

Computing Project Report

Status Project report

Graf_us report

Group names and email

Richard Emmerton remme001@gold.ac.uk

Asaph Kalala akala001@gold.ac.uk

Fabian Simon fsimo001@gold.ac.uk

Rahul Mohite rmohi002@gold.ac.uk

Santiago Lopez Paredes slope004@gold.ac.uk

Index

Introduction

About Graf_us

Business model

Group structure

Litrature

Key words to understand the report

Initial steps of action

Specification

Technical specification

Functional specification

Stakeholders

Week 1 report

Project manager comments for week 1

Goals for week 1

Why have we chosen 5 users for a usability test

Task for each person

The creation of teams to achieve certain tasks

Week 2 report

Project manager comments for week 2

Review of week 1

Market research

Social media research

Alternative network research

Research done into design

Research into technology

Using LinkedIn API

Web Scraping

Collecting Information

Goals for week 2

Week 3 report

Project manager comments for week 3

Review of week 2

Interviews

Paper prototypes

Goals for week 4

Week 4 Report

Project manager comments for week 4

Review of week 4

Higher fidelity design

Tools that can be used for collecting data

Goals for week 5

Week 5 report (reading week)

Project manager comments for week 5

Review of week 4

Survey method

UI diagrams / notes

Use case diagram

User Journey

Activity diagram

Sequence diagram

Goals for week 6

Week 6 report

Project manager comments for week 6

Review of week 5

Research

Design

Goals for week 7

Week 7 - 8 report

Project manager comments for week 7 & 8

Review of week 6

Tech

Flow chart
Data base
Class diagram
Goals for week 9

Week 9 report

Review of week 8

Research into social network analysis

How did development go

Ethical audit

Formative evaluation

Conclusion

Next steps for term 2

Reference list

Appendix

"You only know who you know and maybe most of the time, your friends know the same sort of people you do. But if just one of your friends is friends with just one other person who is friends with someone not like you at all, then a connecting path exists. You may not be able to use that path, you may not know it's there, and finding it may be difficult. But it is there"

- Six degrees the science of a connected age Duncan J.Watts pg 83

Introduction

Concept / what is the product we are making

About Graf_us:

With the introduction of social media, virtual calls and newer technologies in a post covid world, the way we network has been permanently changed. This is even more true when it comes to young people entering the workforce today. However, as great as these changes are, it is often difficult to see the scope of the networks we create — That is where Graf_us comes in. We help you visualise your network to help you see the connections in your network that you might have missed.

Business model:

To provide our service for free to students/job seekers to allow them to visualise and strengthen their ability to network. In exchange for our free service, we will be able to collect privileged information showing how networks of people are connected. We can use this privileged information to help companies identify new employees that are more compatible with the culture at the company. This software will allow us to provide a service, which will allow us to follow the SaaS (software as a service) model.

Group structure:

The group is made out of three teams. Each team will contain two people to ensure someone else can pick up if one person is unavailable. Rahul and Santiago had previous experience setting up a database, so they were given the responsibility for back-end development and will be known as the tech team.

Fabian has front-end development experience; therefore, he will be on the design team.

Richard is interested in how structures are built, so he will be on the research team because we are looking at how people are structured in a social group.

Asaph will be placed on both the research and design teams to help with side tasks.

Richard is also good at paperwork and reports, so he is the project manager.

Literature:

This YouTube video is a fun introduction into network science to help you get a brief understanding:

https://www.youtube.com/watch?v=TcxZSmzPw8k&ab_channel=Veritasium

Key words to understand the report

Cluster / Grouping: Groups of people who are connected through shared values or spaces.

Initial steps of action

Stages of development:

Stage 1: Conduct market research, to narrow the scope of the project and to identify what resources we have available to work on the project

Stage 2: Begin to work on a prototype

Week 1 plan 2

Stage 3: Conduct user research to get data to evaluate goals

Stage 4: Update project in response to user feedback

The group will work on weekly intervals. This is because working on smaller intervals would require micromanaging, which would be exhausting for everyone in the team. The team also has commitments outside of the project.

Working on intervals longer than one week would allow the group's vision to diverge over that timeframe and allow communication to break down. This is why we believe that intervals of one week are the most appropriate.

We will have weekly meetings where we will fill each other in on our progress, address any emerging issues, and develop the team's vision.

Specification

Technical specification

Aa Social Network App Feature	≡ Description	≡ Notes
<u>Social authorization</u>	Users can register/login via a social network	- One social network - Facebook or Twitter or G+ (two or more networks influence the estimate) - Transfer of account photo and full name included - Creation of Facebook developer accounts (develop, staging, production) - Facebook review process and support communication are handled by a project manager and not included into the estimate
<u>Feed</u>	Users can see a feed with posts by one criterion/logic (basic)	- Each next criterion/logic influences the estimate

Aa Social Network App Feature	☰ Description	☰ Notes
<u>Post creation</u>	Users can create posts (basic)	- Text, photo, geolocation
<u>Post likes</u>	Users can like and unlike post	-
<u>Social notifications</u>	Users can like and unlike post	- New likes, comments on your posts, new friends - Automatic refreshing of displayed data on the fly should be implemented additionally - Push notifications in background are not included (should be implemented additionally)
<u>User profile</u>	Users can manage a profile (basic)	- Personal information (text fields, birthday, gender), one photo
<u>Search</u>	Users can search for one type of entity by one criterion	- Each next entity influences the estimate
<u>Chat</u>	Users can chat (basic)	- List of chats - Send a text message or image, list of messages (with time and a user avatar) - Push notifications for new messages and new chats
<u>Push notification module</u>	Integration of a module for push notifications (hidden for users)	- Unsubscribe from push notifications if a user is logged out - Specific push notification implementation influences the estimate
<u>Analytics</u>	Basic integration with analytics (hidden for users)	- One Analytics tool (except Fabric) - Flurry or Google Analytics/ Firebase or MixPanel - Basic SDK configuration (minimum analytics - OS versions, devices etc.), screen tracking for Android - Develop, staging, production
<u>CMS: Admin authorization</u>	Admins can register, log in, and log out	- Log in, log out
<u>CMS: Admin management</u>	Admins can manage other admins	- CRUD on administrators - Full name, email
<u>CMS: User management</u>	Admins can manage users	- Basic sorting, filtering and searching (by name, by email, by ID) included
<u>CMS: Reported user management</u>	Admins can manage reported users	- One entity (a photo or user or post), each next entity adds % to the estimate - Can be removed - Sorting by amount of claims

Technical Specification

What the system will achieve:

Graf_us will allow users to connect to one another through a platform that contains a different kind of User interface, focusing on visualising data.

The system will not allow a user to follow another. We would like to implement that as part of our future improvements.

How the system will be built:

The Model Template View (MTV) concept of building this project will be applied.

The back-end system will be written in Python using the Django framework.

Data will be stored using the Relational Database Management System (RDBMS) PostgreSQL.

React will be used for the front-end, along with the D3.js library, allowing for graph plotting and representation of connections as nodes.

GitHub will keep track of all changes made in the codebase and version control.

Possible Risks:

GraphQL: At the beginning, GraphQL looked to be a good idea to retrieve information from the Database and pass it along to the view in an MVC concept. After looking further into the project's specifications, it would be overengineering to continue with that idea.

APIs: These were going to be used to gather data from other sources, such as LinkedIn. However, after reassessing the project, it is clear that a database solution will gather as much information as necessary while the user is aware of what they share with Graf_us. On top of this, the system will be scalable, as other features can be implemented independently of third-party organisations.

Functional specification

Specification	Why this was chosen	How this will be accomplished	How will success be measured
User can identify important links in the network	This will allow the user to focus their efforts when networking	A graph will be drawn to show the connections to the users	A series of user tests will be conducted to show if users can identify key people of importance in a network
Users can discover new people	This will allow people to network	We will show adjacent connections that their known connections have	We will conduct usability test to see if the new connections are deemed useful.
To show how clusters can affect groupings	By identifying different groups we can do social network analysis.	We will use algorithms to find clusters of people	We will be able to see different clusters that emerge in our graphs.

Stakeholders

For our project, we have two stakeholders in order to diversify our business plan.

One of our stakeholders will be students / younger people who are looking to network. This is because when people begin to network during university and when they enter the workplace, the number of people increases very quickly, making it challenging to keep up with all the new people they meet. In addition to meeting so many new people, it is also challenging to get an understanding of someone's background.

Because of this, it makes it difficult to see whom they should aim to network with and keep track of their connections. Our application should be able to give them a visual way to understand their network. We can also suggest certain connections within their network to help them focus their networking efforts.

The other group of stakeholders will be the human resource department looking to bring in new talent. By being able to see how applicants are connected to different groups of people, they can choose candidates who have a lot of connections to take advantage of their network.

They can also use the tool to see each candidate's personality by viewing their network and identifying if they will fit into the culture at the company.

Week 1 report

Project manager comments for week 1:

For week 1, we begin at stage 1 of our plan. In stage 1, we plan to conduct market research to see what current applications are on the market and to see what resources we have access to. This will help us identify a problem in the market that is not currently being addressed. We can then create clear goals for how we can solve this problem.

Stage 1 is very important because it will act as the foundation of the project and will define the scope of the project. Once we begin to have a scope of the tasks we need to do, we can work on the problem.

It may sound naive to jump into the problem quickly, but this is intentional. I do not know how quickly and how willing each person can work on a given task. By giving them these tasks early on, I can establish my expectations for the team and allocate tasks accordingly.

