. The 7 key rules of the GDPR (One Trust, 2021) at the heart of the law should inform every step of a modern privacy management program. These principles are as follows:

Lawfulness, Fairness and Transparency
There should always be a good reason for processing personal data

Purpose Limitation
The purpose of processing data must be clearly established and must be clearly communicated to individuals through a privacy note

Data Minimization
Only collect the smallest amount of data you will need to complete your purposes

Accuracy
Companies should ensure the accuracy of the data collected and stored and should always set up checks and balances to correct, update, or erase incorrect or incomplete data that comes in.

Storage Limitation
You should always justify the length of time you are keeping each piece of data you store.

Integrity and Confidentiality
You should secure the collected data from internal and external threats and must protect data from unauthorized or unlawful processing and accidental loss, destruction or damage.

Accountability
You must at all times have appropriate measures and records in place as proof of your compliance with the data processing principles.

'Pre-digital sharing was about exchange, sharing with digital technologies is about exchange and distribution' (Stalder & Sützl 2011). While users share information via online platforms, there are conflicts between the commercial ambitions of these platforms and the intellectual property rights of the shared information. On the internet, users are bound by private consent forms to use any service and cannot negotiate the terms of use on these contracts. Unethical practices like sharing user data with government agencies and third-party advertisers for financial gains are some of the violations of data privacy that users have no control over.

Importance of Data Literacy for Users

As people generate and interact with data every minute of their lives, it becomes important for them to know how it is used, who it is shared with and how it affects their lives and of those around them. Misuse of this data "...reinforces biases in the society and moreover leads to behavioral modification[5] of the masses that is not self directed. The availability of vast amounts of data and the tools to analyze them have come faster than the ethical and legal standards could develop regarding the use of such data" (Weinhardt 2020). "The protocols of communication are based on the *sharing of culture* but not on the *culture of sharing*" (Castells 2009). Even though there are rules in place to protect a user's data, not many people bother to think twice before consenting. They choose convenience over privacy which is not surprising.

5. Is a treatment approach that replaces undesirable behaviors with more desirable ones using the principles of operant conditioning

After reading through these resources I wanted to explore how information design could be used as a tool to make the experience of giving consent inviting and engaging. Hoping that this would give users a chance to make informed decisions before sharing their data online. This led me to my first research question:

How can information design assist in understanding and developing transparency and ethics in Informed Consent forms?

II - INFORMATION DESIGN

Information Design Theory and Practices

Dear Data by Giorgia Lupi and Stefani Posavec (September, 2016) documents a year-long information design project. Each week for a year they collected and shared data about mundane activities with each other. Sharing this data gave ideas about their days through the pretext of their data collection. It was an attempt to compose a portrait of the other person through those fragments of their nature in the form of data. The authors found that "…data is not only scientific and functional but can also be presented in its lateral truths that can reveal the emotions, wants, needs, personality and so on of the person it belongs to" (Lupi 2020). They conclude that data is not just about percentages and numbers, but are placeholders for meaningful moments and visualizing it was a way to reconnect those numbers to what they really stood for. This conclusion is supported by Rendgen and Widememann, who stated that "Our everyday lives are filled with a massive flow of information that we must interpret to understand the world we live in. Considering this complex variety of data floating around us, sometimes the best - or even only way to communicate is visually" (2020).

6. Study of visual representations of abstract data to reinforce human cognition

While Lupi, Posavec, Rendgen and Widememann connect meaning to everyday life through information design, other scholars focus on the cognitive aspects of information design. "Information visualization[6] is the use of computer supported interactive, visual representation of abstract data to amplify cognition" (Card et al, 1999). Graphics represent the different elements in our environment and the relations between these elements are represented in the graphic space. Information graphics help in understanding the target information by using graphical patterns. These patterns invoke existing schematic structures and most

information graphics are understood in image schematic terms. This is done by using knowledge of things that are well understood and superimposing them on something that is complicated. For instance, using the solar system to understand the structure of an atom. “Source and target domain representations are aligned and features of the source are projected onto the target via inference” (Risch 2008).

To get a deeper understanding of data visualization and how it helps the human mind comprehend complex information, I relied on *The Visual Display of Quantitative Information* by Edward Tufte. In his chapter “Data Ink[7] and Graphical Redesign,” Tufte states that ‘‘...data graphics should draw the viewer’s attention to the sense and substance of data. Every bit of ink on a graphic requires a reason and nearly always that reason should be that the ink presents new information’’ (2001). Tufte refers to the cognitive qualities of information design where jumping back and forth from text to graphic severs the understanding and the flow of information. He says that ‘‘words and pictures belong together, genuinely together. Separating text and graphics even on the same page usually requires encoding to link the separate elements. Attentive readers must repeatedly jump back and forth between text and graphic’’ (Tufte 1990). This supports Lupi’s intuitive approach to information design where text and graphics are an immersive experience.

7. Non-erasable core of the graphic

First Experiments in Data Visualization

Based on these readings, I started experimenting with my first visualizations. I did this by visualizing simple and personal data that I had access to, from my location history on Google Maps. After moving to Vancouver and coming out of quarantine in early February, I traveled a lot around the city. While traveling, I found myself totally depending on Google Maps to find my way around the city. I was learning different bus routes and constantly looking out for landmarks to familiarize with the street names. After a few weeks, I started recognizing those streets but I thought to myself, ‘what if a tool like Google Maps could help me familiarize with a new place rather than me totally depending on it?’ Since I had been going to school a lot, I wanted to explore if Google Maps could help me learn this new city in a better way? While traveling on buses in Vancouver, riders can constantly listen to the announcement of the next stop. I wanted to see if the audio cues on the bus and the visual cues of the stop could help a newcomer like me learn the routes. To do this, I took screenshots of the entire route from my home to school and recorded the sounds that I heard while taking that route. I was able to record the sounds of everything starting from the bus PA system to the beep on the crossing that goes off every time the light turns green and to the voices of other people talking on the bus.

The idea was to document all of this and make a slideshow that could replicate and communicate my experience of taking the bus to the school. Building on what I had learnt so far reading *Dear Data* by Giorgia Lupi and Stefanie Posavec, I wanted to explore how much of this data could tell the audience about how I spent a usual day in the city. But as I began documenting this data, my focus shifted towards visualizing it and that led me to my first project in data visualization.

I started documenting the distance I had covered on foot and the distance I had covered on a bus for a period of 4 weeks. Plotting this data on a line chart (*Figure 2*) and on a radial chart (*Figure 3*), I could immediately see patterns emerging from them. For instance, the distance covered on a bus on weekdays was much higher than that covered on weekends. This made sense since I was not leaving home on weekends but was going to school during the weekdays. The other pattern that emerged from this experiment was that the distance covered was more during the later weeks of February and early weeks of March than before. This was true too because I had not got my Compass Card which is used to take the bus in Vancouver. All these initial experiments with Data Visualization indicated the fact that visualizing large amounts of data does help in understanding it, as opposed to when it is read in its traditional form.

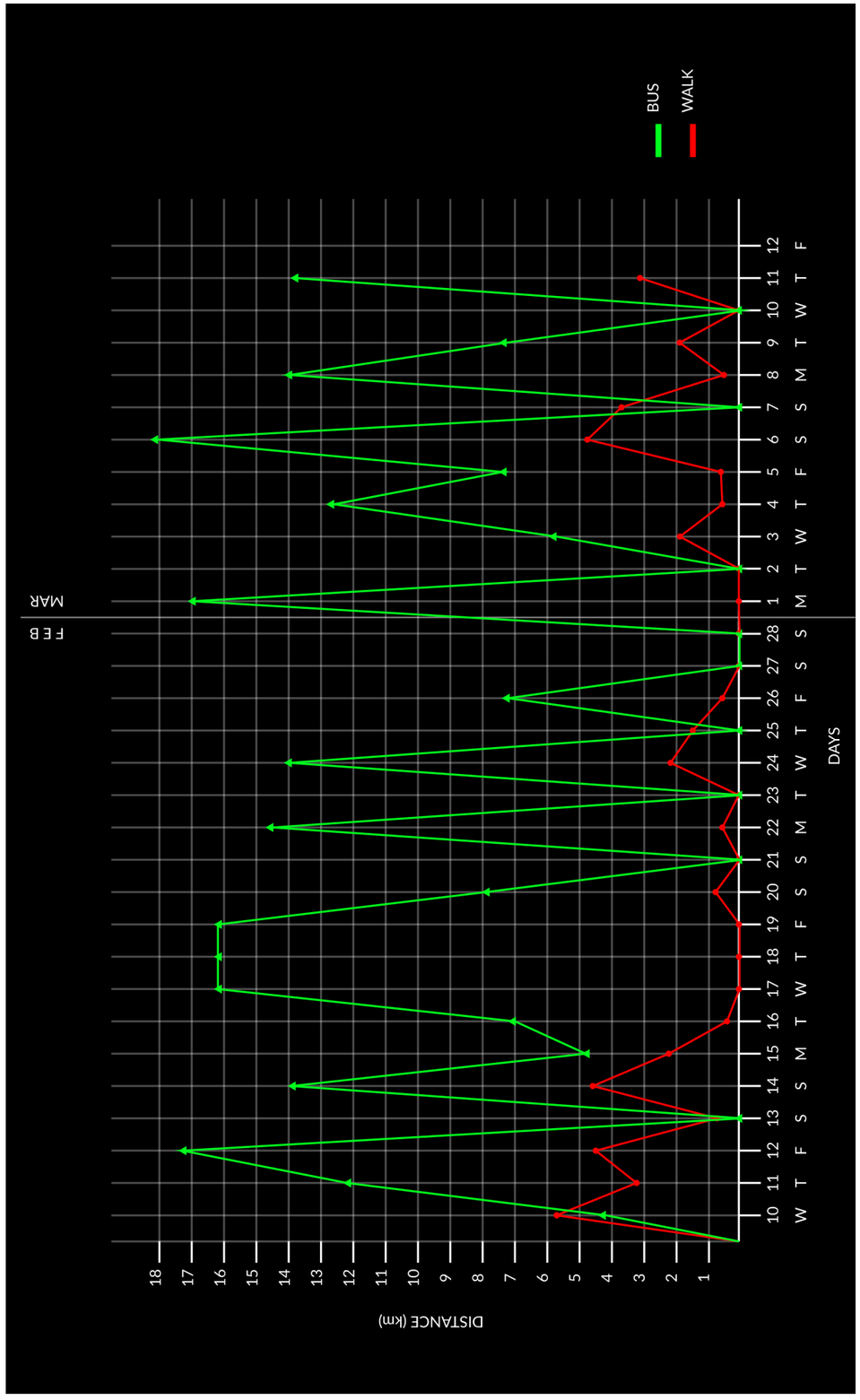


Figure 2: Line chart showing distance traveled on foot and bus for the months of February & March 2021 (Singh, March 2021)

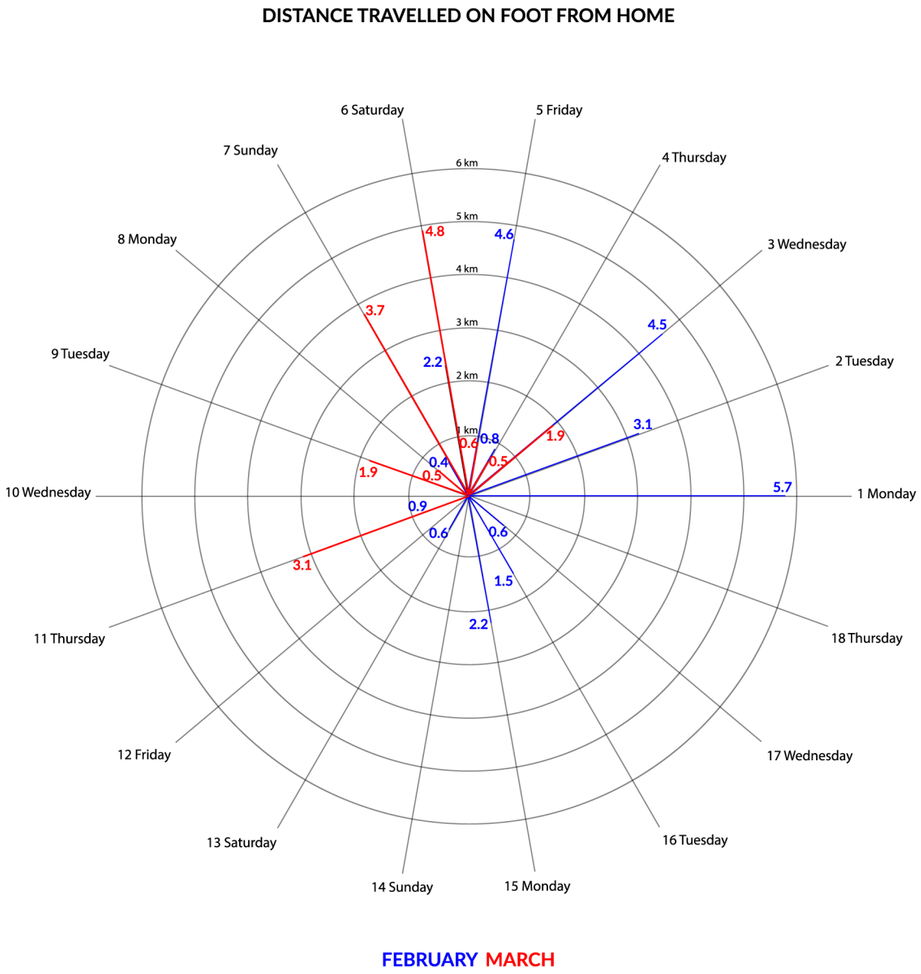


Figure 3: Radial chart showing distance traveled for the months of February and March 2021 (Singh, March 2021)

To continue working with data visualization, I started using simple data that I had access to. One of which was visualizing the demographics of my cohort at school (*Figure 4*). Visualizing the split between the males and females in my class, made it clear what the demographic of my cohort was, which otherwise were just numbers before. Even though these numbers made sense, the split in the demographics was never evident.