Goals for week 1:

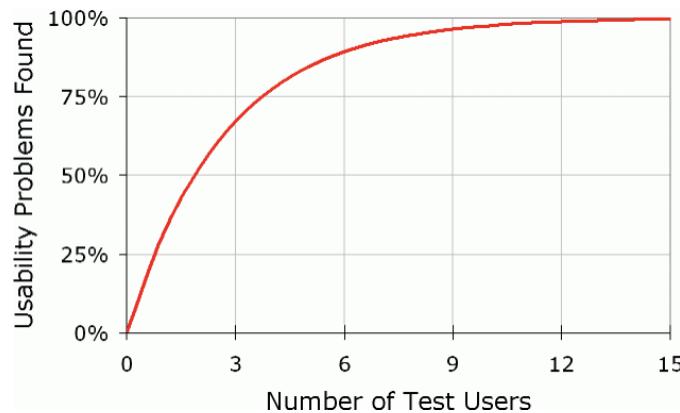
Goal	Reason	How to measure success
To identify how we can create a product that users will want to use	By identifying a product that users will want to use we can create clear goals to solve a problem for the users.	We will create a paper prototype and conduct a usability test for 5 users.
Research will need to be done to identify what people want from networking applications and what services are currently out there to avoid repetition	This will be done to identify key features and key points of data we will need to develop for our product.	We will have a list of key features / techniques that people use when networking that we can refer to
know what resources we can have access to	To know how limited our access to peoples data on other networking services. This will limit affect our ability to map out a network. If data is too restricted we will not be able to map out a network	To have an in-depth understanding of the different tools we can use to access peoples data
To have a look at how we can make our product visually attractive.	This is to make our tool useful to everyday people who want to network and to not be a tool used by trained analysts.	We will create a paper prototype and conduct a usability test for 5 users.

Why have we chosen 5 users for a usability test:

According to an article written by the Nielsen Norman Group (2000) they believe that a usability test with five people is an appropriate number for a usability test. This is because to be able to identify all usability problems in the design you would need fifteen people. However, finding the resources to get 15 people to do a usability test is very resource intense, and we would not realistically be able to sustain such in-depth testing.

A more manageable and appropriate number of people to test is five people. According to the article, this is more realistic to do and would show us 85% of usability issues. Again, a figure we found satisfactory would allow us to test multiple iterations of our program.

This will allow us to do consistent usability testing with every iteration to identify any issues that may arise with each iteration.



Graph taken from the Nielsen Norman group article

Task for each person:

For this week, we can try to conduct research for our given group and create a short five-minute presentation to show the group what we have learned. It is just a prompt to get us started.

The creation of teams to achieve certain tasks

For the project, we have decided to create three teams; design, research and technology. This will allow for tasks to be assigned more efficiently and help with accountability.

The technology team will be made out of Rahul and Santiago. This is because both of them have experience setting up back-end technologies and are interested in the space.

The design team will be made out of Fabian because of his previous experience and ability to quickly create high fidelity prototypes and Asaph, who is interested in that space.

The research team will be made out of Richard, Rahul and Asaph. Richard is acting as the project manager, and as the project manager, the project's vision will be heavily affected by Richard. By having Richard in the research team, he can have access to the most up to date information that will help guide the project. Rahul also has an interest in research and has experience writing an academic paper. To take advantage of these skills, Rahul will also be doing research.

Asaph has been placed on both the research and the design team. This is because Fabian was already very confident with his ability to create the design elements, and having Asaph being responsible for only a tiny part of the design would be a waste of resources.

Week 2 report

Project manager comments for week 2:

This week has been an exhilarating week. The group is very motivated about the task. However, Richard has a concern about the scope of the project. Because everyone is so excited, it is challenging to bring in the project's scope. However, we want to avoid curbing their enthusiasm about the project, so we will allow them to continue exploring different options. In the next few weeks, we will aim to limit the project's scope to focus their efforts.

Review of week 1:

Goal	How to measure success	Level of success	Next steps
To identify how we can create a product that users will want to use	We will create a paper prototype and conduct a usability test for 5 users.	Currently under development. Key features still need to be fleshed out to how the product can be made.	To be able to develop a product that is needed the other goals need to be archived first. This goal will be put on pause.
Research will need to be done to identify what people want from networking applications and what	We will have a list of key features / techniques that people	Partial success. We have managed to identify a handful of social media accounts that make content on how to network more effectively.	Continue to go over the content published by these influencers to identify

services are currently out there to avoid repetition	use when networking that we can refer to		networking skills that are currently being used
know what resources we can have access to	To have an in-depth understanding of the different tools we can use to access peoples data	Low level of success. We still are discovering what data we should collect. Because we do not know what data we need to collect we cannot find the scope of the data we do need to find.	To work out what data we need to collect and where to collect it from.
To have a look at how we can make our product visually attractive.	We will create a paper prototype and conduct a usability test for 5 users.	No development. More research needs to be done on existing systems.	Conduct test with users to give comments on already existing visual networking apps and apply them to our paper prototype.

Market research:

Social media research:

The research team decided to use Tik Tok and Instagram to identify networking influencers for the social media research. This was done because this would give us insight into the current trends within networking.

We decided not to refer to academic papers to identify current trends in networking because we felt they would be out of date or out of touch. This is because, in academic papers, there is a "numbers" approach, which we felt would be disconnected from the culture around networking. Something that was less dependent on numbers and more or a "vibe" (a feeling towards others in a positive way).

From our research, we have learned that the initial connections you make are some of the most important. So this defines how you find your adjacent connections when going on from networking.

Finding a niche can also strengthen your networking skills as you can stand out within a niche.

LinkedIn is used a lot like Facebook but for a professional setting, and people are unwilling to add random people they do not know.

People tend to network through adjacent connections or with people with similar interests or from similar backgrounds, such as working in the same company or going to the same school.

The most compelling and most legitimate advice came from a pair of influencers that run a networking company called Wonsulting. Wonsulting gave helpful insight into how to network and claimed that a variety of their clients have jobs at top firms such as Google, Goldman Sachs and Deloitte.

From our research we have decided to use Je Hak, one of the influencers who work for Wonsulting, LinkedIn as a case study. This is because apparently he has an "ideal" LinkedIn page that would seem attractive to employers.

Alternative network research:

There appears to be a lack of alternative options for people who want to have a visual oversight of their network. The only serious work done in this field was done by LinkedIn with their IN Maps tool. Unfortunately, this tool was discontinued in 2014.

The fact that the tool was discontinued in 2014 does raise some concerns. However, LinkedIn released some advertisements in 2011 where they revealed that one of the top questions they received from users was what their network looked like. There were also a number of blogs that were writing about the need for such a tool and several more minor services that could make a visual graph for you.

We are not entirely sure why Inmaps was removed, but a statement in 2014 mentioned that they were looking for new ways to visualise networks. We hope that we can make a more intuitive way to see a network.

For the next step in our research we plan to show users a collection of different graphs and to get feedback.

Research done into design:



There are not too many tools aimed at the average person in the networking space that aims to play around with a network. Therefore, to find valuable and intuitive designs for networks, we look towards the gaming space.

The game Democracy 3 is a game where you get to act as the government, where specific policies and groups of people are represented as nodes. You can manipulate the values within the nodes to affect how government policy plays out.

Democracy 3 is not aimed at data scientists but is aimed at "gamers" who are interested in strategy games. Richard had played the game before and got into it around the age of 16-17 - without any prior knowledge of how to play it. Considering a teenager can pick up the game and play it without a considerable struggle would imply the game mechanics can be friendly enough to the average person who is not a data/network scientist.

To understand the game's mechanics better, we have looked at the game review made by the Youtuber James Allen. The game allows you to easily pick a faction to play from a home screen (a faction being a political party in a larger Western country). Additionally, a slider changes how each node is weighted to influence policy.

The game is very icon heavy, with the "blue things" representing statistics (the blue things are bars that show how much a policy is going well). The statistics can represent various policies such as tourism or industry. In addition, there are arrows next to the statistics bar to show if the influence in that sector is going up or down.

There are also arrows linking nodes together. Green arrows and the industry of arrows on the arrow show how much a policy is linked. The arrows go green when the influence goes up and red when going down. This can show the relationship between different nodes.

To get a more detailed view of a policy and change how you want to affect that policy, you can click on a node containing the given policy, and a menu will appear with some statistics. You do not have to understand the statistics; you can rely on how full the bars are and what colours they have.

Taking away how from the game design colour coding is very important to show on connections are made. Also, showing the relationship with arrows can help you understand how everything is linked. Finally, having a more detailed menu appear when you click on the node can allow more advanced players to play with more mechanisms.

Complicated mechanisms are hidden behind the menu, which allows for discoverability by more experienced users, but

because the advanced features are hidden, the fundamental mechanisms appear clearly to new/inexperienced users.

Research into technology:

Using LinkedIn API

- Why we need API

One method we can use to collect peoples data is to use the LinkedIn API. This will enable LinkedIn members to post certifications directly to their profiles.

Professional companies have also worked with LinkedIn API to optimize their search queries and pre-existing leverage tools. This can reduce friction when collecting data allowing users to sign in with LinkedIn instead.

Reason Why not using LinkedIn for collecting data

The amount of data we can collect from LinkedIn is limited unless we gain access to a premium account. Unfortunately, we do not have the resources to access this.

We cannot view reviews that someone leaves from a company. However, this data may be useful when looking into the quality of a company.

We want to use a method that does not require too many resources to access peoples data.

Web Scraping

Web scraping refers to the **extraction of data from a website**.

We can extract data from LinkedIn using the python script. This will allow us to get more detail from each LinkedIn page.

Reason Why not using Web scraping for collecting company Information:

- LinkedIn can detect the IP addresses of web scrapping
 - They can block us out as a result.
- Using the proxy URL web scraping can work but If the LinkedIn detects every time then it need to change while synchronising data from web.