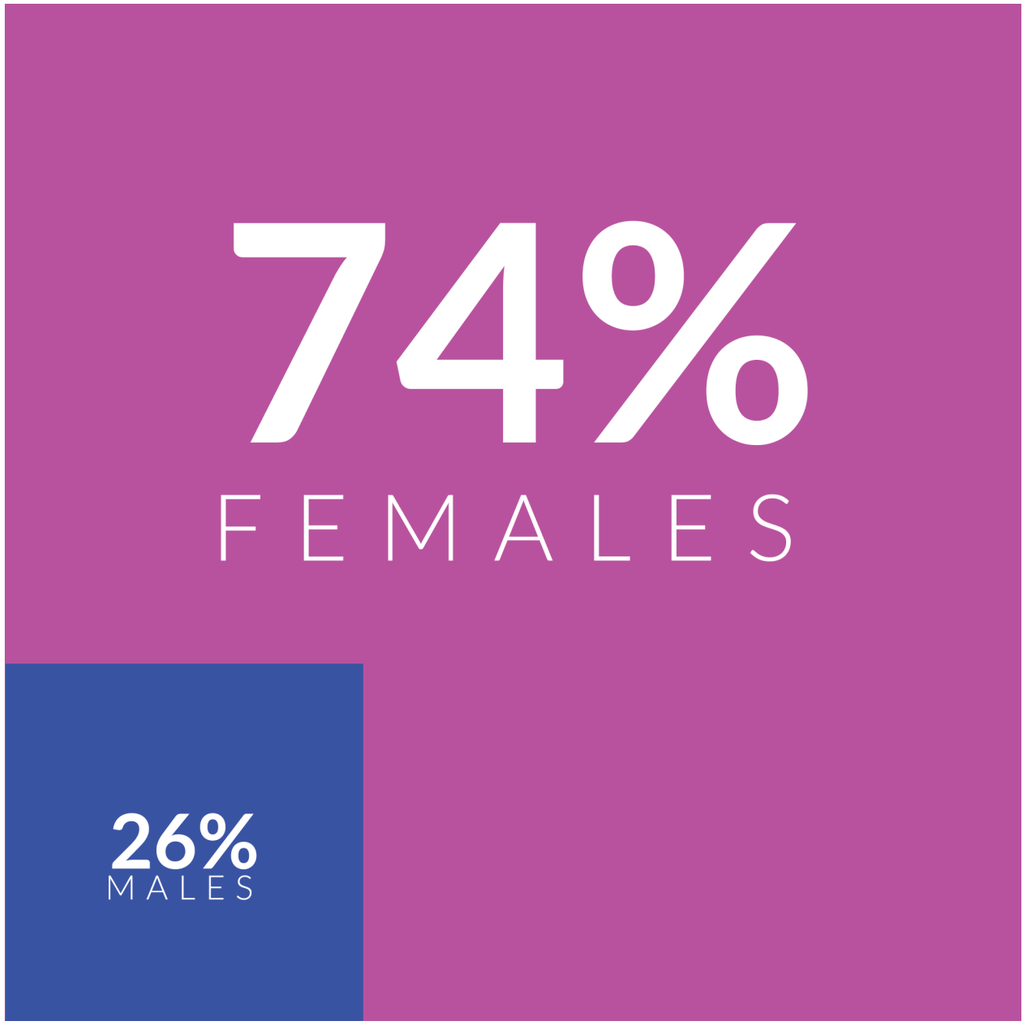


Figure 4: Demographics of MDes 2022 (Singh, March 2021)

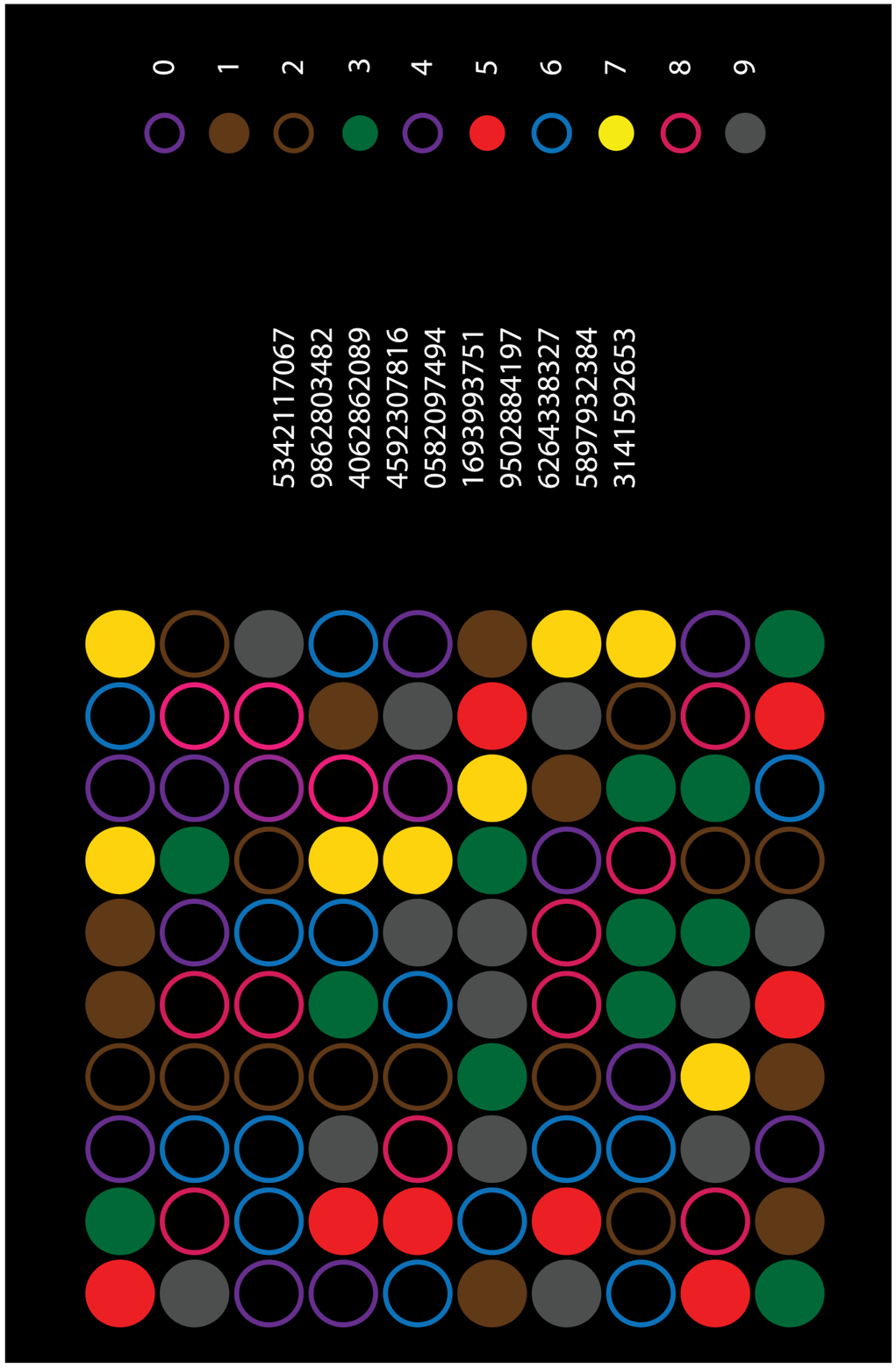
After completing these visualizations, I was sure that visualizing data could help in grasping and understanding large amounts of data easily. But my other question of whether data visualization could lead to user engagement was still left unanswered. This led me to my next experiment in data annotation[8].

While continuing to research on Data Annotation I came across an article on the internet titled, "*Visualizing the Beauty of Pi – Towards Data Science"* (Aqeel 2021). The author had conducted an experiment by annotating the value of Pi to the first 100 decimal places. Each digit was annotated using a specific color and all even numbers were annotated using hollow circles while all odd numbers were annotated using solid circles. These circles were then arranged in a grid of 10x10. Looking at the grid of these annotated digits there were more interesting patterns that emerged. For instance, the first 5 digits from the top in the fourth column were taken by the number 2 and looking at the grid, one could easily count how many times a single digit was repeating itself for the first 100 times. I printed out the final visualization (*Figure 5*)[9] and pasted it on my wall in the studio and soon realized that out of all the visualizations I had done so far, this one was getting the most engagement. Asking my peers as to why they found this visualization so engaging I learnt that most of them were intrigued by the contrast of color and the placement of the circles.

After completing these first experiments, I was able to conclude that large and complex data could achieve engagement using data visualization and data annotation.

8. Process of labeling information so that machines can use it

9. Figure 5: Annotating the first 100 decimals of Pi, following Anwar Aqeel's work (Singh, March 2021) – Pg. 16



FRIES of Digital Consent

In the online realm, the data we transmit builds our digital identities. These digital identities then interact with the identities of other users intermediated by the servers they inhabit. Users on the other hand have no control over the data, the digital identities, or the servers that occupy it. "By binding the data into a cell with its own logic, protected by encryption, users could restore autonomy to their digital bodies, allowing interactions to involve them instead of acting upon them" (Lee & Toliver 2017). In their zine *Building Consentful Tech*, authors Una Lee and Dann Toliver explain consent in digital technologies with the acronym FRIES[10].

10. **Explaining FRIES**
Freely Given: If an interface is designed to mislead people into doing something they normally would not do, the application is not consentful.

Reversible: Users should have the right to limit access or entirely remove their data any time.

Informed: Consentful applications use clear and accessible language to inform users about the risks they present and the data they are storing, rather than buying these important details from the fine print of terms and conditions.

Enthusiastic: If people are giving up their data because they have to in order to access necessary services and not because they want to, that is not consentful.

Specific: A consentful app only uses data the user has directly given, not data acquired through other means like scraping or buying, and uses it only in ways the user has consented to.
(Lee & Toliver 2017)

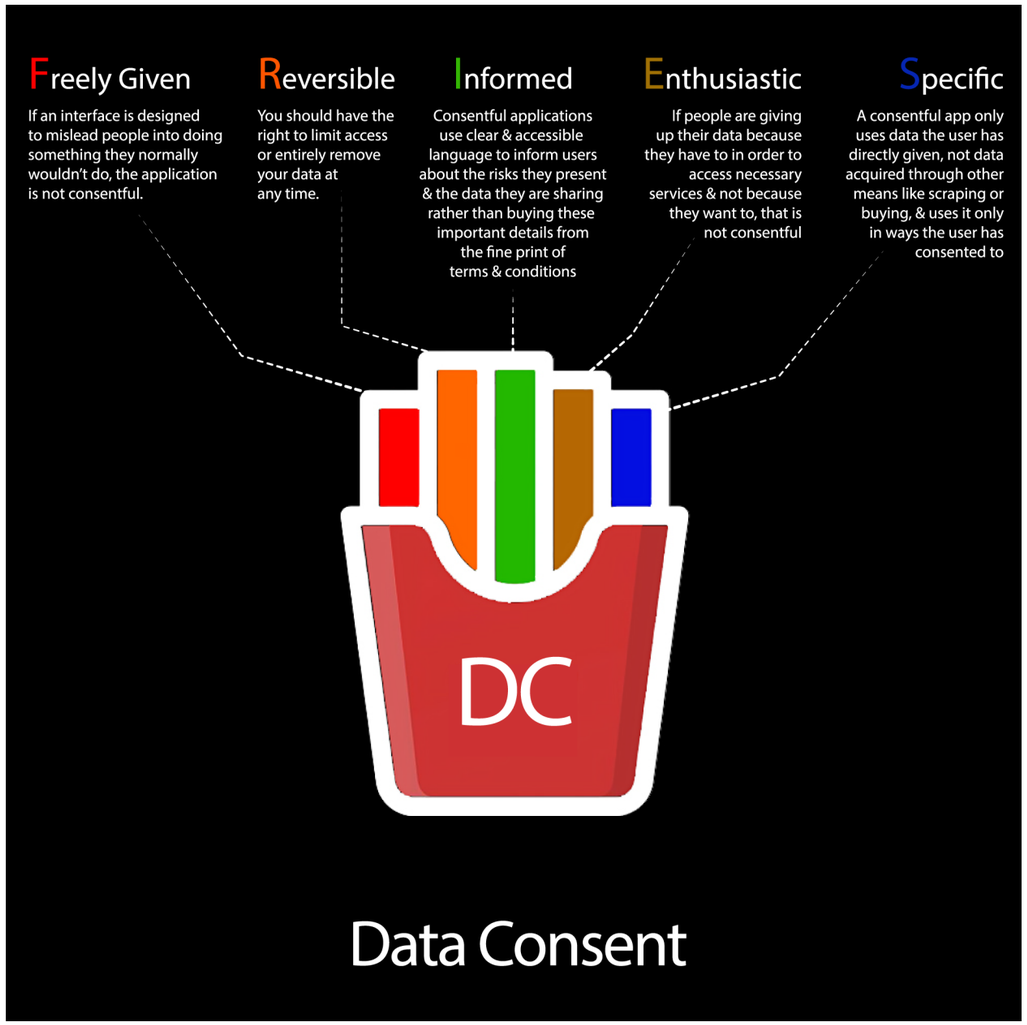


Figure 6: Understanding the FRIES of consentful technology, designed using definitions from Building Consentful Tech (Lee & Toliver 2017), (Singh, March 2021)

At this point in my research I had concluded that even though all online services say they have the users' consent, in reality the way this consent is taken is not often informed. Users are left in the dark when it comes to knowing what goes on with their data and how it is used. But, after conducting some preliminary experiments with data visualization and data annotation, I had evidence that no matter how complex the data is, if it is presented in an inviting manner, it does lead to user engagement which could be the first step towards harnessing the agency to understand it. "There exists an extensive, if sporadic, body of work on how the structure of diagrams and other visual representations shapes our understanding of their informational content" (Ziemkiewicz & Kosara 2008). This led me to the second version of my research question:

Would visualizing an entire consent form or a privacy policy statement from an online platform, lead to the same level of engagement from users?

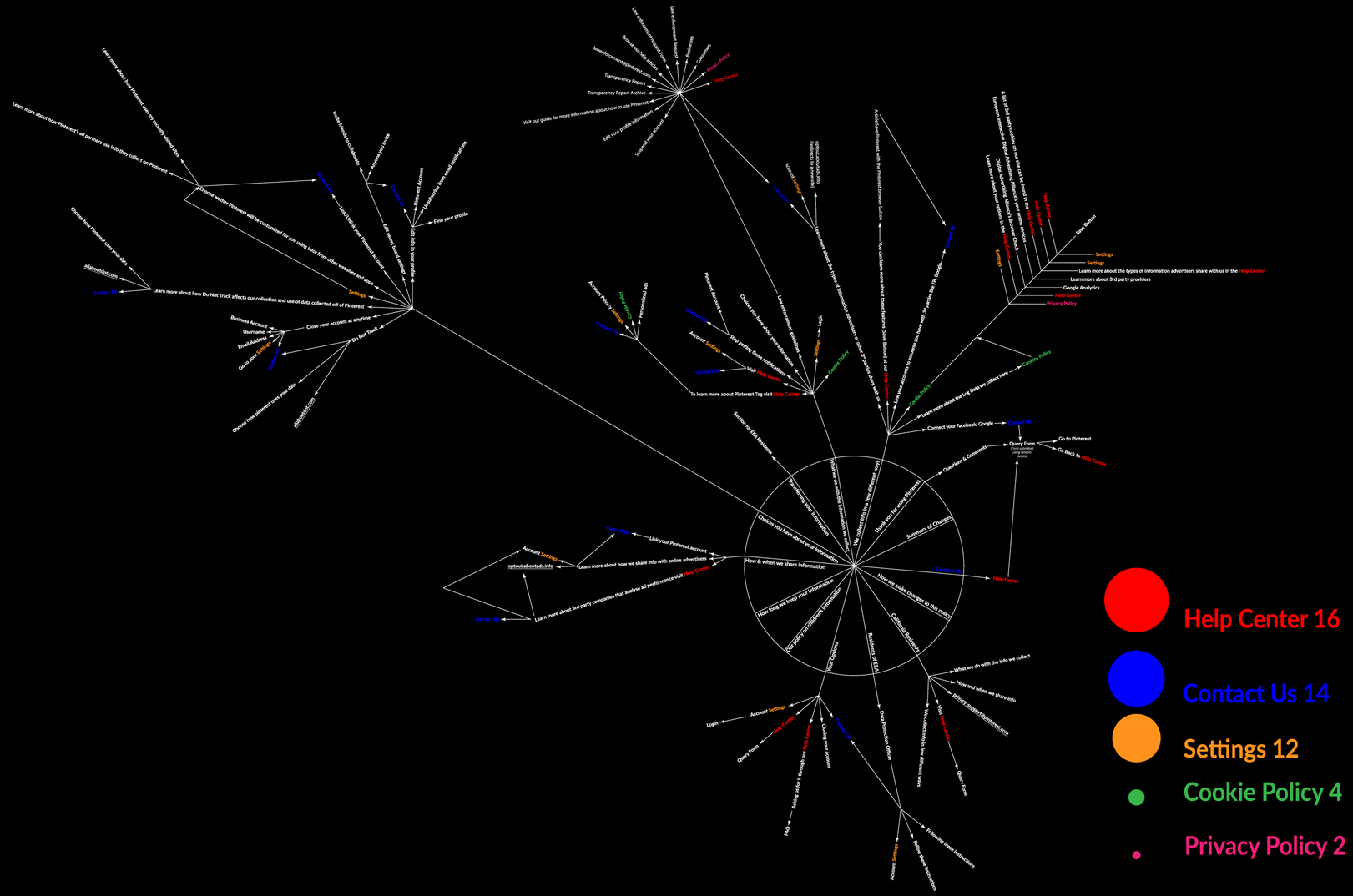
Formulating the Idea of Visualizing Consent Forms of Social Media Platforms

My aim in this project was to break down consent forms of online social media platforms beginning with Pinterest. Visually encode it and interrogate it to fathom areas where there could be concerns about transparency in data sharing.

11. Figure 7: Visualizing the consent form of Pinterest.com (Singh, May 2021) Pg. 22

This was easier said than done. On an average, ‘‘an online consent form is 15 to 20 pages long and could have upto 17,150 words’’ (LePan 2021). To begin visualizing the Privacy Policy of Pinterest, I had to review 4395 words and 48 internal links. This design experiment was based on, ‘‘Visualizing Text Based Data: Identifying the potential of visual knowledge production through design practice’’ (Kasunic & Sweetapple 2015). There is a fine line between Information Visualization and Information Design. While the goal of Information Visualization is to discover the structure of a typically large dataset, Information Design visually expresses a dataset that already has a clear structure. In other words Information Visualization works with data while Information Design works with information.

The Privacy Policy of Pinterest as available on the internet has 14 sections. Since the document was complex, I decided to map out the links on the document and track where each link led me. I started with the 14 sections of the consent form as my headings and then documented each internal link that I came across. Some sections on this document had one or no links at all, while some sections had more than 25 links. Breaking down a circle into the first 14 sections gave me a starting point to see how far this visualization could go. After meticulously mapping every link on the document I finally had the visualization of all the internal links on the consent form of Pinterest (*Figure 7*)[11].

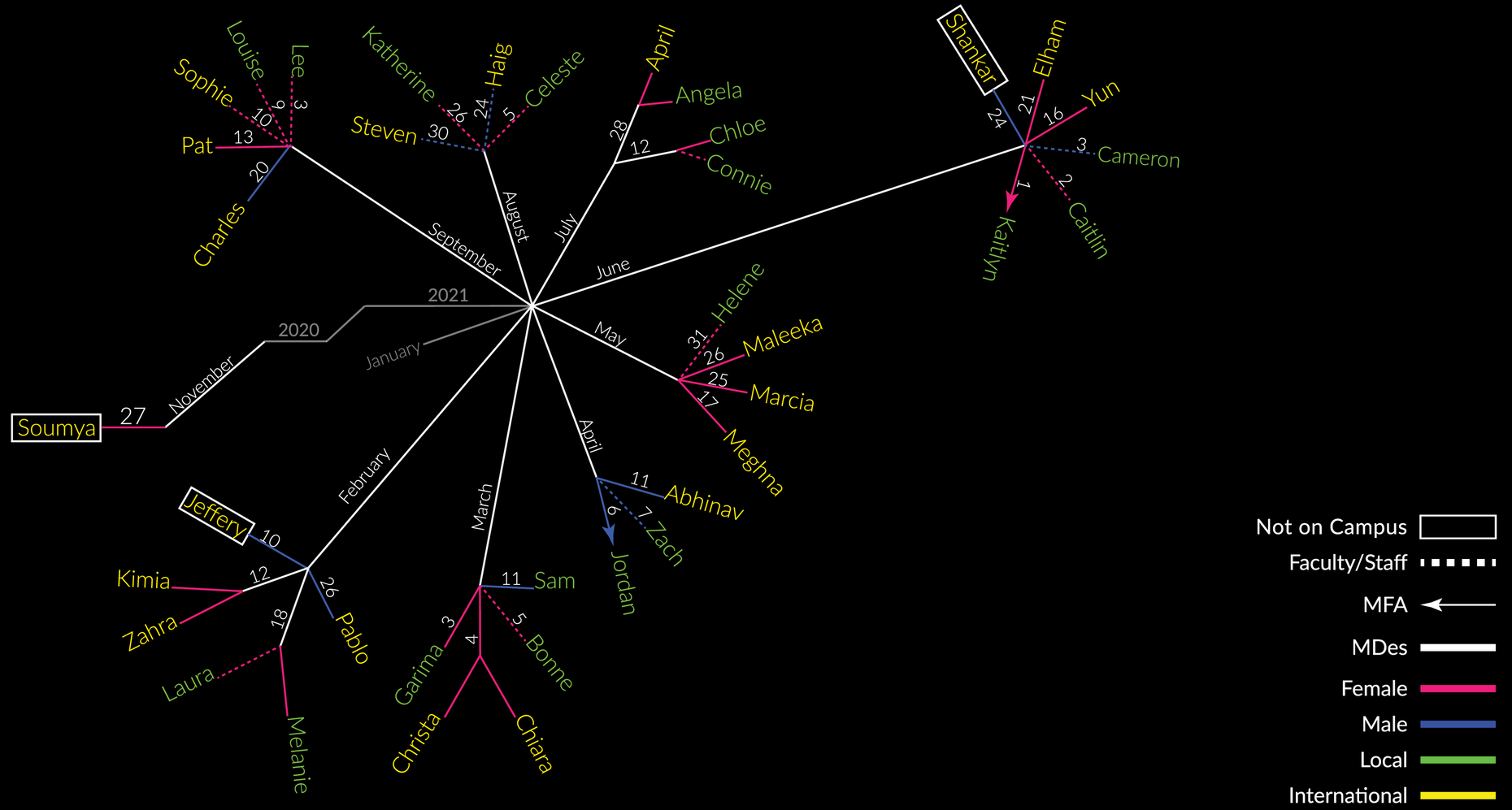

Help Center 16
Contact Us 14
Settings 12
Cookie Policy 4
Privacy Policy 2

I could see the extent of information these consent forms held and why users were not bothered to read through them. The interesting outcome of this design experiment was that almost all internal links on the document led to Pinterest's Help Center and links to it appeared 16 times on the visualization, while other links like *Contact Us*, *Settings*, *Cookie Policy* and *Privacy Policy* appeared 14, 12, 4 and 2 times respectively. Kasunic and Sweetapple's work was a helpful guide in designing this visualization. By mapping out all the internal links on the consent form I was able to create different entry points into the document and navigate easily through the consent form using these links.

"Any network visualization, which is the visualization of relationships (edges or links) between data elements or nodes, in its Macro View should provide a bird's eye view into the network and highlight certain clusters as well as isolated groups within its structures" (Lima 2013). For the next part of this project I decided to go through the visualization and mark areas which could lead me to my answers about how user data is used by these platforms. But again, all the links that I followed in the document ended up on Pinterest's Help Center which was nothing more than a complaint form that users could fill to get their questions answered. Therefore after completing this experiment I concluded that online consent forms only give information about what user data they use, but not how they use it.

As I read more on network visualization, I was also trying to visualize all the people I had met in person after coming to Vancouver. After spending the fall semester of 2020 in India I was excited to meet my colleagues and faculty members in person. Once again I started documenting the names of the people I was meeting for the first time in person, along with other information such as, if they were students or faculty members, were they males or females, did I meet them on campus or not and if they were part of my cohort or not? The final visualization is shown on the next page.

Figure 8: Network visualization of members of my cohort, I met with in-person for the first time (Singh, September 2021) – Pg. 26


Louise
Lee
Sophie
Katherine
Haig
Celeste
April
Angela
Shankar
Elham
Yun
Pat
Steven
Chloe
Cameron
Charles
Connie
Caitlin
Kaitlyn
September
August
July
June
2021
2020
January
November
May
Helene
Maleeka
Marcia
Meghna
Soumya
27
April
Abhinav
Zach
Jordan
February
March
Jeffery
Kimia
Zahra
Pablo
Laura
Melanie
Sam
Garima
Bonne
Christa
Chiara
Not on Campus
Faculty/Staff
MFA
MDes
Female
Male
Local
International

To complete my initial plan of visualizing and comparing consent forms of different social media platforms, I started mapping out the links on the consent form of WhatsApp (*Figure 9*). While doing this I also read a chapter in Visual Complexity (Lima. M., 2013) titled *Decoding Networks*, to get more information out of Pinterest's Privacy Policy visualization. As Jacques Bertin writes in this chapter, ''the graphic is no longer only the representation of a final simplification, it is a point of departure for the discovery of these simplifications and the means for their justification. The graphic has become, by its manageability, an instrument of information processing'' (Bertin 2013).

In the *International Review of Information Ethics* (Stalder & Sützl 2011) authors Felix Stalder and Wolfgang Sützl, write how in the online realm sharing is often confused with copying. The authors have argued that if a piece of information is shared digitally, it should go less in quantity as opposed to being multiplied which is what happens with data. In other words, every time data is 'shared', all that happens is that it multiplies, and users that it is shared with now have the same amount of data. The other question that they raise is that once this data is shared, who has ownership of it? Sharing has a feeling of ownership while distribution commodifies your data. Do we really have control of our data, once it is on the internet? Or are we being tricked into the whole notion of our data being secured and still ours?

At this point in my research, I was struggling to find answers to my research questions regarding how user data was being used by online platforms and how they were able to target content to their users with such accuracy. Visualizing and scanning the Privacy Policy statements of two popular social media platforms did not help. But in a final attempt to find answers using the visualization I returned to *Data Ink and Graphical Redesign* (Tufte 2002) and was reminded of Tufte's advice to draw the viewer's attention to the sense and substance of data, and to be strategic with every graphic. Here he instructs his reader to ''Erase non-data ink, within reason. Ink that fails to depict statistical information does not have much interest to the viewer of a graphic, infact sometimes such non-data ink clutters up the data'' (Tufte 2002).

After reading through all this and attempting to redesign my visualizations, I was still convinced that ethics in data sharing lay at a deeper layer inaccessible to the user. For the next phase of my research I intended to find out what this layer was.

As D' Ignazio and Klein explain, Donna Haraway describes data visualization, as ''the God trick of seeing everything from nowhere. It is also the most ethically complicated to navigate for the ways in which it masks the people, the methods, the questions and the messiness that lies behind clean lines and geometric shapes'' (D'Ignazio & Klein 2020). Hence I was able to conclude that visualizing consent forms might lead to engagement but not answer any questions around the ethics of the use of data and its sharing.

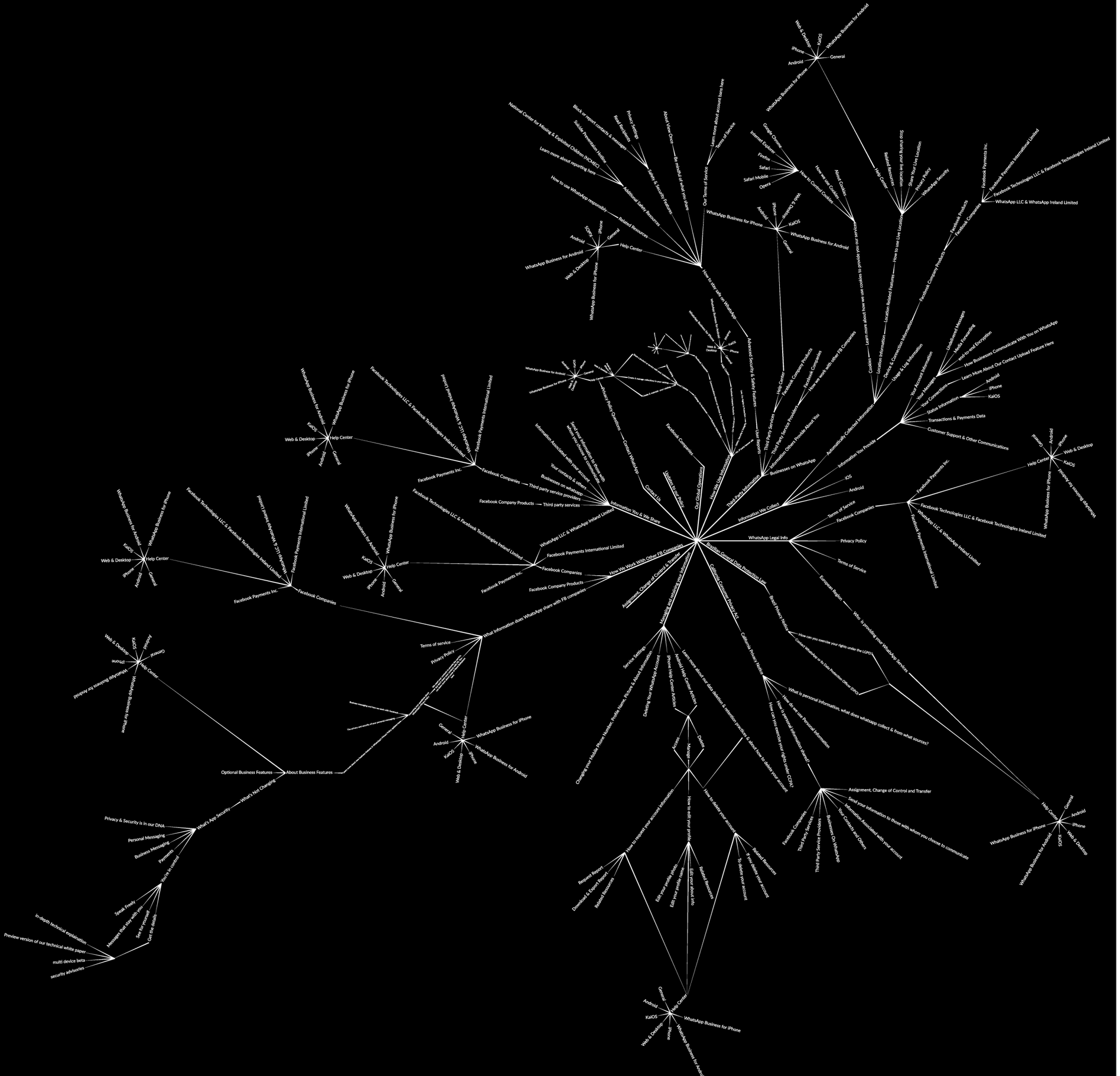


Figure 9: Visualizing the Terms & Conditions of WhatsApp after being updated in January 2021 (Singh, October 2021)

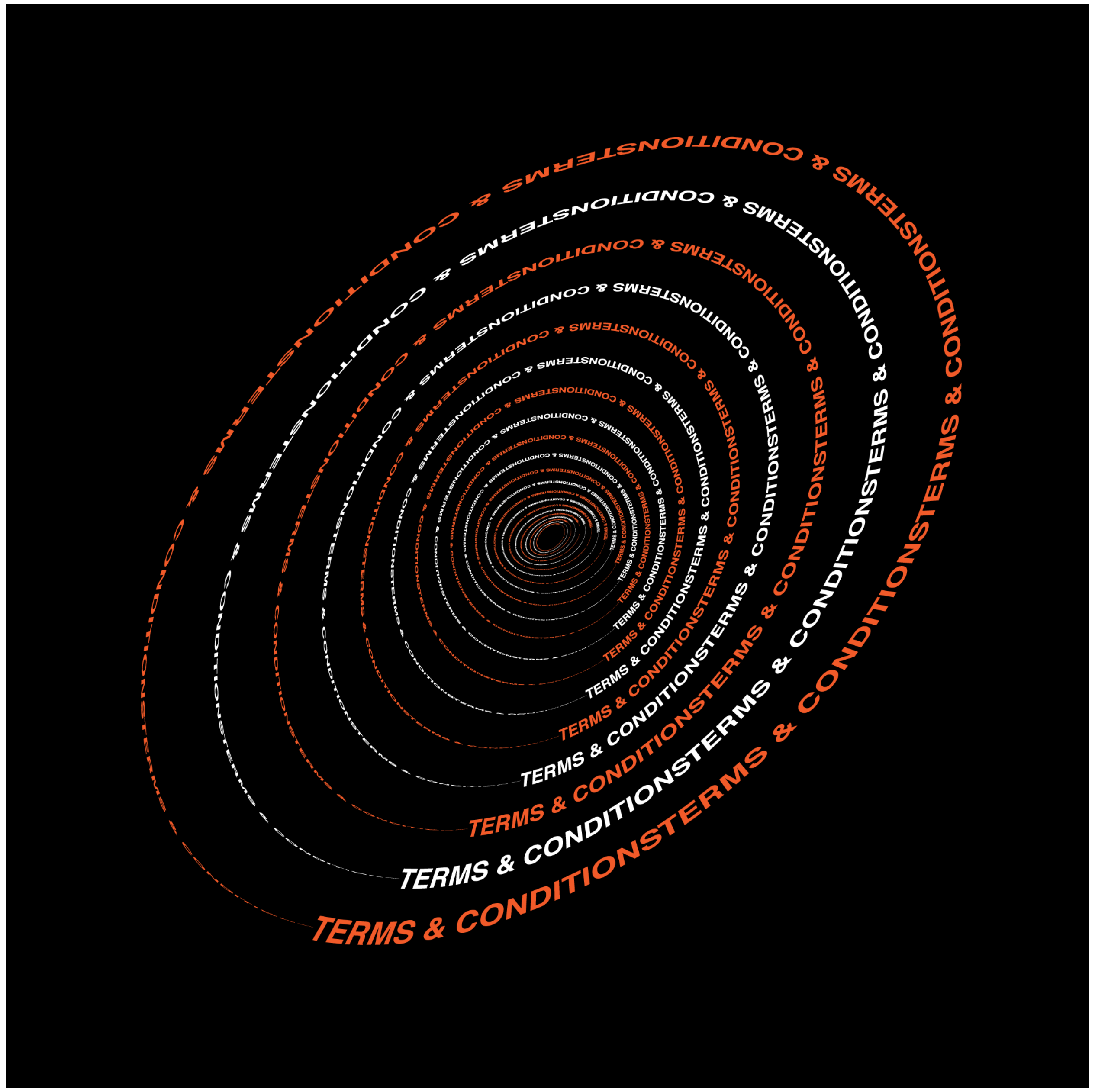


Figure 10: Visualizing the self referencing aspect of online consent forms (Singh, October 2021)