Collecting Information

Collection of the all data are from public feedback form

Get the Sample Data inputs for testing

Target Audience is the University students, Job seekers, companies, and general users

Goals for week 2:

Goal	Reason	How to measure success
Develop the case study on Je Hak to see what pieces of data would be useful to collect	This is to reveal what pieces of data we need to collect	Have a list of possible data points that we can aim to collect
Conduct research into the different tools that can be used to collect data from LinkedIn	This is to see what resources need to be allocated to learning different tools.	To have a list of different tools we can use
Find other attempts to visualise networks	This will allow us to save time in development by working on previous efforts	To have a better understanding on how to develop our application
Conduct interviews to gauge how people feel about LinkedIn's In maps tool	This will reveal the current limitations in the design of LinkedIn's networking tools	To have feedback from our interviews
Create a prototype	This is to act as a reference for the team to get a better idea of what we are making	Check if the team has a point of reference

Week 3 report

Project manager comments for week 3:

The main aim for week 3 was to conduct research into how we could limit the project's scope.

The case study that we have conducted Je Jak has been helpful in limiting the scope of the amount of data and allowing the technology team to focus on how to collect certain data and begin to store the given data on a database.

The design team has also made a paper prototype giving the team a visual aid for reference.

Review of week 2:

Goal	How to measure success	Level of success	Next steps
Develop the case study on Je Hak to see what pieces of data would be useful to collect	Have a list of possible data points that we can aim to collect	The case study has been carried out and we have been able to identify key pieces of data	To take these key data points and to start collecting data on people
Conduct research into the different tools that can be used to collect data from LinkedIn	To have a list of different tools we can use	This has been successful. We have found a range of tools we can use to approach this problem	To identify which tools will be the most appropriate for us to use.
Find other attempts to visualise networks	To have a better understanding on how to develop our application	We have found different approaches for how others looked at this problem	To decide what would be the best way to display the network
Conduct interviews to gauge how people feel about LinkedIn's In maps tool	To have feedback from our interviews	We have been able to conduct some interviews. We have not reached the 5 interviews we aimed to do but have still collected useful user feedback	To use this feedback to see how we can make it easier for people to network
Create a prototype	This is to act as a reference for the team to get a better idea of what we are making	Some success. There is a visual prototype that the team can refer to	To create a higher fidelity prototype

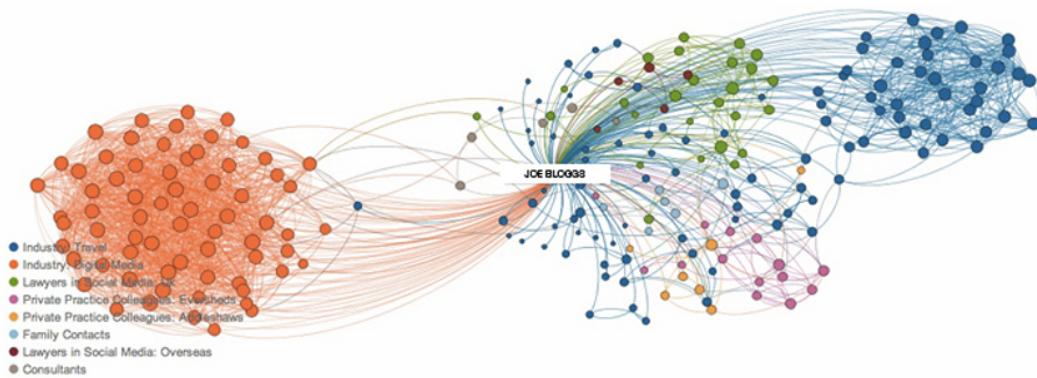
In the case study of Je Haks LinkedIn we were able to see what a fully developed LinkedIn page is supposed to look like. The key data points that we found were:

Data point	Comments	possible relevance
Active company		The size of the company could show importance
Headline	description of work at the company	As a stretch goal we could use sentiment analysis to gauge the importance of someone's job
About page		Sentiment analysis could be done to get an idea of the person's character
Active company experience	How to rank skills Idea : find a list of the most common skills and find a system to rank them	If we can find a list of jobs we can rank them based on importance.
Active company		Depending on the company size we can alter their ranking
Part time / full time		To check the level of commitment to a company
Featured	Related reading to the person	This can show what interests the user has. This could be mapped on a graph
Activity	Recent posts	This can show what interests the user has. This could be mapped on a graph
Length of time at company		Can be used to check how committed someone is to a company
Education	Education can be a cluster Sub clusters of what	Depending on the level of education this can be

	their education in, exp BS of science	used to rank the user
Volunteering		This can show additional experience
Active role		This can show the level of importance of the user at the given company
Recommendations,	find appropriate ratio of received to given	This can show the direction of how of relationships this person has with other people
Link recent recommendations to their Possible connection		This can show who is in their network

Interviews

Image:



The context is given to the interviewee: The graph that you can see shows all the connections that a person has within their network. Certain groups within the network have been colour-coded to show the industry they are in.

Questions ask: How clear is this information, and how useful is it?

The interview notes are not a transcript of what the user said. Instead, the notes are a summary of what they said.

Person interviewed: 1st Year International relations student at Goldsmiths.

User 1: The colours are helpful for seeing the different groups, but there are too many lines on the screen, and it looks a little confusing.

Follow up discussion

They were not too sure how to use a tool like this. The tool would need to be visually "lighter".

Person interviewed: 1st Year law student at King College London

User 2: The different groups are useful to see, but they were not sure who would be a person they would connect to. All the dots are a bit ambiguous

Follow up discussion

Maybe having an image on each dot (node) could make it easier. They like to connect to people who they already know and meet people through them.

Person interviewed: 3rd Year Psychology student.

User 3: They found it interesting how they could see certain social structures. People who connected groups together were important to them.