III - INFERENCES

Data Exhaust[12], Behavioral Data[13], Inferences[14] and Behavioral Modification

Continuing with my research to find out more on the ethics of data use and sharing, I was suggested to refer to *The Age of Surveillance Capitalism[15]: The Fight for a Human Future at the New Frontier of Power* written by Shoshana Zuboff. As Zuboff explains in her book, "surveillance capitalism is a new economic order that claims human experience as free raw material for hidden commercial practices of extraction, prediction, and sales" (2019). She further writes that "Surveillance capitalists learn that extracting human experience is not enough. The most predictive raw-material supplies come from intervening in our experience to shape our behavior in ways that favor surveillance capitalists' commercial outcomes" (Zuboff 2019). She continues to highlight how big tech companies constantly feed on user data and when you have access to so much data about someone, it becomes easier to make predictions about them.

While on the internet, users give out personal data in the form of Name, Phone Number, Date of Birth and Email Addresses. But there is a lot of other information that gets recorded outside of the user's knowledge. This data is called "*Data Exhaust*" (Zuboff 2019), which is not given out voluntarily but can be inferred by how users access the internet over a certain period.

12. **Data Exhaust**: Trail of data left by the activities of an internet or other computer system users during their online activity, behavior and transactions

13. **Behavioral Data**: Data that describes the observed actions of users or customers

14. **Inferences**: A conclusion reached on the basis of evidence and reasoning

15. **Surveillance Capitalism**: Economic system centered around the commodification of personal data with the core purpose of profit-making (Zuboff 2019)

Every action by users on the internet, produces a wake of collateral data. The keywords used for search, the likes, the comments, the shares and even the duration of a browsing session tells a little bit more about the user every time. It acts as a digital identity builder that tells detailed stories about the users' thoughts, feelings and interests. ‘‘Companies utilize this information through data driven personalization to exploit personal weakness with calculated efficiency’’ (Zuboff 2019). This data is fed back to push targeted content to the user. ‘‘If it's free then you are not the product but it's the gradual, slight, imperceptible change in your own behavior and perception, that is the product’’ (The Social Dilemma, Netflix, 2020). In other words, this is behavioral modification or habit forming that is not directed by your own choice. ‘‘Under the regime of surveillance capitalism, content is a source of behavioral surplus[16], as is the behavior of the people who provide the content, as are their patterns of connection, communication and mobility, their thoughts and feelings, and the meta-data, expressed in their emoticons, exclamation points, lists, contractions and salutations’’ (Zuboff 2019).

16. Data that goes beyond online product and service use

Why Does Data Visualization Not Help?

The Age of Surveillance Capitalism, began to answer why I was not able to find any information around the ethics of data sharing in the consent forms I had worked with before. ‘‘Paper contracts require a physical signature, limiting the burden a firm is likely to impose on a customer by requiring them to read multiple pages of fine print. Digital terms in contrast are ‘weightless’. They can be expanded, reproduced, distributed and archived at no additional costs’’ (Zuboff 2019). This also started to make sense of the argument that Felix Stalder and Wolfgang Sützl make about sharing and copying data digitally and how if a piece of information is shared digitally, it should diminish in quantity as opposed to being multiplied. When data multiplies it is not being shared by definition but is being copied and distributed which raises concerns around its ownership.

Formulating the Data and Behavioral Surplus Project

As I read more about Data Exhaust and Behavioral Surplus, everything that I could not find in the visualization of the consent forms of Pinterest and WhatsApp was now making sense. As I was scrolling through my LinkedIn feed, I realized that all the posts appearing on my wall, had information about which of my connections had interacted with these posts. For example, which of my connections had liked the post, commented on it or found it insightful. Still not knowing what could be done with this data, I started to document these data traces or tags under each of my connection's names. Soon, I realized that with just this small piece of information, I was now learning so much more about my connections without ever interacting with them. For instance, I now knew the interests of my connections from the posts they had interacted with, which of my connections had been very active on LinkedIn and ones who had not. Using this information I could also predict what type of content could lead to any kind of interaction from these connections.

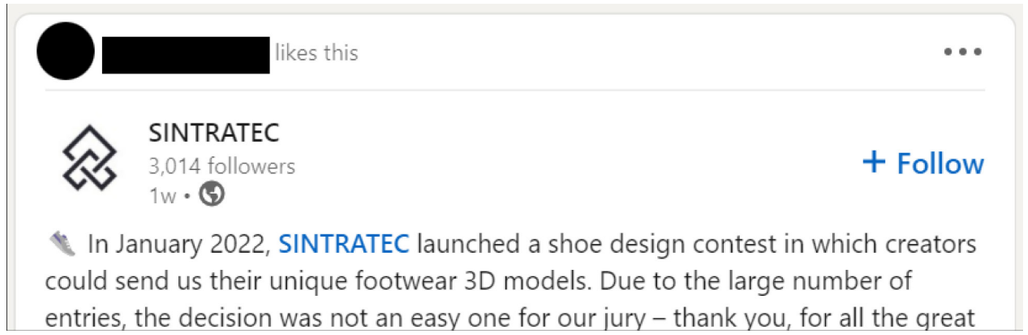


Figure 11: Examples of Data Exhaust on LinkedIn.com

REB Application

To continue my research in this direction, I planned another experiment of documenting these interactions for all my connections on LinkedIn and then analyzing it to see how much more could I learn about my connections and if I could predict certain interactions from them? Since I was going to work with data from human participants, I had to apply for a Research Ethics Board approval before I could start this project. This thesis research was done to validate the theory of interpreting behavioral data to make inferences about users. The research was conducted using information from my LinkedIn account's connections which is available to me and has been consented to before sharing. Names of all connections were masked and a written consent was taken from all connections prior to the start of the research to give them a free choice of opting out. The information collected from LinkedIn.com was the basis of the content analysis. The participants were informed of the duration of the project and their occupations were replaced with non-identifiable, generic categories of the industry sector they worked in. The application to the Research Ethics Board can be found in Appendix A.

Once the project was approved by the REB, I was able to get consent from 15 of my connections on LinkedIn. I started documenting (*Figure 12 – 20*) all their interactions that I had access to, through LinkedIn's 'See all activity' feature. To document these interactions, I was taking note of what the connection had posted or shared on their wall, how old was this interaction or post, posts that my connections had liked, commented on or shared and the hashtags they had used (if any). All of this was being done making sure that no data was personally identifying any of my connections.

3rd degree connection shared an article about them		2 years ago	[redacted] likes this
3rd degree connection shared a video	#womensmovementneverstops #hockey #campaigns	2 years ago	[redacted] likes this
2nd degree connection shared a workshop	#designthinking #ignite #innovate #educe #create #artofeducation	2 years ago	[redacted] likes this
shared the same workshop	#designthinking #ignite #innovate #educe #create #artofeducation	2 years ago	
2nd degree connection posted an update	#theartof #lifelonglearning #learning #purpose #entrepreneurship #femaleleadership #inclusivity	2 years ago	[redacted] likes this
2nd degree connection posted an update	#newcomers #immigration #designthinking #diamonds #stickynotes #Elevate	2 years ago	[redacted] shared
2nd degree connection shared an update about an opening at a design school		2 years ago	[redacted] likes this
	#survey #workshops #healthdesign		

2nd degree connection shared an event by Deoartment of Imaginary Affairs	#eaconference21 #socialinnovation #conference21	7 months ago	[redacted] likes this	
Public Post Secondary Art School and University shared a video		6 months ago	[redacted] likes this	
Department of Imaginary Affairs shared an online conference		6 months ago	[redacted] likes this	
2nd degree connection shared a video on AI and sign language	#AI #ai4good #translator #inclusive #ASL #machinelearning #deeplearning #artificialintelligence	6 months ago	[redacted] likes this	[redacted] commented on this
shared a fund raiser event		5 months ago		
3rd degree connection shared a video	#lilnasx	6 months ago	[redacted] loves this	
2nd degree connection shared a fund raiser event		6 months ago	[redacted] supports this	
2nd degree connection posted an update	#braidingsweetgrass	5 months ago	[redacted] supports this	[redacted] commented on this
2nd degree connection posted an update		6 months ago	[redacted] likes this	[redacted] shared this
1st degree connection shared an article	#design #writing #socialjustice #antiracism #storytellingforjustice #yoruba #yorubastorytelling #justice #decolonialpractices #Schoolpsychologist	5 months ago	[redacted] celebrates this	
3rd degree connection posted an update	#weseeyou	5 months ago	[redacted] loves this	
2nd degree connection shared Dismantaling White Supremacy Box		4 months ago	[redacted] celebrates this	
2nd degree connection shared a survey by Industrial Designers Society of America	#IIDSA #industrialdesign #diversityindesign #designeducation	5 months ago	[redacted] likes this	
2nd degree connection shared a talk on inclusion	#InclusiveDesign #BeyondInclusion #WideningDesignNarratives #MultipleCenters #DesignForThepluriverse #DeColonizingDesign #SystemsChange	5 months ago	[redacted] likes this	[redacted] shared this
2nd degree connection shared a job opening at a management consulting firm in toronto		4 months ago	[redacted] liked someone's comment	[redacted] likes this
2nd degree connection shared an event about immigrants, refugees and apps	#ArrivalAdvisor #AppDemo #refugees #immigrants #PublicGoodAppHouse #PublicGoodTech	4 months ago	[redacted] likes this	
	#PublicSpace #SeaLevelRise #Storytelling			

2nd degree connection posted about being selected for further studies		3 years ago	likes this
2nd degree connection posted about being a speaker at a UX conference		2 years ago	celebrates this
Connection shared a workshop 'The Respobility of Design: Transition Design Workshop'		2 years ago	celebrates this
Connection posted a video from an event	#design #uxdesign #uxresearch #pluriverse	2 years ago	likes this
2nd degree connection shared Google Doc for Career advice	#designer #earlycareers #mentorship	2 years ago	likes this
2nd degree connection shared a VR project	#ar #vr #virtualreality	2 years ago	likes this
Public Post Secondary Art School and University posted an update		2 years ago	likes this
2nd degree connection posted about graduating	#graduation	1 year ago	likes this
2nd degree connection posted about a job update	#university #students #teaching #professors #associateprofessor	1 year ago	celebrates this
2nd degree connection posted a question	#2QTBIPOC #QTBIPOC #POC #diversityintech #inclusiveculture #inclusivehiring	1 year ago	likes this
2nd degree connection shared a post by 'The Female Lead'		1 year ago	celebrates this
Connection shared participating in a podcast	#ux #podcast #diversityandinclusion	1 year ago	likes this

alumni.design posted a video	#communicationdesign #graphicdesign #artdirection #uxdesign #microsoft #earlycareer #mentorship	5 months ago	celebrates this
3rd degree connection posted about a conference	#Pivot2021 #PivotConference #Pluriverse #Pluriverso #PluriversalDesign #Design #Research #BuenVivirCentric #Mesoamerica #Maya #Mexico	5 months ago	loves this
2nd degree connection posted a job opening		6 months ago	likes this
2nd degree connection posted about a workshop	#art #design #woolweaving #squamishtradition #history #storytelling	5 months ago	loves this
2nd degree connection posted a job opening	#ITProjectManager #EPMO #ArtAndDesign #HigherEd #HiringNow #ITJobs #PMP #education	5 months ago	likes this

Public Post Secondary Art School and University posted an update		1 month ago	celebrates this
Connection posted an update	#designers #pointofview #perspectives #ux	1 month ago	likes this
2nd degree connection posted about a lecture series		2 months ago	likes this
2nd degree connection posted an article about them		2 months ago	celebrates this
2nd degree connection shared an article		2 months ago	celebrates this
2nd degree connection shared an article about them		3 months ago	likes this
3rd degree connection posted about an award		3 months ago	celebrates this
2nd degree connection posted about starting a new job	#newjob #art #design	4 months ago	celebrates this
Public Post Secondary Art School and University posted an article		5 months ago	celebrates this
3rd degree connection posted about starting a new position at work		1 month ago	likes this
2nd degree connection posted about an event		1 month ago	likes this
2nd degree connection posted about a job opening		1 month ago	likes this
Public Post Secondary Art School and University posted an article		2 weeks ago	likes this
Posted ********** Earns WIDC Feature Film Award		2 weeks ago	
Connection shared '******** Most Read Stories in 2021'	#design #pluriverse #diversity #inclusion	2 weeks ago	likes this

Public Post Secondary Art School and University posted an update		11 months ago	loves this
2nd degree connection posted 'Diversity Statement'		11 months ago	likes this
2nd degree connection shared their work on behance		10 months ago	celebrates this
2nd degree connection shared their work	#animationvideos #marketing #motiondesign #motionlovers #animation2d #artdigital #typography #brandingdesign #design #creative #digitalmarketing #animation #graphicdesign #designer #branding	1 year ago	likes this
[redacted] celebrates a post by Advanced Design	#design #designeducation #industrialdesign #fooddesign	10 months ago	celebrates this
2nd degree connection posted a job opening		10 months ago	likes this
2nd degree connection shared a post by Public Post Secondary Art School and University		9 months ago	loves this
2nd degree connection posted a video about their project		8 months ago	celebrates this
3rd degree connection posted a video	#animationart #art #designart #motiondesign #motiongraphics #adobeaftereffects #adobeillustrator #animation #filmmaking #onset #behindthescenes #stopmotion #animation	6 months ago	likes this
2nd degree connection shared a video	#research #university #vfx #virtualproduction #unrealengine	6 months ago	likes this
Public Post Secondary Art School and University posted a blog		6 months ago	likes this
Public Post Secondary Art School and University posted a blog		6 months ago	likes this
2nd degree connection posted about their project		6 months ago	likes this
3rd degree connection posted about their project	#film #animation #art #filmfestival	6 months ago	likes this
2nd degree connection shared 'A teacher was pregnant. Students built a device so her spouse, who uses a wheelchair, can stroll with the bal	#healthdesign #designforhumans	6 months ago	likes this
3rd degree connection shared their animation project		6 months ago	likes this
2nd degree connection shared '***** receives ********** Educator Award for ******** Canada'	#designeducation [redacted] #GDC #designstudents #UFV	5 months ago	likes this
2nd degree connection shared an event they were a part of		6 months ago	likes this
posted How Designing with More-Than-Humans Fosters Social Change and Environmental Justice		5 months ago	
Connection shared their work	#bpm #stjude #philanthropy #blackgivesback #bpm2021 #community	5 months ago	celebrates this

2nd degree connection shared a post by Public Post Secondary Art School and University		9 months ago	loves this
2nd degree connection posted a video about their project		8 months ago	celebrates this
2nd degree connection posted a video about their project	#animationart #art #designart #motiondesign #motiongraphics #adobeaftereffects #adobeillustrator #animation #film #video #artist	9 months ago	loves this
Graphics by Quiet Lion shared 'Visiting McIlory Professor Inspires New Futures for More Inclusive Design Conversations	#SchoolofArt #design #marginalized #communities #visualdesign #graphicdesigners #community #diversity #visualarts #arthistory #graphicsbyquietlion	8 months ago	loves this
2nd degree connection posted a video about their project		8 months ago	celebrates this
3rd degree connection shared an event 'Healthcare and Design Coffee Chat'		8 months ago	loves this
2nd degree connection shared 'Current opportunities'	#rmitdesign #communicationdesign #designeducation	8 months ago	likes this
	#standwithasians #asiansarevisible #leadershipdevelopment #emotionalintelligence		

Figure 12 – 20: Documenting data from LinkedIn.com (Singh, July 2021)

As these interactions were being documented, I had already started to recognize certain interaction patterns from my connections. For instance, one of my connections always liked a post and then shared it on their wall, one connection was always using the same set of hashtags on everything that they were posting on LinkedIn. Some connections also had specific reactions to posts depending on who had posted it. I was also able to learn about the interaction habits of some of my connection's connection by going through their posts. Apart from learning about the interaction habits of my connections I was also able to recognize certain changes being suggested to me by LinkedIn based on my recent activity. One of these was LinkedIn suggesting that I add 'Open To Work' to my profile even when I had recently updated my job just weeks before starting this project. I assume that this suggestion was made since I was looking at many different profiles regularly while working on this project.