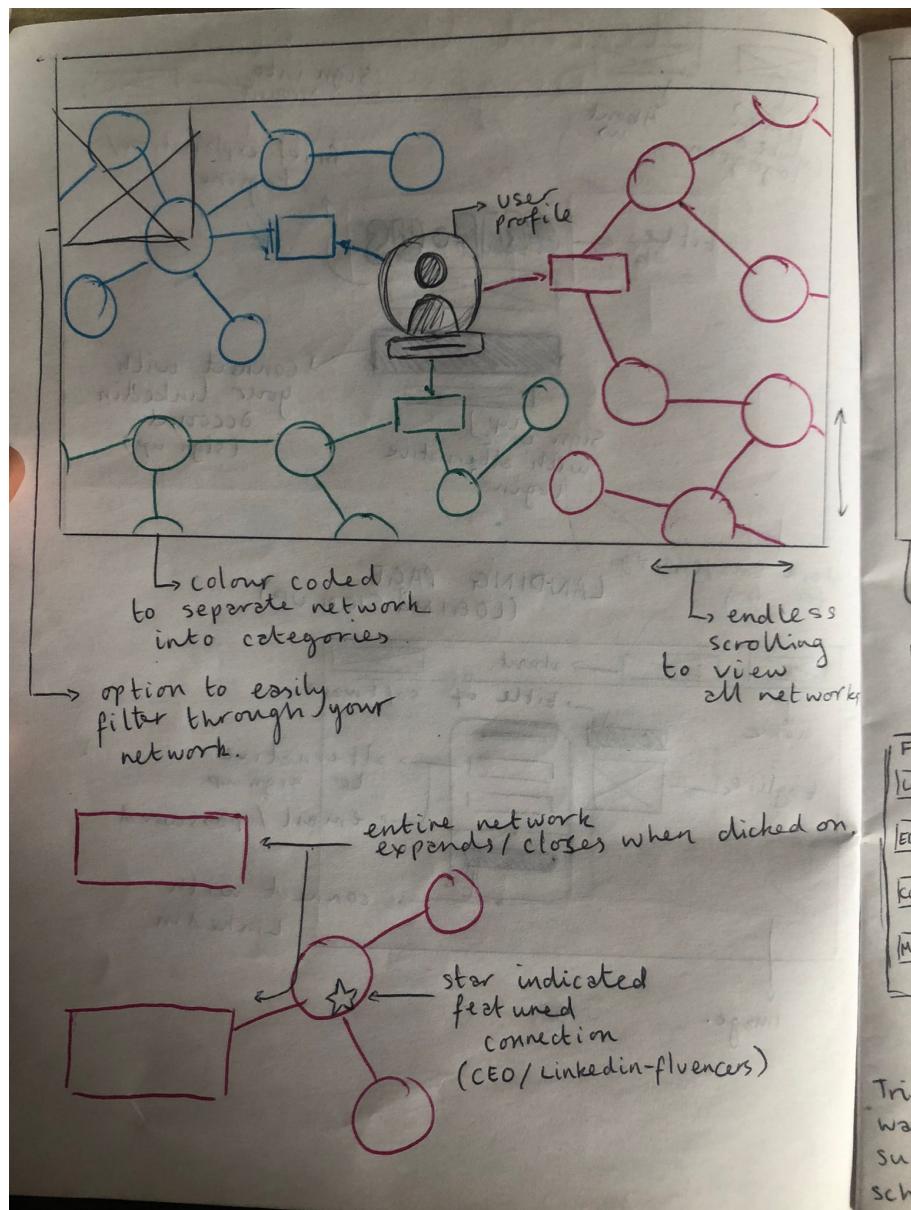
Follow up discussion

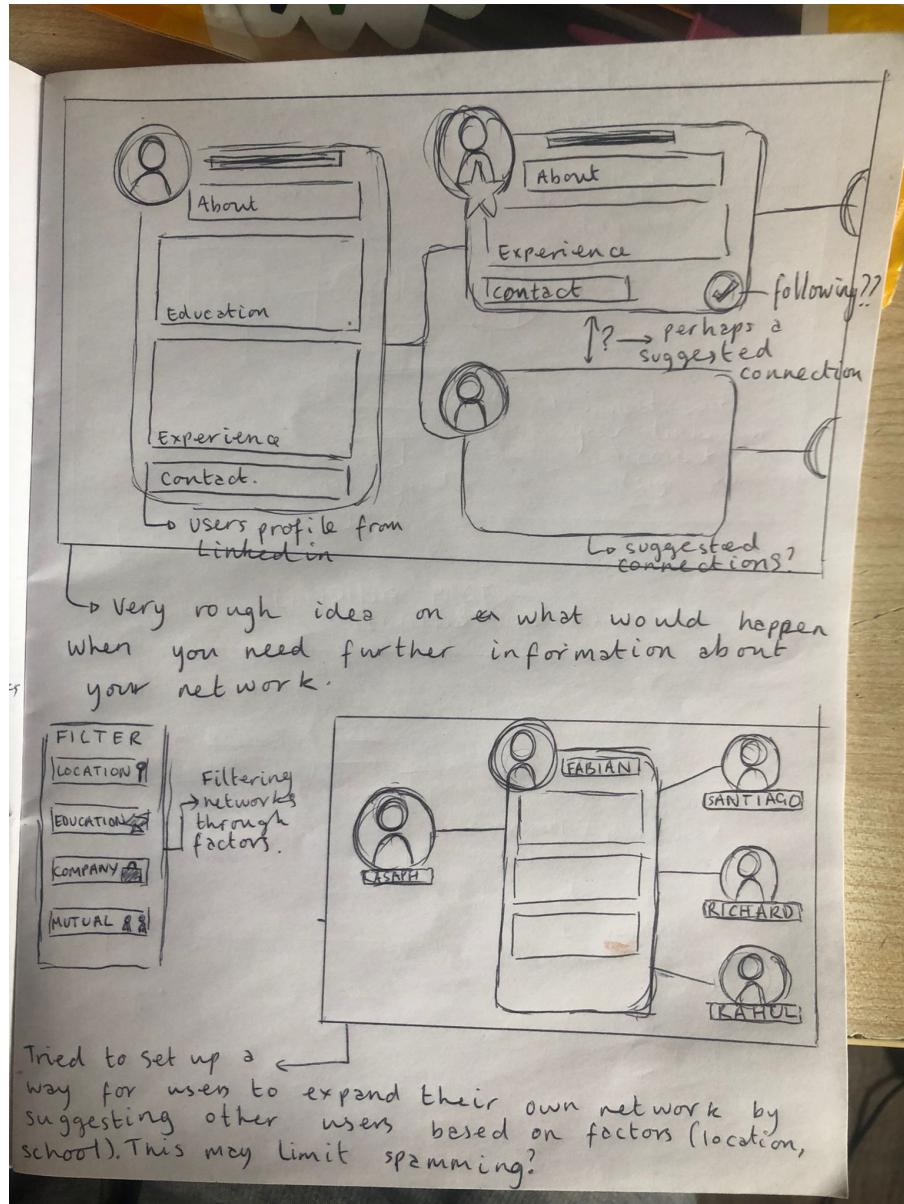
They liked the idea of the tool and would find it useful for research purposes to see how social structures are formed.

Take away :

The Inmaps tool is useful for showing certain clusters, but too much information is on the screen. We should aim to limit how much information is on the screen for our application. Colour coding is also essential to help people understand what is on the screen.

Paper prototypes :





For our initial UI setup, we created a brief mock-up of how all of the components will link together, primarily focused on how the selection menu will then show all of those within your connections who meet those parameters.

In our UI, we decided to lean towards ego-based, ensuring more relevant connections are in the forefront with others further away from the centre. This was a conscious choice that we made in our design process, relating back to our social research, as we were trying to emulate the human behaviour within our system. You are more likely going to focus on your most important connection: larger circles of deeper shade being viewed as important; smaller circles of a lighter shade being seen as less important within that network.

We will be continuing working in this manner; however, we need to find a way to feature a more inclusive design for our users and generally find a way to make sure our clusters are not cluttering the entire screen. In the future, we will implement a select few main larger clusters with a connection list inside the cluster. In addition, we plan to rank your connection when clicked, prioritising more relevant and important users.

Goals for week 4:

Goal	Reason	How to measure success
Create a higher fidelity prototype	We need to have a more clear data prototype that we can refer to	Do we have a more useable prototype
To see how we can start to organise people based on the data we have collected	This will allow us to do some analysis on the networks we can see	Are we able to identify key people with our analysis
To look at possible technologies to store the data we aim to collect		

Week 4 Report

Project manager comments for week 4:

This week we were able to bring in the project's scope without dampening team morale. The design team has created user diagrams to show how the users will traverse the program giving the group a framework to work on. In combination with the design team, the research team has worked on higher-level prototypes with current research in mind. We have also been able to take advantage of previous interviews and case studies to make our prototype. We still have some concerns about the scope. The amount of research we need to do for network analysis is rather broad, and the direction of the research feels like it is not catching traction. We need to have a conversation with someone who knows more than us for guidance on the topic.

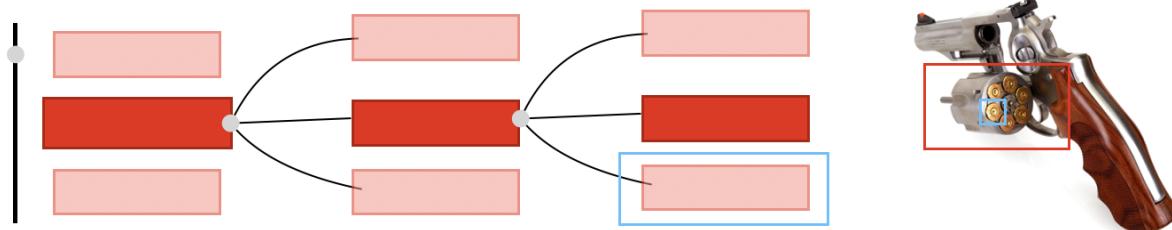
We can now move onto stage 2, where we can begin to work on a higher fidelity prototype.

Topics covered:

Review of week 4:

Goal	How to measure success	Level of success	Next steps
Create a higher fidelity prototype	Do we have a more useable prototype	Partial success. We have created a more visually useful prototype	Conduct usability interviews to see if there are any issues
To see how we can start to organise people based on the data we have collected	Do we have way to arrange people on our network	Some success. We have created a structure on how we can arrange people but we need to verify if our structures are valid	To go over our ideas with someone who knows more about network science than us
Identify which tools would be best to use to collect data	To have a list of tools to limit the scope of what we have to learn	We have been successful in being able to identify key tools. We need to now chose which on the tools we want to use.	To chose one of the tools to collect data to limit the scope of the project

Higher fidelity design



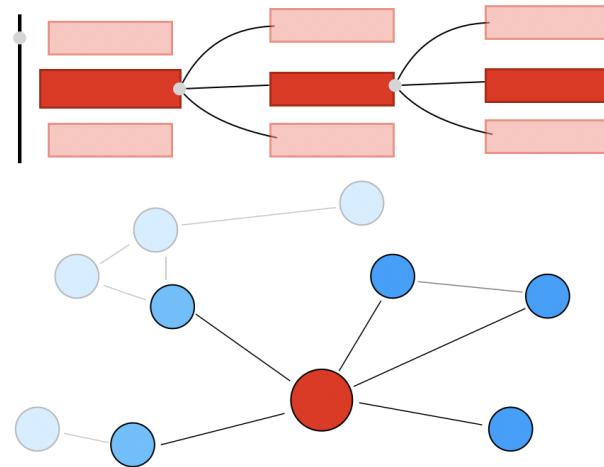
In our Inmaps interview, we discovered that showing too much information to the user is not useful. Therefore, to limit the amount of information they can see, we will show the user a large cluster option within bars, as shown on the left in the image

above.

Once an option is selected, they will be shown sub-clusters within the cluster. This process will be repeated until the graph has been made small enough for the user to digest the information.

To switch between clusters we will organise each cluster like a bullet, and to select each cluster, you would rotate the bullets in the same way you might go through bullets in a revolver.

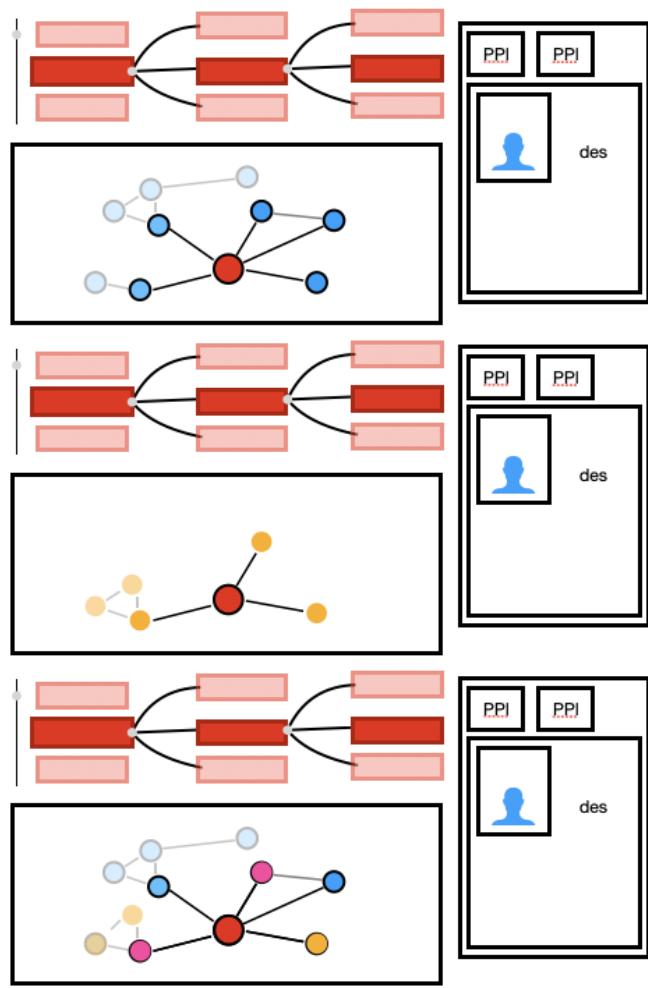
The number of "bullets" that you can see will be a maximum of 7. This is because in a paper written by George A. Miller called The Magical Number Seven, Plus or Minus Two Some Limits on Our Capacity for Processing Information. He mentioned that people could process up to 7 pieces of information effectively. Above 7 it becomes more difficult to process information.