All these insights proved helpful in understanding how certain prediction algorithms might work for all their users on different online platforms. Based on the findings of this project, this is how I understood the inference cycle[17] being used by online platforms (Figure 21).

17. The Inference Cycle:

Index Available Data:
All online platforms keep a record of their user's profiles and interactions that they do on these platforms.

Patterns emerge from Data:
Based on these records there are certain behavioral patterns that emerge for every user.

Interpret Data Patterns to make Assumptions:
Analyzing these behavioral interaction patterns platforms are then able to make predictions about what content would lead to more interactions.

Compare aggregated meta-data:
Having access to meta-data from all users, platforms are also able to predict how two or more users could connect based on their interaction patterns.

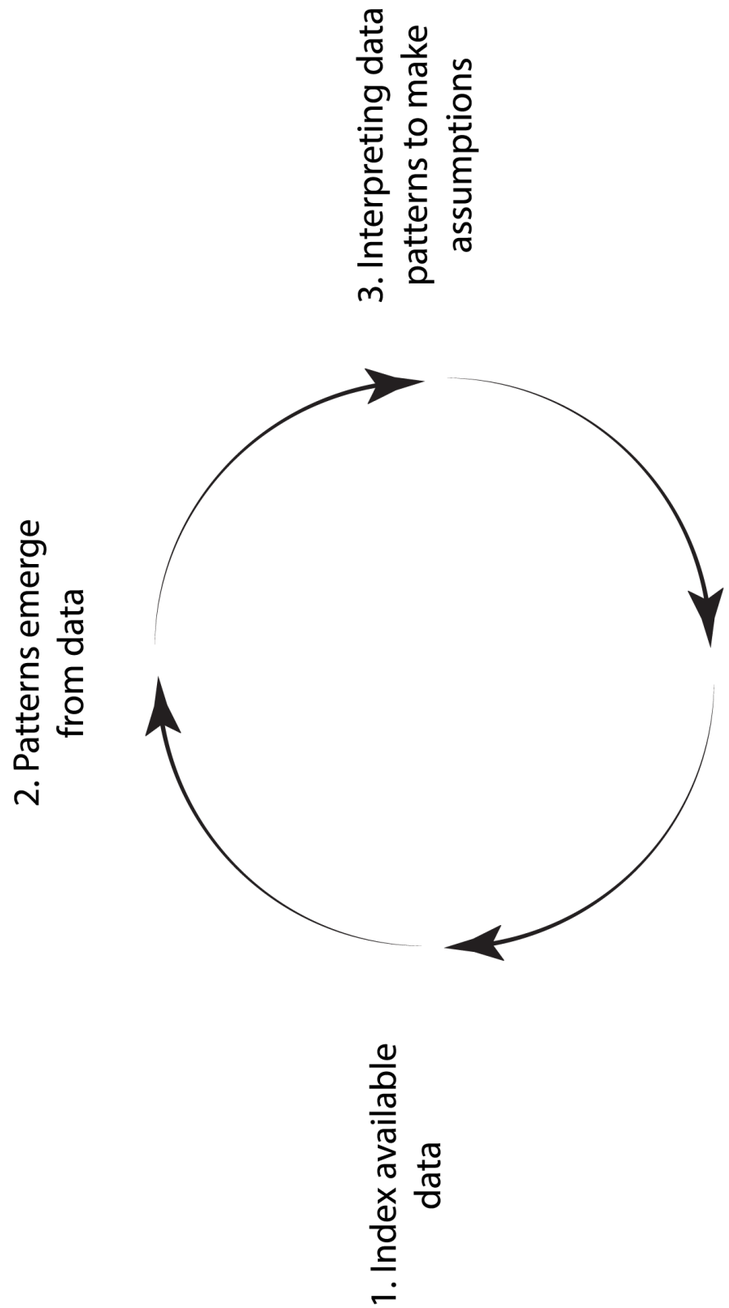


Figure 21: The inference cycle (Singh, August 2021)

"Designing is a process of pattern synthesis, rather than pattern recognition. The solution is not simply lying there among the data… it has to be actively constructed by the designer's own efforts" (Cross 2006). By the end of this project I began to understand how online platforms were utilizing user data to study behavioral patterns and make predictions about their users, while also trying to understand where ethical boundaries lay that should not be crossed to manipulate users for monetary interests.

'Infer' – Keyword Search on Online Consent Forms

Now that I had learned how inferences were being made based on user data, I started to investigate if consent forms ever let users know about these inferences beforehand. Doing a quick keyword search for 'infer' and 'inferences' on the consent forms of LinkedIn.com (*Figure 22*) and Pinterest.com (*Figure 23*), I found the following texts on them:

Information inferred from data described above (e.g. using job titles from a profile to infer industry, seniority and compensation bracket; using graduation dates to infer age or using first names or pronoun usage to infer gender; using your feed activity to infer your interests or using device data to recognize you as a member (LinkedIn Privacy Policy, 2020).

The log data includes your Internet Protocol address (which we use to infer your approximate location), the address of and activity on websites you visit that incorporate Pinterest features, (like the 'Save Button'), searches, browser types and settings, the date and time of the request. We use your activity - such as pins you click, boards you create, and any text you add in comment or description - along with information you provided when you first signed up and information form our partners and advertisers to make inferences about you and your preferences. If you create a board about travel, we may infer you are a travel enthusiast. We may also infer information about your education of professional experience based on your activity (Pinterest Privacy Policy, 2021).

Completing this keyword search I was sure that this is where the gaps about the use of data were. "When the user who is not professionally trained to deal with data, becomes the analyst, it is important he or she knows what is going on" (Yau 2013).

2. How We Use Your Data

We use your data to provide, support, personalize and develop our Services.

How we use your personal data will depend on which Services you use, how you use those Services and the choices you make in your settings. We use the data that we have about you to provide and personalize our Services, including with the help of automated systems and inferences we make, so that our Services (including ads) can be more relevant and useful to you and others.

We keep most of your personal data for as long as your account is open.

We generally retain your personal data as long as you keep your account open or as needed to provide you Services. This includes data you or others provided to us and data generated or inferred from your use of our Services. Even if you only use our Services when looking for a new job every few years, we will retain your information and keep your profile open, unless you close your account. In some cases we choose to retain certain information (e.g., insights about Services use) in a depersonalized or aggregated form.

- Information inferred from data described above (e.g., using job titles from a profile to infer industry, seniority, and compensation bracket; using graduation dates to infer age or using first names or pronoun usage to infer gender; using your feed activity to infer your interests; or using device data to recognize you as a Member).

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Figure 22: 'infer' - keyword search on linkedin.com/legal/user-agreement

- **Log data.** When you use Pinterest, our servers record information ("log data"), including information that your browser automatically sends whenever you visit a website, or that your mobile app automatically sends when you're using it. This log data includes your Internet Protocol address (which we use to infer your approximate location), the address of and activity on websites you visit that incorporate Pinterest features (like the "Save" button—more details below), searches, browser type and settings, the date and time of your request, how you used Pinterest, cookie data and device data. You can learn more about the log data we collect here.
- **Clickstream data and inferences.** When you're on Pinterest, we use your activity—such as which Pins you click on, boards you create, and any text that you add in a comment or description—along with information you provided when you first signed up and information from our partners and advertisers to make inferences about you and your preferences. For example, if you create a board about travel, we may infer you are a travel enthusiast. We may also infer information about your education or professional experience based on your activity when you link your account to accounts you have with third parties like Facebook or Google.

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- Inferences we draw or derive about users, such as your interests or preferences

Figure 23: 'infer' - keyword search on policy.pinterest.com/en/privacy-policy

IV - DISSEMINATIONS

How do I get People to Engage with all This?

Looking back at my research at this point I realized how much I had discovered about data, privacy and the ethical use of user data. But the one question that remained unanswered was, *how do I invite people to engage with what I had learned, so that they could have more agency to understand their data?* It was around this time when we had our Open Studios at school, a perfect opportunity for me to showcase my research and findings to my peers and faculty members. After carefully displaying all my work that I had done for the last year, I was expecting engagement, questions, and discussions from people who visited my studio. However, on the day of the Open Studio, I realized that most of my work was just making sense to me while everyone else was still finding it hard to engage with. The most common feedback that I got was that, this was still too much information which was hard to understand and was missing context. A similar feedback was received during my studio class in the Fall of 2021.

Taking all this feedback into account I now understood that even though my research was important, it was still too much information to grasp for others and since data and privacy is something that has a very large audience, I had to come up with simpler ways to invite readers into my research.

Internet Cookies – A Presentation

During one of our studio classes we were asked to pitch our research as a product to our class. The idea was to market it and sell it to our studio mates who were acting as investors. With my experience from the Open Studio still fresh in my mind, I decided to start simple and sell the idea of a game that would help players understand how cookies worked on the internet. We have all come across instances when we have been asked to accept cookies on entering a website. Most of us do not really understand how these cookies work and accept it anyways to start using the website.

The idea of this game was that the player acts like the content server to different browsers linked to it. Each browser had a session timer and as the server the player had to keep sending content based on the cookies it received from each of these browsers, to keep them engaged for as long as possible. The information collected through the cookies is annotated using different shapes and colors. The slides are shown on the next page.

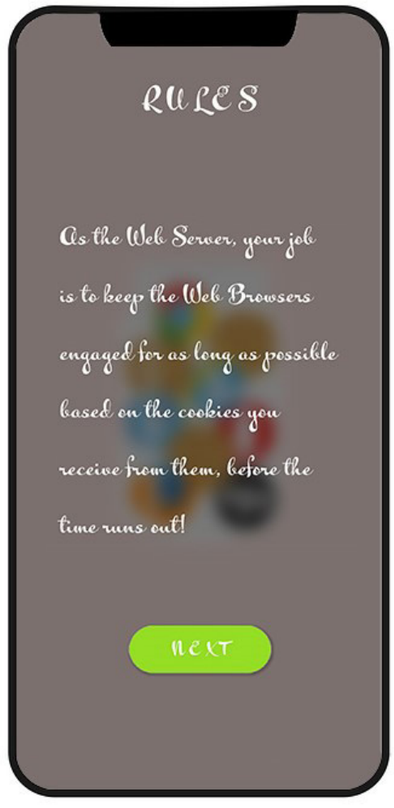
51

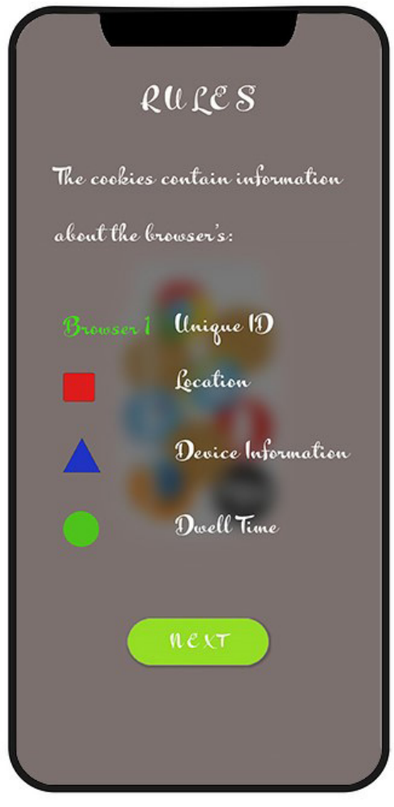
We use cookies

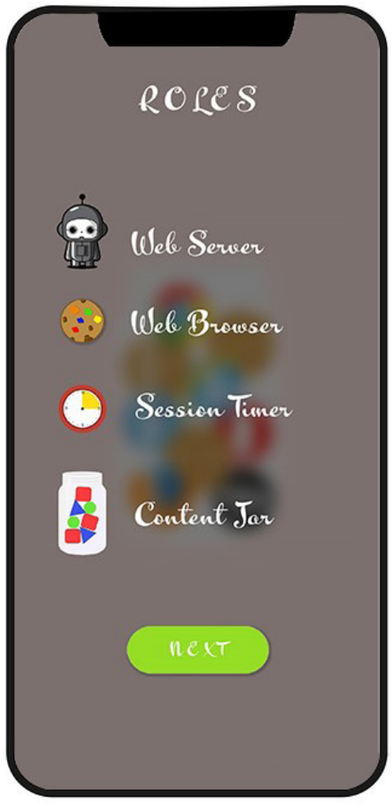
This website uses cookies to ensure
you get the best experience on our website.