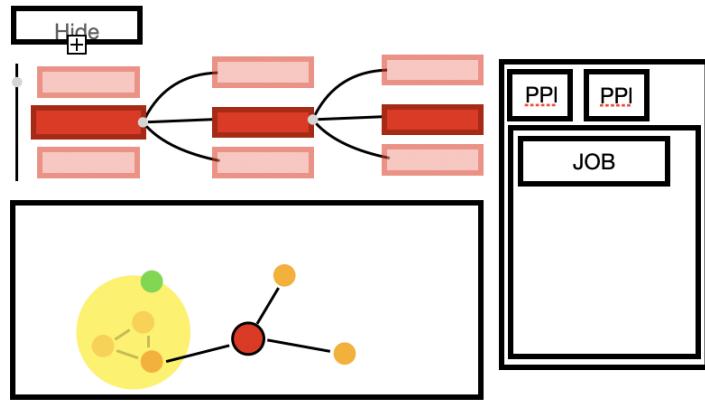
Once a specific cluster is chosen, we will choose to use an ego diagram to show someone their network. An ego diagram is when the person of interest is at the centre of the diagram. Primary connections will show up in a more robust colour, and as the connections go from secondary to tertiary, the colour of the nodes will fade. We are unsure how deep (the more indirect connections between people)we should show the connections. To find identify how deep we should go when showing a network, we will need to do more research.

The user will then have the option to add a second graph below to be able to look at other clusters to be able to make comparisons. We can then show an additional graph that contains a combination of the different graphs they are looking at and see who matches in both networks. We will aim to colour code all this information because we learned that colour coding is vital in our interviews.

The user can also click on each node to see more details on the given person. This takes inspiration from our research into the game Democracy 3 game mechanics.



We can then use network analysis tools be able to show them potentially important people in their network. This can be done by adding a warm glow to important areas.



How to organise people on a network:

To understand how social structures come together, we decided to do some reading into social psychology after looking over some papers written by the following authors, Uzzi, Brian House, James S., and Jeylan Mortimer.

From the reading that we did, we concluded that we should have five main attributes that can be used to measure their importance to identify important people on a network.

These attributes are

- social time: How long it takes to connect to people
- social space: What environment are they in
- social role: What is the sum of all their roles
- Performance currency: Possible active job / role
- relationship currency: how connected, how good are connections, time on the app, people connected + raised

These attributes have been picked because the three main factors that form social structures are environment, surrounding social pressure and time in the group. These attributes reflect these factors from the reading we have done.

Tools that can be used for collecting data

LinkedIn API

Selenium web-scraping with python

Paid APIs that have already collected the data

Goals for week 5:

Goal	Reason	How to measure success
Explore the groups network to identify any possible people we can interview to verify our graph structure	This is so we can interview them to see how valid our structures are	To compare their comments against the current structure
Create a UI diagrams	This will allow a clear vision for the design team and allow the tech team to start creating infrastructure around the front end	We will have UI diagrams that can guide the group
Continue research into the database we can use for storing data and create needed graphs	This is to see how we store each person data	We will have a collection of graphs that will guide the tech team in making the back end infrastructure
To look at possible technologies to store the data we aim to collect	To be able to collect the data we need for the project	We will have decided on a tool to collect data

Week 5 report (reading week)

Project manager comments for week 5:

This week has been a good week for both the design and tech teams. They have been able to create a number of graphs that have limited the scope of the research they have to do to achieve their goals. For the research team, this has been an interesting week. After getting feedback on our approach to collecting data, we learned that we have a basic understanding and that our approach needed to change. There is still a lot to learn. Nevertheless, we were able to learn about the field of network science, and from the initial reading, a lot of the initial confusion with networks has been cleared and that there is a wealth of resources we can use going forward.

Although the group has been able to limit the scope of some of their idea, looking at the timeline for the project and the speed we are working at, more work has to be done to focus our efforts on the MVP.

Internal message to the group to address this:

After further reading, we have realised that the project's scope has become too broad.

To be able to achieve our MVP, the network we will be looking at is Goldsmiths.

Aim for the project:

To identify a cluster and identify possible clusters within.

We will begin mapping our current cohort (2021 Goldsmiths computing) onto a graph to achieve this.

For this stage, we need to be able to create an interface to collect data. Once we have collected enough data, we can begin to do an analysis of the data.

Review of week 4:

Goal	How to measure success	Level of success	Next steps
Explore the groups network to identify any possible people we can interview to verify our graph structure	To compare their comments against the current structure	Successful. We have been able to find a social psychologist who has experience looking at social structures	To act on their input and let their advice guide us
Create a UI diagrams	We will have UI diagrams that can guide the group	Successful. We have a collection of UI diagrams that will guide the design and tech team allowing them to link their work together.	To use the UI diagrams to guide future design for the front end
Continue research into the database we can use for storing data and create needed graphs	We will have a collection of graphs that will guide the tech team in making the back end infrastructure	We had to take a step back. Before we could identify how to store the data we need to look at how the data is going to be structured	To develop the graphs to show how we will store the data in more depth.
To look at possible technologies to store the data we aim to collect	We will have decided on a tool to collect data	Successful. We have been able to chose a technology to collect data on users.	To begin the process of collecting data

Topics covered:

Survey method

To test how connected people are, we thought we should conduct an experiment to see the "connectedness" (how well linked a group of people are).

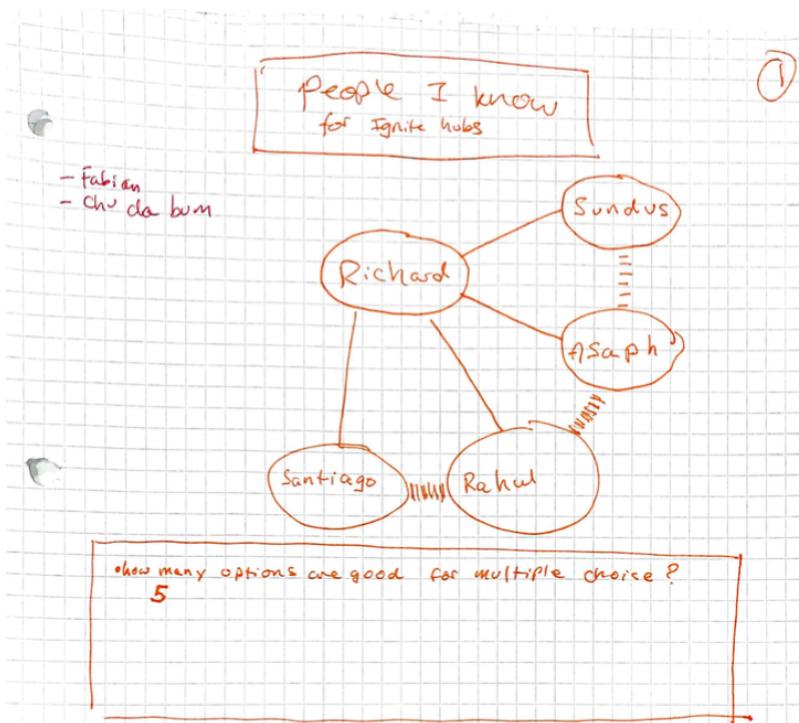
Our experiment would rely upon opportunistic testing where would we interview random people around Goldsmiths to see if we could map any connections people had.

Aim of the experiment: To identify key connections between people at Goldsmiths, map their connections, and identify any connections between the people we interview.

Hypothesis: We expect to see very few connections in the network within this experiment, but the few connections we find could show us key people in the network.

The incentive for the experiment: We could give them some chocolate for participating in our experiment.

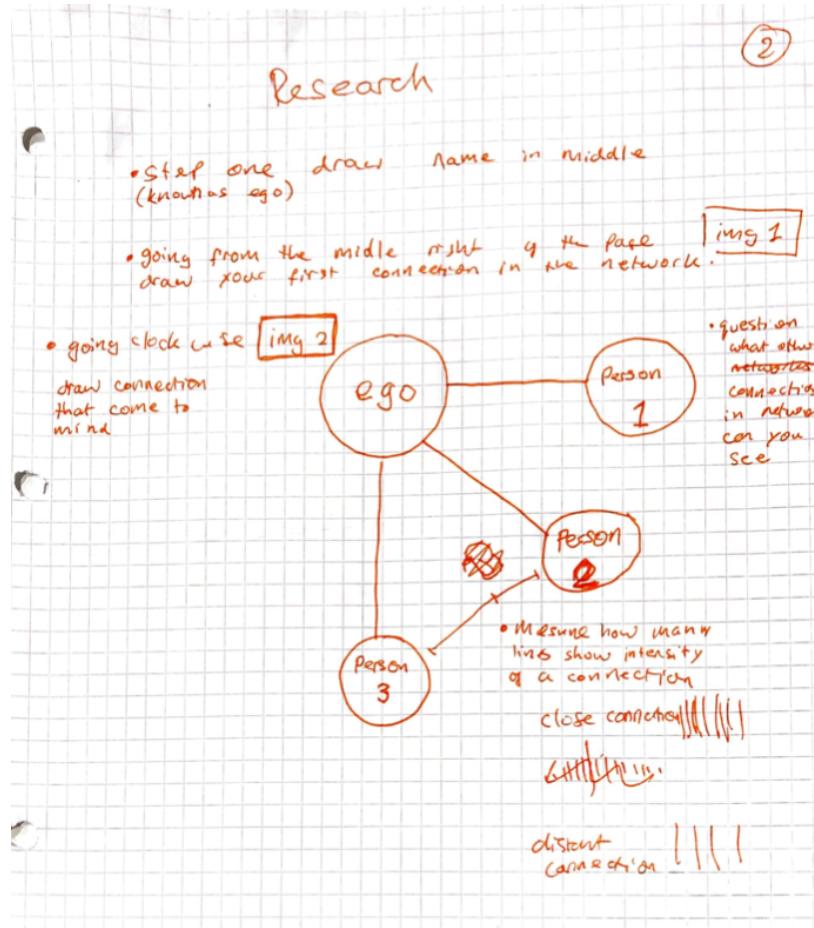
Method: We would go to an area populated by Goldsmiths such as the Goldsmiths Cafe or bar and ask each person to name five people they spend the most time with at Goldsmiths with their subject and year.