ACCEPT

52


RULES
As the Web Server, your job is to keep the Web Browsers engaged for as long as possible based on the cookies you receive from them, before the time runs out!
NEXT


RULES
The cookies contain information about the browser's:
Browser 1
Unique ID
Location
Device Information
Dwell Time
NEXT


ROLES
Web Server
Web Browser
Session Timer
Content Jar
NEXT

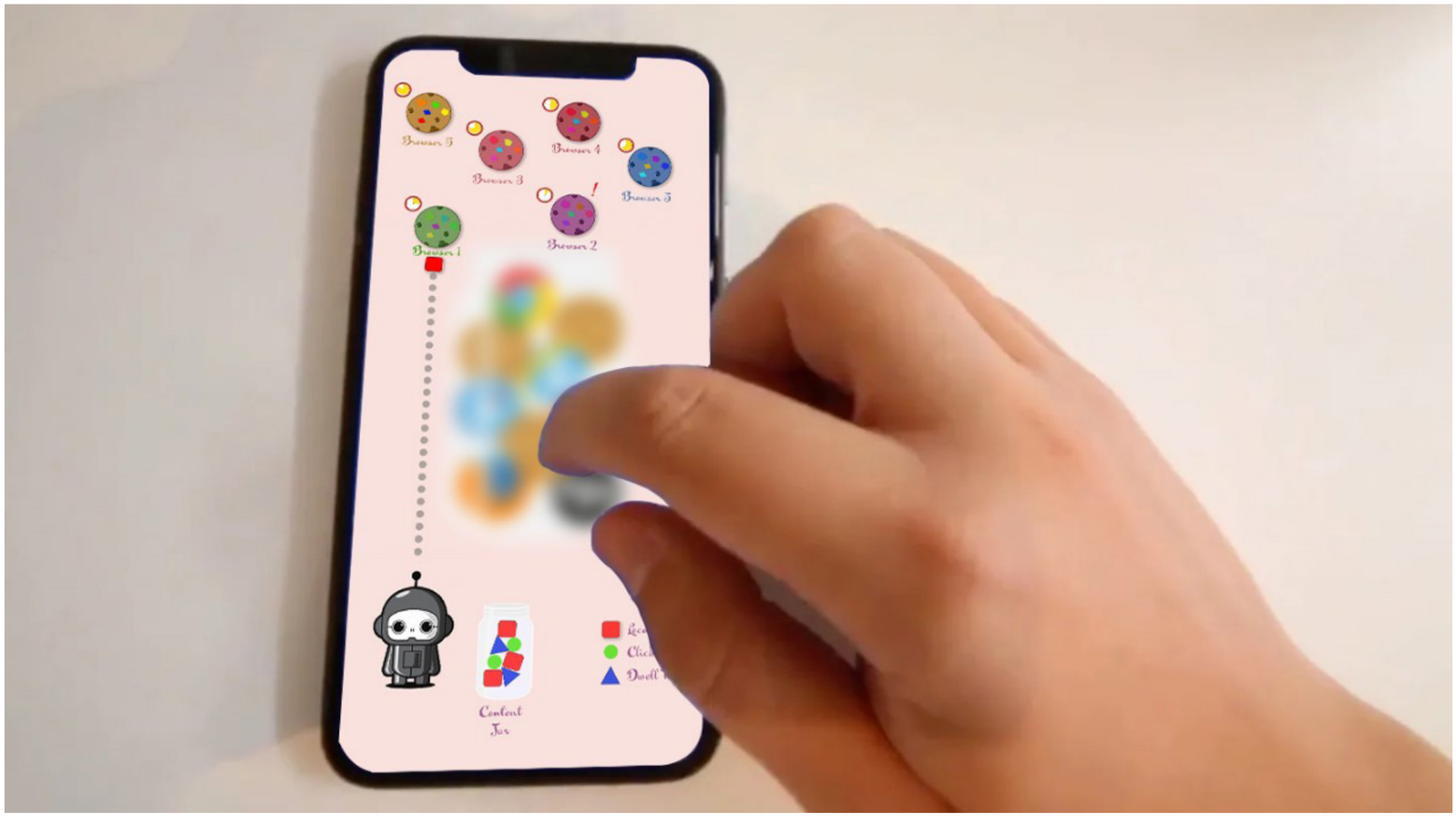

Browser 5
Browser 3
Browser 4
Browser 5
Browser 1
Browser 2
Content Jar

Figure 24 - 31: Slides from the Cookies presentation (Singh, September 2021)

The feedback from this presentation was enlightening. Everyone who was part of this presentation engaged and understood what kind of information is collected through internet browser cookies and why are they collected.

Getting this feedback confirmed that was important to make complex and abstract concepts around data and privacy tangible before people could start engaging with it. This also gave me a chance to reflect on the why I was not able to strike up interactions during the Open Studio.

The Inferences Presentation

After getting a positive response to the last presentation I decided to pitch an idea of another game called Inferences in my studio class. For this game the player had to make inferences about users based on data that was provided to them. Every time the inference was correct, the cutout of a human body would fill up, indicating that they had learnt more about the user. For every incorrect answer the player would be given another chance. The game ends with the entire human cutout filled up. A few screens from the prototype are shown on the next page.

Scan the QR code to view the prototype

Link to the project: shorturl.at/ouxBR

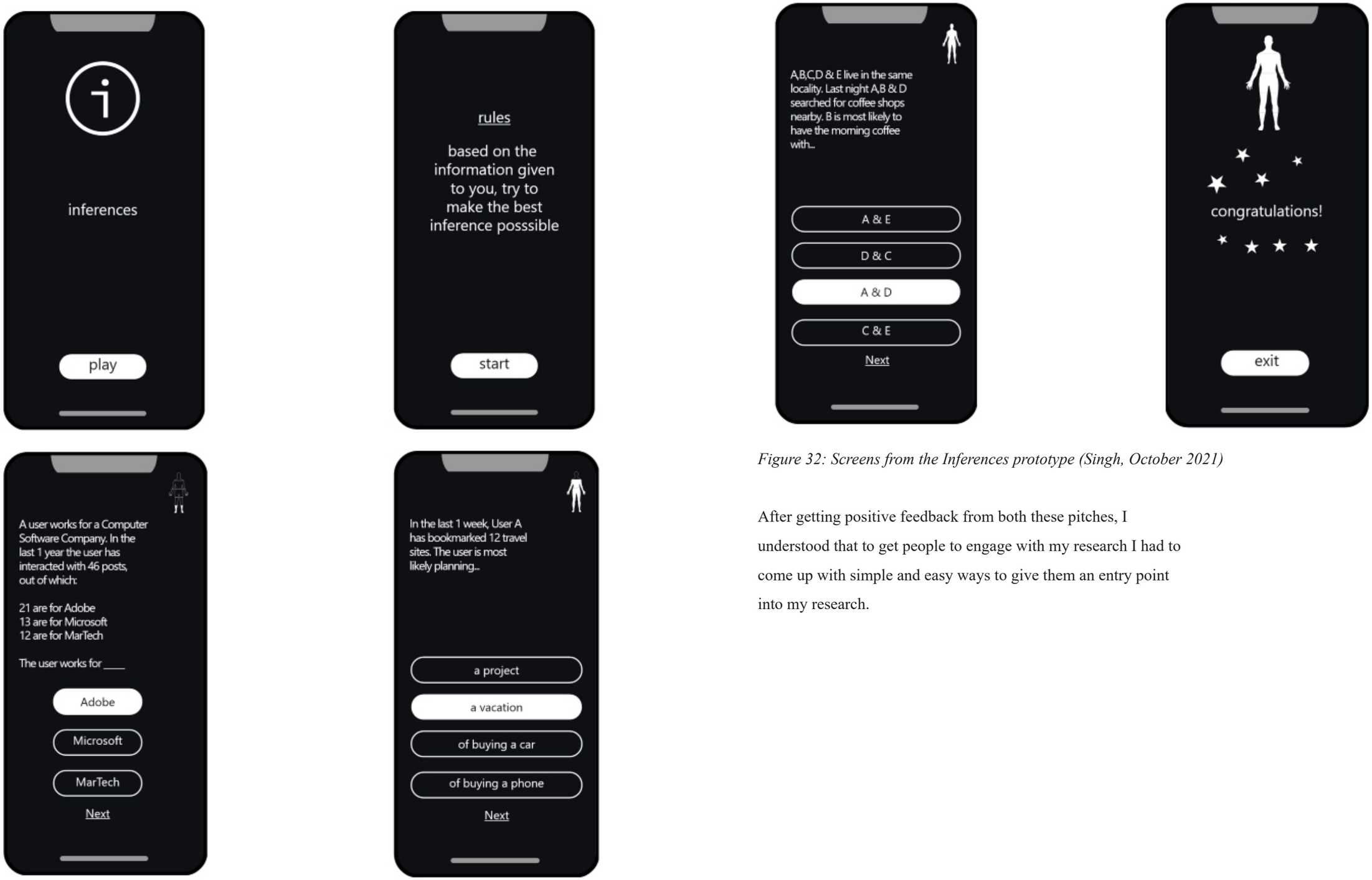


Figure 32: Screens from the Inferences prototype (Singh, October 2021)

After getting positive feedback from both these pitches, I understood that to get people to engage with my research I had to come up with simple and easy ways to give them an entry point into my research.

Research Narratives

As a final project for the Fall semester, I made short narratives with illustrations that would act as precursors to the different findings of my research. Every small project that I had done during my research had led me to new findings and research questions. I wrote this narrative as an attempt to invite my reader into my research. The protagonist of the narrative is Anthony who is a college student and wants to buy himself a new pair of headphones. The different chapters tell what goes on behind the scenes as Anthony looks for headphones and what happens once he buys those. After presenting these narratives to my class and getting yet another positive response I was finally able to give my audience an entry point into my research and let them engage with it.

Scan the QR code to view the narrative

Link to the project: shorturl.at/agGZ0

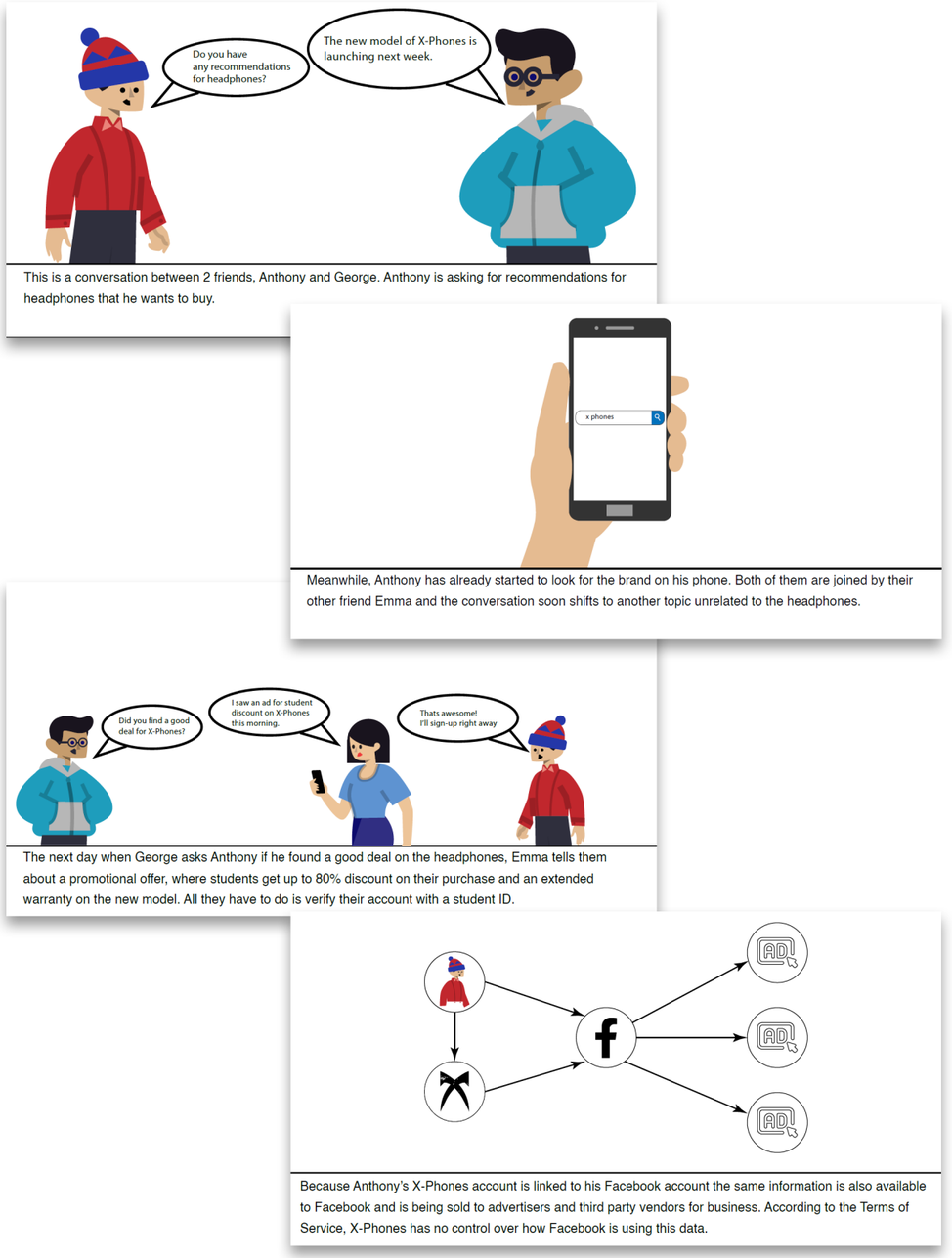


Figure 33: Screenshots from the Research Narrative

V - APPLICATIONS OF INFORMATION DESIGN

MITACS - ioAirFlow

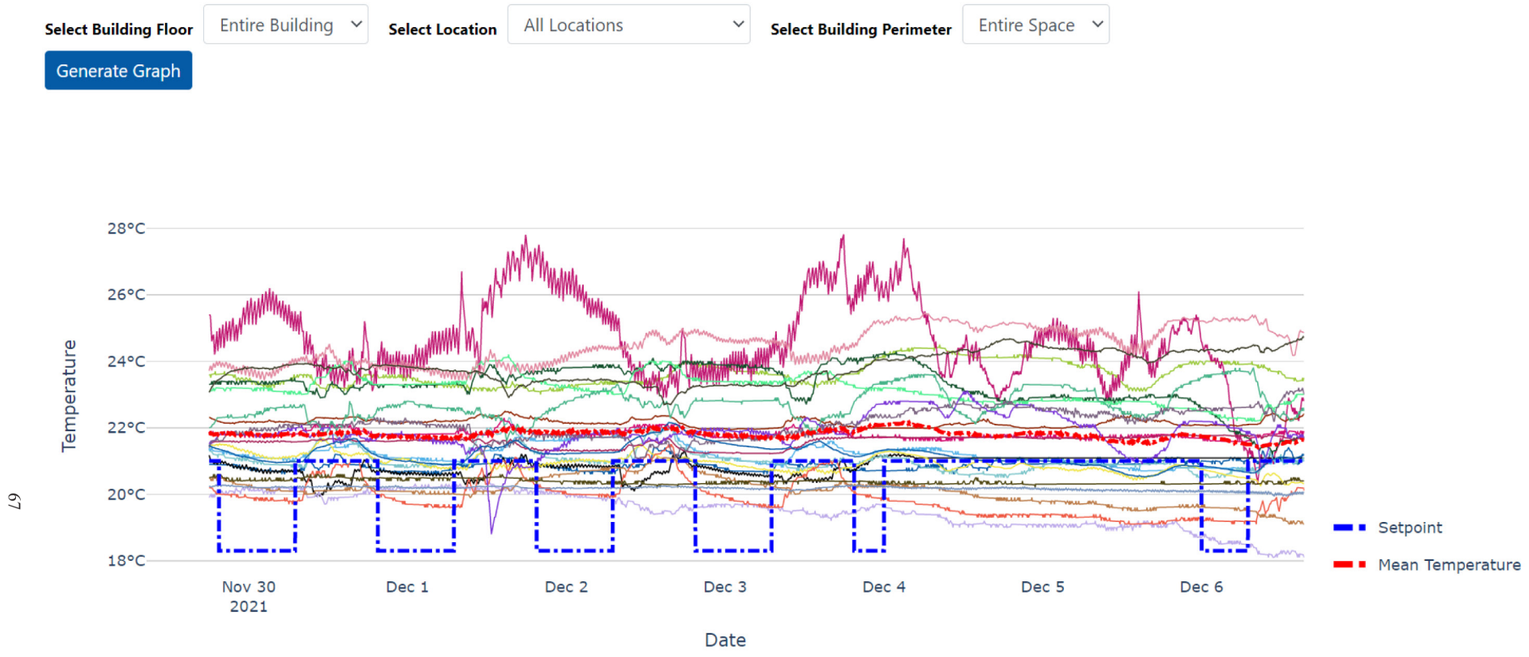
In November 2021, I started working on a research project with ioAirFlow through MITACS, to visualize complex building analysis data to increase comprehension of the public audience. This research study focused on the communication and transmission of technical and industrial analytic data, developed by our research partner, ioAirFlow. ioAirFlow tests the internal environment of commercial buildings by placing sensors throughout them that collect data on several variables related to thermal comfort and air quality. This raw sensor data identifies trends related to a building's indoor environmental quality. Because the current recipients of ioAirFlow's data reports are not always data- or engineering-trained professionals, complex data is not always understood or acted upon. This research internship focused on ways to develop information design to communicate ioAirFlow's data more effectively and efficiently. Using design methodologies of mixed methods and action research, I developed information design and data visualization to communicate, inform, visually analyze or compare, and prototype scenarios and challenges within ioAirFlow systems. Information design and data visualization can generate greater readability and accessibility in data interpretation and analysis. Communicating the ill health and inefficiencies of building environments through information design, creates agency for its users or receivers, allowing building inhabitants to better understand their own health in relation to air quality.

To date, I have worked on studying existing graphs on ioAirFlow's online portal and suggest certain changes that could lead to better reception by its clients. These suggested changes have been based on my prior research on using data visualization as a design tool to make complex data comprehensive. I have also been carrying out Quality Assurance tests on their software to identify areas where there are gaps and suggest changes to attain better user experience. Few graphs that were worked on are as follows:

Temperature v/s Time Graph:

The Temperature v/s Time Graph (*Figure 34*) on the ioAirFlow portal represents the temperature over time for the selected location. But when displaying data for 'All Locations' it was hard to read any data as the resulting graph was clustered.

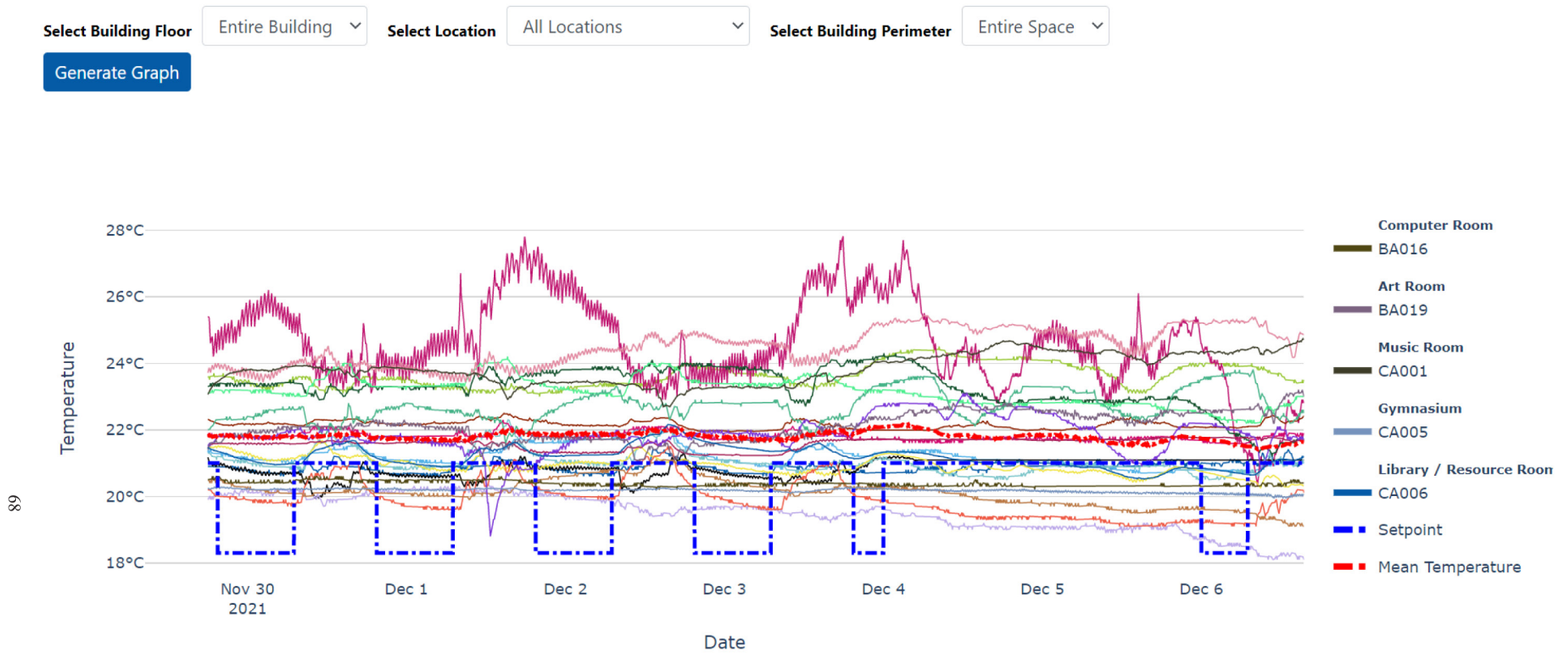
To counter this problem all sensors were grouped based on their location (*Figure 35*), this not only made differentiating between the sensors easy, but also made it possible to isolate (*Figure 36*) certain sensors to make the data readable.



Guide on How to Read This Graph

Time is labeled on the horizontal axis, and temperature is on the vertical axis. This figure represents the temperature over time for the selected location, with all of the individual sensors categorized by that location, as well as temperature setpoint illustrated for reference.

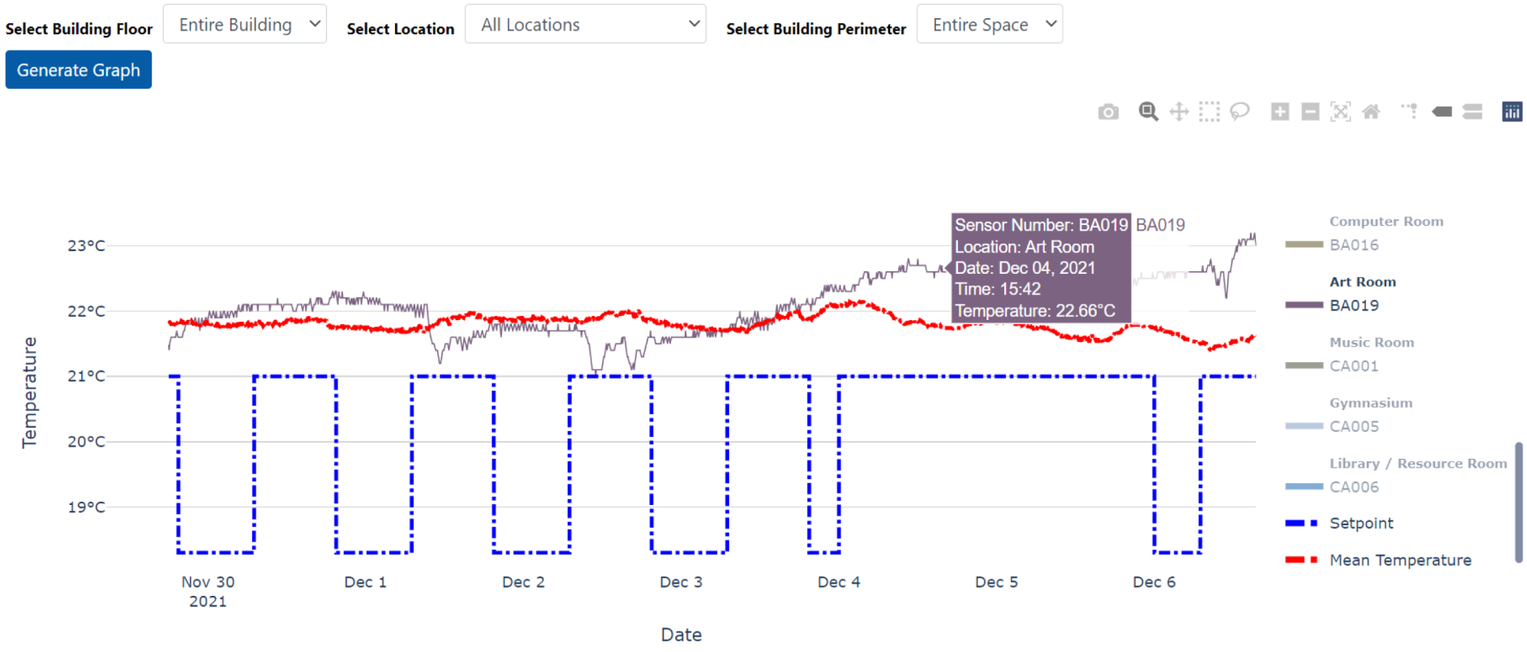
Figure 34: Older version of the Temperature v/s Time graph (shared with permission from ioAirFlow)



Guide on How to Read This Graph

Time is labeled on the horizontal axis, and temperature is on the vertical axis. This figure represents the temperature over time for the selected location, with all of the individual sensors categorized by that location, as well as temperature setpoint illustrated for reference.

Figure 35: Redesigned version of the Temperature v/s Time graph with sensors categorized according to location (shared with permission from ioAirFlow)



Guide on How to Read This Graph

Time is labeled on the horizontal axis, and temperature is on the vertical axis. This figure represents the temperature over time for the selected location, with all of the individual sensors categorized by that location, as well as temperature setpoint illustrated for reference.

Figure 36: Redesigned version of the Temperature v/s Time graph (isolated view) (shared with permission from ioAirFlow)

As of writing this thesis I am still working on developing surveys and questionnaires to help ioAirFlow organize and categorize user feedback. So far, working on this research project has given me the opportunity to test all my research findings from summer in real world scenarios.

VI - DISCUSSION AND CLOSING REMARKS

Conclusion

I began this research in information design, hoping that it would reveal areas of concerns around the use of data in online consent forms. But as the research progressed, it moved towards quantitative research and more expansive practices that repositioned me as an information and communications designer.

This research is applicable to anyone who is bound by online consent forms and therefore I am using information visualization and information design as a means to disseminate its findings. I believe that where ever there is design its primary purpose is to communicate with its users and viewers, so being a graphic designer in my understanding was solutionist as I was always designing something that was a solution to something else and at the same time I wanted to communicate that solution with my audience, but through this research that practice has transformed into being more discursive.

Upon reflection I see my research evolve through 3 stages, where each stage has been an open enquiry led by a research question. The 3 stages are as follows:

1. Ethics in Social Media: This stage is an investigation into ethical technology, how could we achieve it and what would it lead to?

2. Understanding Digital Consent: How are consent forms designed, where are the areas of concerns around the ethical use of data and how can Information Visualization help in making large amounts of data consumable for the public audience?

3. Inferences: What are ways in which design can reveal where inferences exist for the benefit of the users rather than for the benefit of the corporations?

This thesis is a work in "…quantitative research which is defined as empirical research that uses numeric and quantifiable data to arrive at conclusions. This type of research uses data which can be measured and independently verified. Such conclusions are based on experimentation or on objective and systematic observations and statistics" (Muratovski 2016).

Such research is done by measuring attitudes, behaviors and perceptions based on observations, or by collection of numerical data. This data is then used to prove or disprove ideas or assumptions and the analysis and conclusions are based on "...deductive reasoning - a logical process where repeated observations of a certain phenomenon will lead to conclusions based on high probability of occurrence" (Lewis-Beck et al, 2004). On the internet, users may have the agency to understand the use of their data but, they are often not aware of where to find it and that is where the gap is. Redesigning these systems to fill these gaps will be the first step towards harnessing that agency which will allow users to control their data and understand how it affects their decisions and of those around them.

This research is not solutionist but discursive that "…reveals and contests hegemonies" (Kraff 2020) in the online realm and leaves it up to the reader to make the final choice.

My research demonstrates that although information design is useful in making concepts and actions such as data exhaust, data mining and inferences transparent, it does not stop the use of such services. My design practice invites users to understand their role

in making informed decisions about the use of their data, providing agency and ethical transparency. It uses information design as a tool to visualize crucial but invisible aspects of social media. This can assist designers to understand the structures in which they can contribute to future design and social media users in understanding true consent and the impact of their participation in social media spaces.

VII - REFERENCES

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Appendix A

REB Application

ROMEO - Researcher Portal

Application for Human Research Ethics - REVISED 2017

Project Info.

File No: Ref No : 1898

Project Title: DATA AND BEHAVIORAL SURPLUS

Principal Investigator: Dr. Bonne Zabolotney (Faculty of Design + Dynamic Media)

Start Date: 2021/10/01

End Date: 2021/12/31

Keywords: Information Design, Ethics

Project Team Info.

Principal Investigator

Prefix: Dr.

Last Name: Zabolotney

First Name: Bonne

Affiliation: Faculty of Design + Dynamic Media

Position: Associate Professor

Email: bzabolot@ecuad.ca

Phone1:

Phone2:

Fax:

Primary Address: Emily Carr University of Art + Design, 520 East 1st Avenue, Vancouver, BC V5T 0H2

Institution: Emily Carr University of Art and Design

Country: Canada

Other Project Team Members

Prefix: Mr.

Last Name: Singh

First Name: Aman

Affiliation: Faculty of Graduate Studies

Role In Project: Co-Investigator

Email: asingh44878@ecuad.ca

Common Questions

1. Project Ethics Details

1.1 Anticipated date that work with participants will begin.

2021/10/01

1.2 Anticipated date that work with participants will end.

2021/12/31

1.3 Type of Project

Graduate Thesis Project or Dissertation

1.4 If you have chosen “Other” in the selection above, please describe here

1.5 Does the research fall within the jurisdiction of another research ethics board or body? If so, all approvals need to be in place before participant research can begin.

No

1.6 If you answer ‘Yes’ to question 1.5, please list the names of all of the Research Ethics Board(s) to which you have applied for this project.Include the approval date(s). These dates must match the dates in the certification documents that you attach to this application. Please follow this format: UBC GREB | January 15, 2017 to January 15, 2018

1.7 Are you a student (graduate or undergraduate) applying for ethics approval for a thesis project?

Yes

1.8 If you answer ‘Yes’ in 1.7, ensure that the Principal Investigator in this application is your thesis supervisor and add your name to the “Other Project Member” category at the bottom of the page. Please click the info button for important instructions.

1.9 Have all of the named researchers completed the TCPS2:CORE (Course on Research Ethics)? If yes, upload each of the certificates using the attachments tab of this application. No application will be processed until all of these certificates are supplied. If you have comparable certification from another site, please upload the certification with an explanation.

Yes

1.10 If you have uploaded comparable certification from a source other than the TCPS2:CORE, please describe here. (Provide a link to the program or an institutional description, if available)

1.11 For student researchers (if you answered ‘yes’ in 1.7) - describe any potential conflicts of interest for the researchers such as non-academic benefits, (eg. financial remuneration, patent ownership, employment, consultancies, board membership, share ownership, stock options, etc.) expected by the researchers, partner organizations, or collaborators as a result of the research. Also describe any non-disclosure agreements or any other restrictions anticipated to affect the research

1.12 Attachments checklist - Ensure that the following documents are attached to this application using the Attachments tab. Incomplete application will not be reviewed.- TCPS2:CORE certificates (or equivalent) for each of the researchers.- All Recruitment materials (also see ‘Research Participants and Recruitment’ tab)- All consent and release materials (also see the ‘Consent’ tab)- Other relevant documents

2. Risk & Review

2.1 Researchers are invited to complete the “Risk and Review”
assessment to determine the level of risk and review required for their project. An optional tool is available here: http://www.connect.ecuad.ca/research/reb/applications

2.2 From the ‘Risk and Review’ assessment, the proposed research project is expected to require the following (choose one). Do not attach the ‘Risk and Review’ assessment Level 2 - Low Risk

3. Summary of Proposed Research

3.1 Summary of Proposed Research: Describe the purpose of the proposed research project in non-technical language (200 words max, please see info button for details) Systems that make decisions about people based on their data, produce substantial adverse effects that can massively limit their choices, opportunities, and life chances. The most predictive raw-material supplies come from intervening in our experiences to shape our behavior in ways that favor capitalists commercial outcomes. While using the internet, we give out personal data in the form of Name, Phone number and email address. But there is a lot of other information that gets recorded outside of our knowledge. This data is called data exhaust, which we do not give out voluntarily but can be inferred by the way we access the internet over a certain period.

This data exhaust, when shared with third party advertisers and partners is what fuels the targeted ads industry and gives access to study user behavior.This thesis research aims to validate the theory of interpreting behavioral data to make inferences about users. The research will be conducted using information from the Co-Investigator’s LinkedIn account’s connections which is publicly available and has been consented to before sharing. Names of all connections will be masked with the use of pseudo names. A written consent will also be taken from all connections prior to the start of the research to give them a free choice of opting out.