• How to build a team using Graf-us

- mark out connection
 - create attributes and method for each person

"Object notation for people"



We can then map the connections, as shown in the sketches above.

To see how valid our experiment was, we decided to ask for feedback from someone who knew more about the subject and the testing process than us.

We identified an experimental psychologist in their third year at the University of Oxford from the people we knew as a group.

In the interview, we went over how we planned to map a social network and were aiming to collect data.

She thought the idea of mapping a network interesting but found our method problematic. From a paper she had read about the topic, the paper suggested that any experiments done in this space should have a clearly defined boundary. However, she believed that the boundary of "random people at the SU" would be too broad and that to identify any useful data, we would have to conduct many experiments.

She suggested that we shrink the group's scope we were interviewing to gain valuable data.

Taking in her feedback, we have chosen to shrink the scope of whom we would interview down to people on our course, second-year computer science students. This would be useful because we also have a complete list of people on our course, giving us the ability to map people who did not participate in our experiment.

She also suggested that we should identify key clusters to look out for before we conduct our testing to identify how people were connected.

Possible clusters included

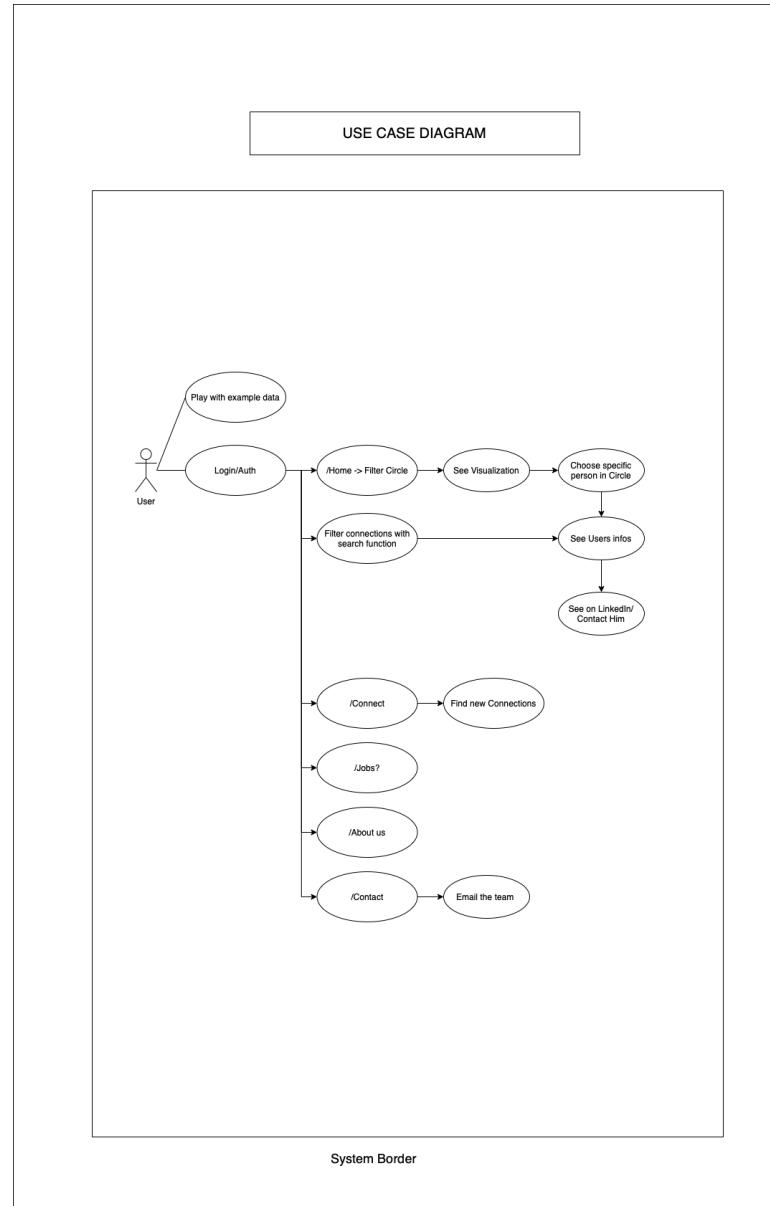
- friends
- friends subject
- same / similar subject
- communication
- dorm
- other

We could also ask additional questions such as who whether you would go to for advice for something. This would show us the flow of resources on the network.

Resources in this context being information.

UI diagrams / notes

Use case diagram

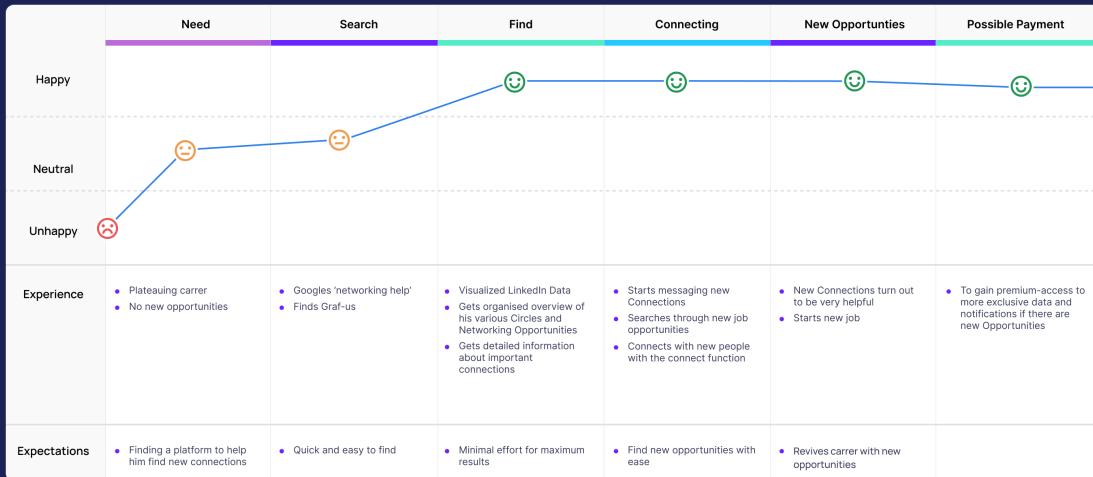


User Journey

Graf-Us: User's Journey Map

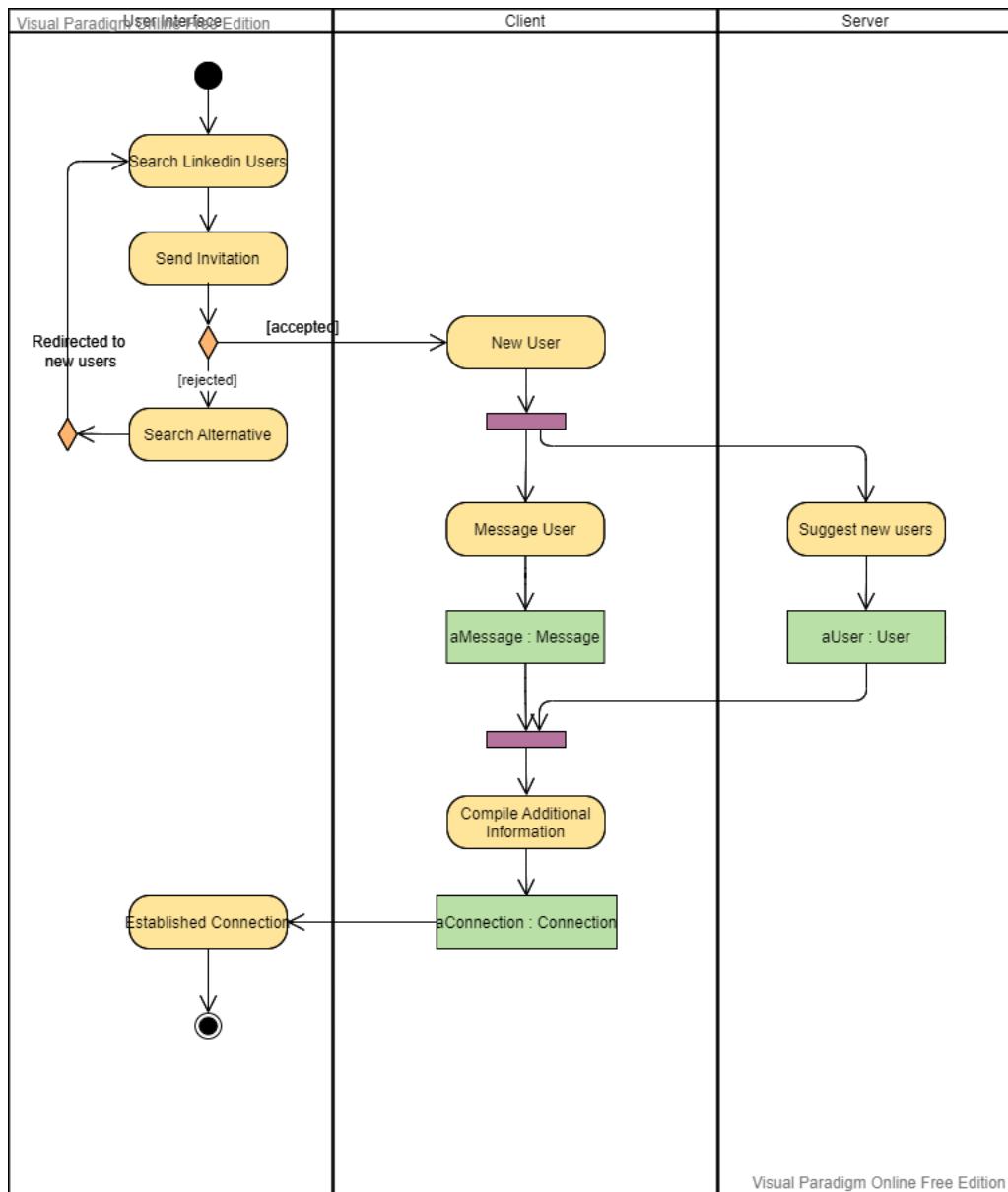
Scenario

Lukas career has been plateauing for a few years now and he decided he needs to expand his network to find new opportunities

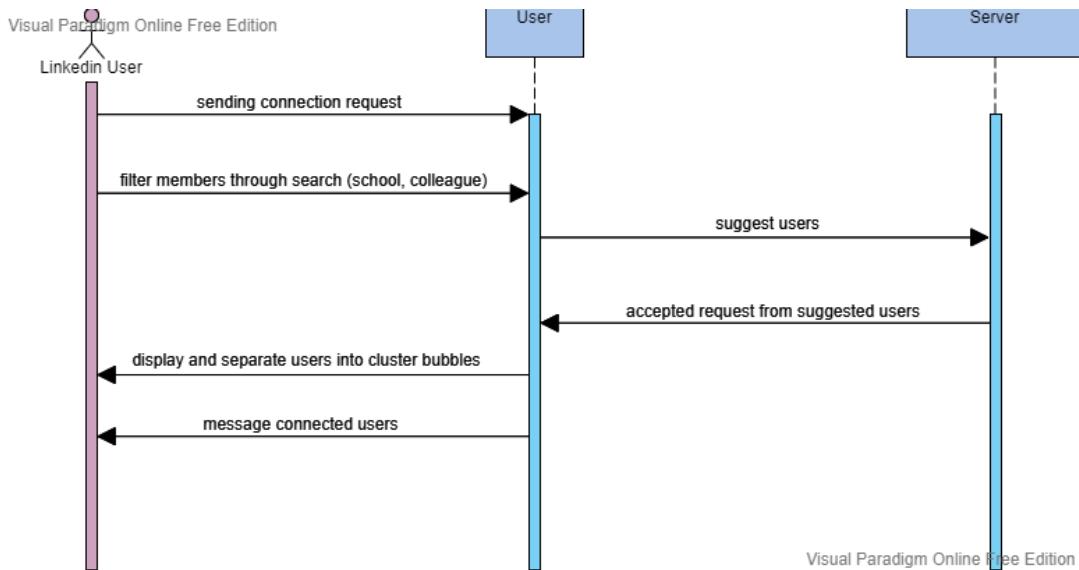


This is a very optimistic journey map and will need to be updated in user testing.

Activity diagram



Sequence diagram



Goals for week 6:

Goal	Reason	How to measure success
Read through academic papers to see current approaches on how to structure people on a network	This is to get a better understanding of how networks are made in an academic setting. We can start to look into the field of network science	To have a better understanding of how networks work
Create the needed graphs to show how the data will be stored	This is to provide guidance for how we make the back end	To have a collection of diagrams to guide the tech team
To begin collecting the data we need of users	To have data that we can test our data analysis	To have the data collected
To create a higher fidelity prototype	To test if our current approach is appropriate	To have a higher fidelity prototype

Week 6 report

Project manager comments for week 6:

We have made significant progress in making a higher fidelity prototype for the front end. We believe the design team has made a visually attractive product, but more work needs to be done on user testing to be able to identify issues with our design.

Research is taking longer than expected. This may prove challenging for the scope of the project, but what the research team has learned is extremely useful going forward for any network analysis we do.

Review of week 5:

Goal	How to measure success	Level of success	Next steps
Read through academic papers to see current approaches on	To have a better understanding of	Some success. The research team is now aware of what network science is	To do more focused research into network science.

how to structure people on a network	how networks work	which has improved the focus of the research	
Create the needed graphs to show how the data will be stored	To have a collection of diagrams to guide the tech team	Successful. We now have graphs.	To conduct test to test how valid our graphs are
To begin collecting the data we need of users	To have the data collected	None	We have decided to put a pause on collecting data until we know specifically what we need and how to store the data securely.
To create a higher fidelity prototype	To have a higher fidelity prototype	Partial success. We have reached the limit of the current tools we have picked.	To find alternative tools to help us create our graphs.

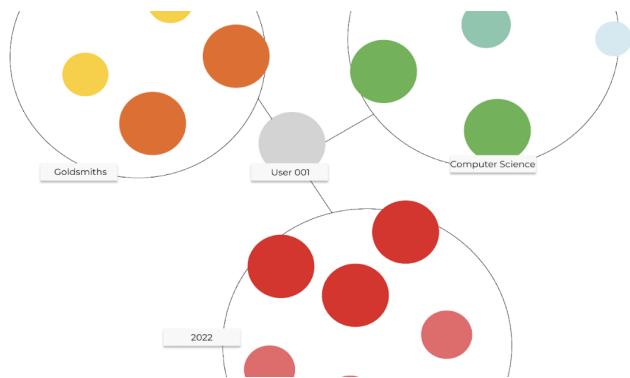
Research

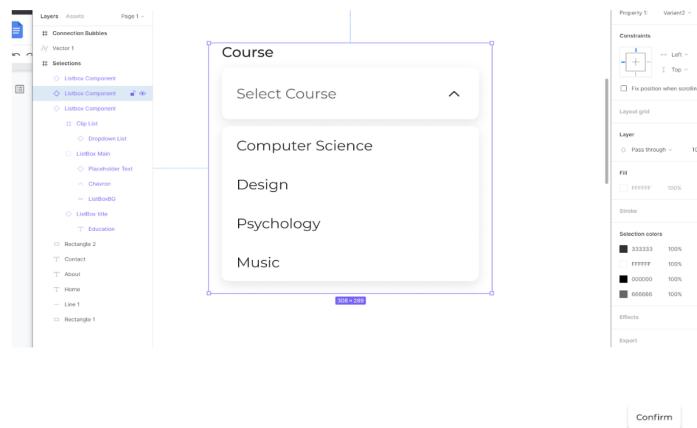
More detailed notes can be found in the research section of the report.

Design

Created in Figma, we achieved this by creating a component with a dropdown menu linked to the selection's main component. Then, linking all of the outcomes together when the user narrows down their search, they will be prompted to confirm the selection, displaying their network.

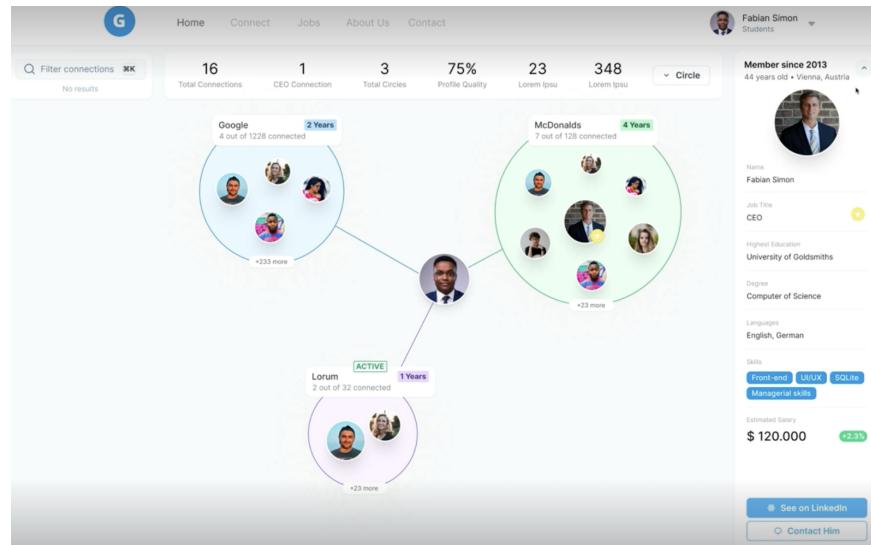
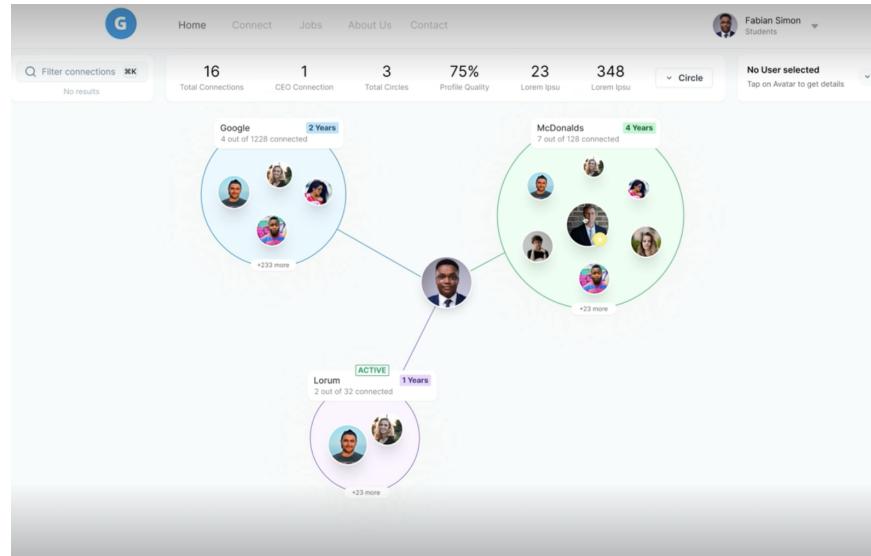
We also used the Shakra UI framework to build many of these elements. As nice as the front end looks, we are running into some issues with creating the graphs. We would need to use additional tools in order to do this. A possible tool that can be used is D3, a commonly used visualisation tool used to visualize networks.