3.2 Methodology (200 words max):Describe this project’s methodological approach to participant research activities. Include details on what will be expected of participants. Attach survey, interview questions and other documents related to the research methods. Include a timetable for participant research activities.

Quantitative Data Collection: Using information design models and communication materials we will develop surveys and questionnaires directed towards users to develop quantitative feedback and user data. The information collected data scraped from LinkedIn.com will be the basis for content analysis. This analysis may also be subject to the development of information design, as a way to systematically organize and categorize user feedback.Prototyping and User-testing. The content analysis, developed from quantitative data collection, will also be reviewed to take user feedback and testing into account, and to make improvements from a user’s perspective. User testing will also take place with communication materials, including printed material and websites. This prototyping phase may require multiple iterations and refinements of materials, and could lead to further user testing and surveys. Participant expectation: The participants will be informed of the duration of the project and consent will be taken from each connection before starting the project. Names of the participants will be anonymized and no participant will be identifiable. The occupation of the participants will be replaced with non-identifiable, generic categories of the industry sector they work in.

3.3 Professional Expertise / Qualifications:If any of the research activities require professional expertise or recognized qualifications (eg. first aid certification, registration as a clinical psychologist or counsellor, health practitioner qualifications or expertise, etc), describe them here.

4. Research Participants and Recruitment

4.1 Participants: Indicate the groups that will be targeted for recruitment in the research project. Describe any specific inclusion or exclusion criteria (example: undergraduate students, specific age ranges, genders, etc)

Graduate Students

Working Professionals

Researchers

Professors

4.2 Number of Participants: What is the expected number of participants?

30

4.3 Recruitment: Describe how participants will be recruited, and by whom. Attach any materials that might be used for recruitment (eg. email text, posters, fliers, advertisements, letters, telephone scripts).

Participants will be informed about the project in the form of a consent form that will be sent to them via email. The consent form will include all the details about the project, including: Timeline of the project, Steps to mitigate the risks involved for the participants, Information about where the findings will be stored and how the results will be shared with the participants. The participants will be given a free choice to not be a part of the project and data from the profile of such participants will not be used for the research.

4.4 Incentives: Will participants be offered incentives to encourage their participation?

No

4.5 If yes to above, describe the incentive plans and the rationale for using incentives.

4.6 Participants and vulnerability: Are there circumstances that cause the participants or participant group(s)to be vulnerable in the context of research?

No

4.7 If yes to above, describe the particular way participant vulnerability may be affected by the research and any measures that are planned to address potential risks associated with these vulnerabilities.

4.8 Are people from First Nations, Inuit, Metis or other Indigenous backgrounds being specifically invited to participate in this research?
No

4.9 If yes to above, describe any additional reviews/approvals/consultations/cultural protocols required to complete this research. Ensure your rationale for engaging with specific individuals or communities is described in 3.1.

4.10 Research Locations : Select all locations where participant research will occur.
Emily Carr University

4.11 Provide details of the locations listed above
The research will be conducted on the Emily Carr University of Art + Design campus in Vancouver, Canada. All the findings and results of the research will be stored in a password protected laptop. Only the Principal Investigator and Co- Investigator will have access to this information. All the data collected throughout the research will be stale dated after a certain point of time.

4.12 Participant Access to Research Results: Describe your plans to provide or share results of your research with participants. This might include invitations to final presentations or exhibitions, or copies of publications produced. Content here should be consistent with descriptions in the consent forms provided. All the results and findings pertaining to each participant of the research will be shared with them via email in the form of a *.pdf* document.

5. Risk vs Benefit
5.1 Describe any known or anticipated direct or indirect benefits to the research community or society that may emerge from the proposed research.
This research work will feature in the Co- Investigator's published thesis and will exist as an available resource for students and researchers in the field of design, data, ethics and privacy.

5.2 Risks of Research: Check any that apply - list all risks likely to be faced by participants in the proposed research. Personal/Sensitive information: the proposed research involves the disclosure of information that is intimate or sensitive in nature.

5.3 Describe the risks identified and contextualize them related to risks faced by participants in everyday activities. See info button for details.
Although the Name, Age, and Pronouns of participants will not be included in the documentation of their interactions on LinkedIn and any information that could personally, the participants will be masked. However, as a requirement of the research, participant's area of work will be included in the research. All precautions will be taken to keep this information as generic as possible. For example, if the participant is a Product Designer working with Honda Motors, their area of work will appear as Automobile Industry.

5.4 Risk Mitigation: Describe how the researchers will mitigate the risks identified above. Describe whether the researchers have the skills to deal with identified risks or whether additional experts will be recruited. Describe any resources that will be made available to participants.

To mitigate the risks involved, Names of the participants will be anonymized and occupations will be replaced with non-identifiable generic categories. All the findings and results coming out of this research will be shared with participants in the form of a pdf document via email. It will be ensured that results shared will be pertaining to that particular participant only.

6. Consent

6.1 Consent Documents: Check all of the following consent and release documents that will be used in this project.

Combined Invitation and Consent Form

6.2 Describe any special consent provisions selected above

7. Confidentiality and Security

7.1 Confidentiality: Indicate the level of confidentiality built into the research design.

Coded - direct identifiers are removed from the research materials (data) and replaced with coded identifiers. There exists the possibility that with access to the codes it may be possible for a third party to re-identify participants.

7.2 Describe the rationale for the collection of identifiable research materials

7.3 Storage & Destruction of Confidential Material: Describe in detail how identifiable materials/ data will be collected, stored, retained and destroyed at the end of the data life cycle.

All data collected as part of the research will be stored in a password protected laptop of the Co-Investigator. Only the Co-Investigator and Principal Investigator will have access to this data. Any files remaining on the laptop will be permanently deleted.

7.4 Location of Data: Describe the location for long-term storage of confidential materials

All data collected as part of the research will be stored in a password protected laptop of the Co-Investigator. Only the Co-Investigator and Principal Investigator will have access to this data.

8. Monitoring

8.1 Once REB approval has been obtained, it is the responsibility of the PI to maintain the ethics file in up-to-date good standing and make appropriate reports (such as Severe Adverse Event reporting) and amendments (please see Info button for more details). Is it expected that the proposed research will require additional monitoring beyond the minimum annual requirement?

No

8.2 If you answered yes to the above, please describe your plans for this.

8.3 Is it expected that the proposed research will continue beyond the conclusion of this project?

No

8.4 If yes to above, describe in detail.

Attachments

Doc / Agreement: Approval/Certification from other institutions or partner organizations

Version Date: 2021/03/19

File Name: tcps2_core_certificate.pdf

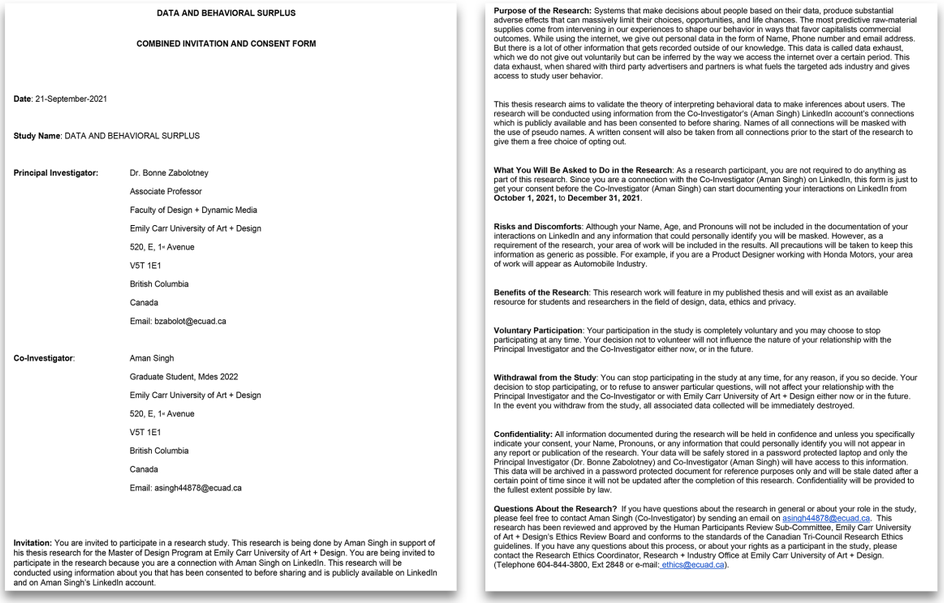
Description: TCPS2_Core_Certificate

Doc / Agreement: Consent Materials

Version Date: 2021/09/26

File Name: Combined Invitation & Consent Form.pdf

Description: Combined Invitation and Consent Form for the recruitment of participants.



DATA AND BEHAVIORAL SURPLUS

COMBINED INVITATION AND CONSENT FORM

Date: 21-September-2021

Study Name: DATA AND BEHAVIORAL SURPLUS

Principal Investigator: Dr. Bonne Zabolotney
Associate Professor
Faculty of Design + Dynamic Media
Emily Carr University of Art + Design
520, E, 1st Avenue
V5T 1E1
British Columbia
Canada
Email: bzabolot@ecuad.ca

Co-Investigator: Aman Singh
Graduate Student, Mdes 2022
Emily Carr University of Art + Design
520, E, 1st Avenue
V5T 1E1
British Columbia
Canada
Email: asingh44878@ecuad.ca

Invitation: You are invited to participate in a research study. This research is being done by Aman Singh in support of his thesis research for the Master of Design Program at Emily Carr University of Art + Design. You are being invited to participate in the research because you are a connection with Aman Singh on LinkedIn. This research will be conducted using information about you that has been consented to before sharing and is publicly available on LinkedIn and on Aman Singh's LinkedIn account.

Purpose of the Research: Systems that make decisions about people based on their data, produce substantial adverse effects that can massively limit their choices, opportunities, and life chances. The most predictive raw-material supplies come from intervening in our experiences to shape our behavior in ways that favor capitalists commercial outcomes. While using the internet, we give out personal data in the form of Name, Phone number and email address. But there is a lot of other information that gets recorded outside of our knowledge. This data is called data exhaust, which we do not give out voluntarily but can be inferred by the way we access the internet over a certain period. This data exhaust, when shared with third party advertisers and partners is what fuels the targeted ads industry and gives access to study user behavior.

This thesis research aims to validate the theory of interpreting behavioral data to make inferences about users. The research will be conducted using information from the Co-Investigator's (Aman Singh) LinkedIn account's connections which is publicly available and has been consented to before sharing. Names of all connections will be masked with the use of pseudo names. A written consent will also be taken from all connections prior to the start of the research to give them a free choice of opting out.

What You Will Be Asked to Do in the Research: As a research participant, you are not required to do anything as part of this research. Since you are a connection with the Co-Investigator (Aman Singh) on LinkedIn, this form is just to get your consent before the Co-Investigator (Aman Singh) can start documenting your interactions on LinkedIn from **October 1, 2021,** to **December 31, 2021**.

Risks and Discomforts: Although your Name, Age, and Pronouns will not be included in the documentation of your interactions on LinkedIn and any information that could personally identify you will be masked. However, as a requirement of the research, your area of work will be included in the results. All precautions will be taken to keep this information as generic as possible. For example, if you are a Product Designer working with Honda Motors, your area of work will appear as Automobile Industry.

Benefits of the Research: This research work will feature in my published thesis and will exist as an available resource for students and researchers in the field of design, data, ethics and privacy.

Voluntary Participation: Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer will not influence the nature of your relationship with the Principal Investigator and the Co-Investigator either now, or in the future.

Withdrawal from the Study: You can stop participating in the study at any time, for any reason, if you so decide. Your decision to stop participating, or to refuse to answer particular questions, will not affect your relationship with the Principal Investigator and the Co-Investigator or with Emily Carr University of Art + Design either now or in the future. In the event you withdraw from the study, all associated data collected will be immediately destroyed.

Confidentiality: All information documented during the research will be held in confidence and unless you specifically indicate your consent, your Name, Pronouns, or any information that could personally identify you will not appear in any report or publication of the research. Your data will be safely stored in a password protected laptop and only the Principal Investigator (Dr. Bonne Zabolotney) and Co-Investigator (Aman Singh) will have access to this information. This data will be archived in a password protected document for reference purposes only and will be stale dated after a certain point of time since it will not be updated after the completion of this research. Confidentiality will be provided to the fullest extent possible by law.

Questions About the Research? If you have questions about the research in general or about your role in the study, please feel free to contact Aman Singh (Co-Investigator) by sending an email on asingh44878@ecuad.ca. This research has been reviewed and approved by the Human Participants Review Sub-Committee, Emily Carr University of Art + Design's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study, please contact the Research Ethics Coordinator, Research + Industry Office at Emily Carr University of Art + Design. (Telephone 604-844-3800, Ext 2848 or e-mail: ethics@ecuad.ca).

Legal Rights and Signatures:

I _____ *(your name)*, consent to participate in the research *DATA AND BEHAVIORAL SURPLUS* conducted by *AMAN SINGH*. I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights by signing this form. My signature below indicates my consent.

Signature _____ **Date** _____

Participant

Signature _____ **Date** _____

Principal Investigator

Figure A-1: Combined Invitation and Consent Form for the Data & Behavioral Surplus project

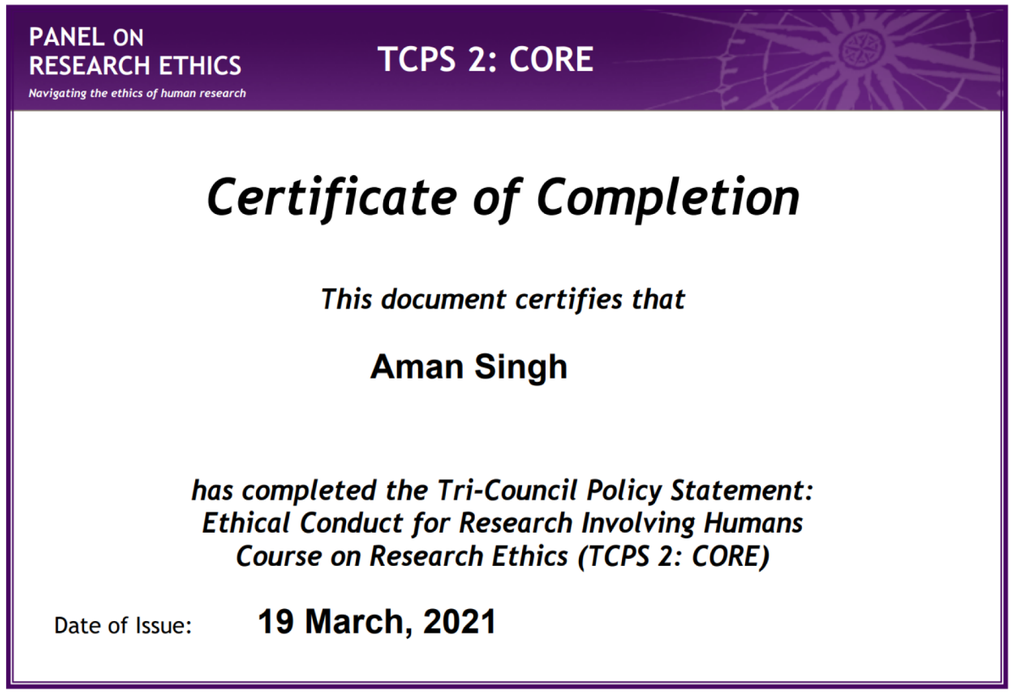

PANEL ON
RESEARCH ETHICS
Navigating the ethics of human research
TCPS 2: CORE
Certificate of Completion
This document certifies that
Aman Singh
has completed the Tri-Council Policy Statement:
Ethical Conduct for Research Involving Humans
Course on Research Ethics (TCPS 2: CORE)
Date of Issue: 19 March, 2021

Figure A-2: TCPS 2: CORE Certificate