Education

Goldsmiths University ▾



Goals for week 7:

Goal	Reason	How to measure success
Create a higher fidelity website to see how we can add the graphs that we need to the website	This is to test if our approach to development is valid	We will have a higher level prototype to test
Continue reading through academic papers to see how networks are structured	This is to allow us to do social network analysis with existing methods	To have a method to do social network analysis
Begin back end development	This is to test if our approach to development is valid	To have some infrastructure for the back end

Week 7 - 8 report

Project manager comments for week 7 - 8:

The goals for week 7 need more resources to address and as a result week 8 has also been assigned to tackle

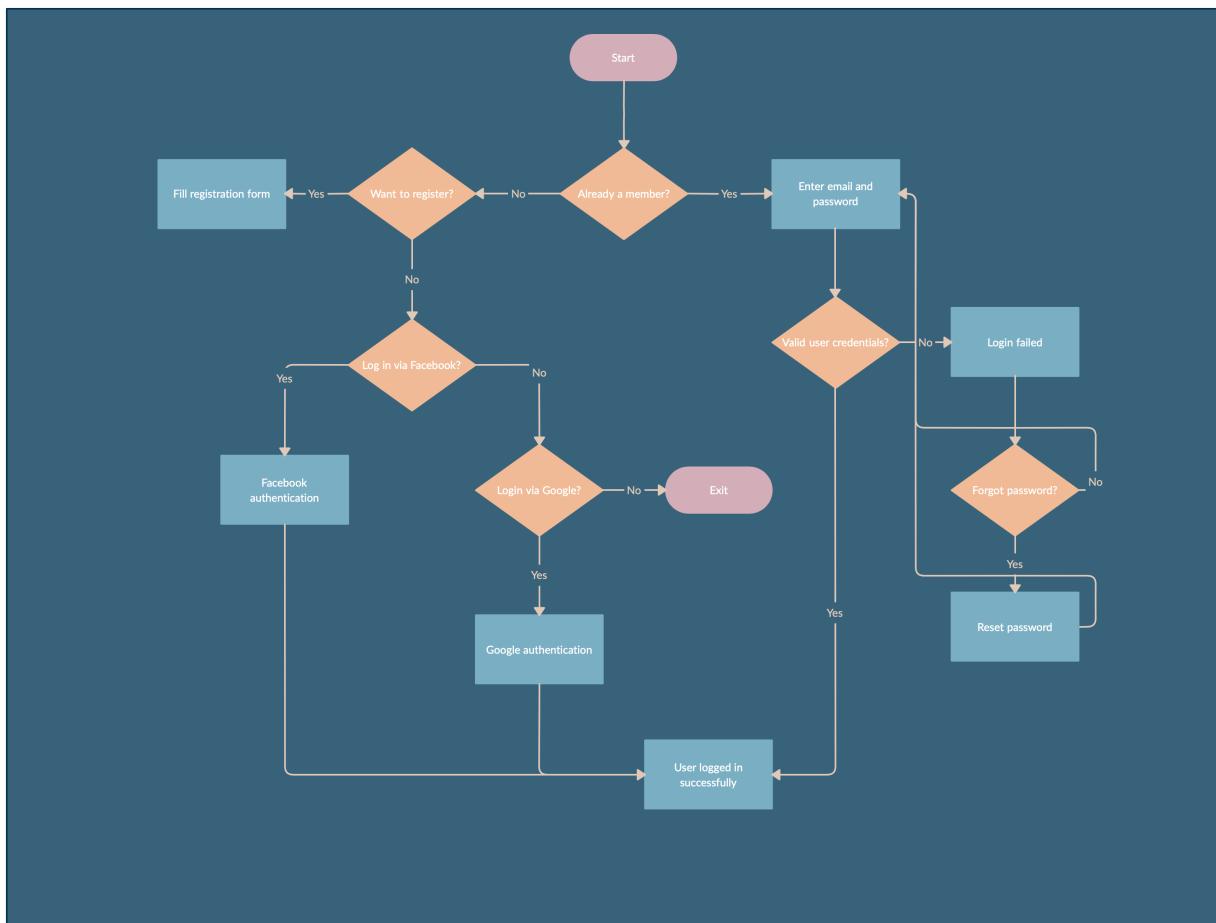
Review of week 6:

Goal	How to measure success	Level of success	Next steps
Create a high fidelity website to see how we can add the graphs that we need to the website	We will have a higher level prototype to test	We have a higher fidelity prototype but have run into limitations with the tools that we have	Look for alternative tools we can use and become familiar with them.
Continue reading through academic papers to see how networks are structured	To have a method to do social network analysis	Progress has been made but more reading needs to be done.	To do further reading and identify an algorithm we can use to do form the graphs for us.
Begin back end development	To have some infrastructure for the back end	We have been able to create graphs to show how the back will work.	To begin development for the back end to see if our current approach is valid

Topics covered :

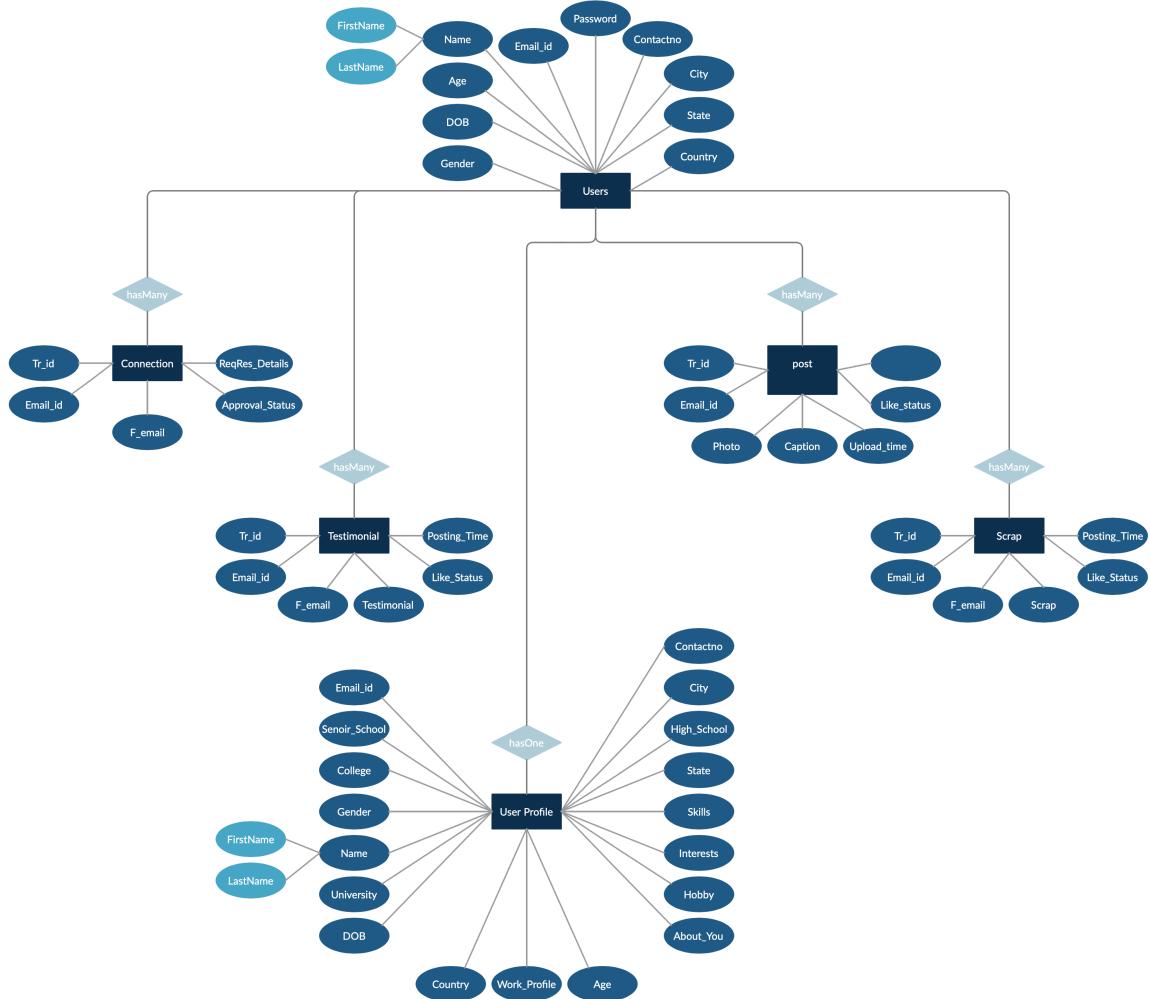
Tech

Flow chart

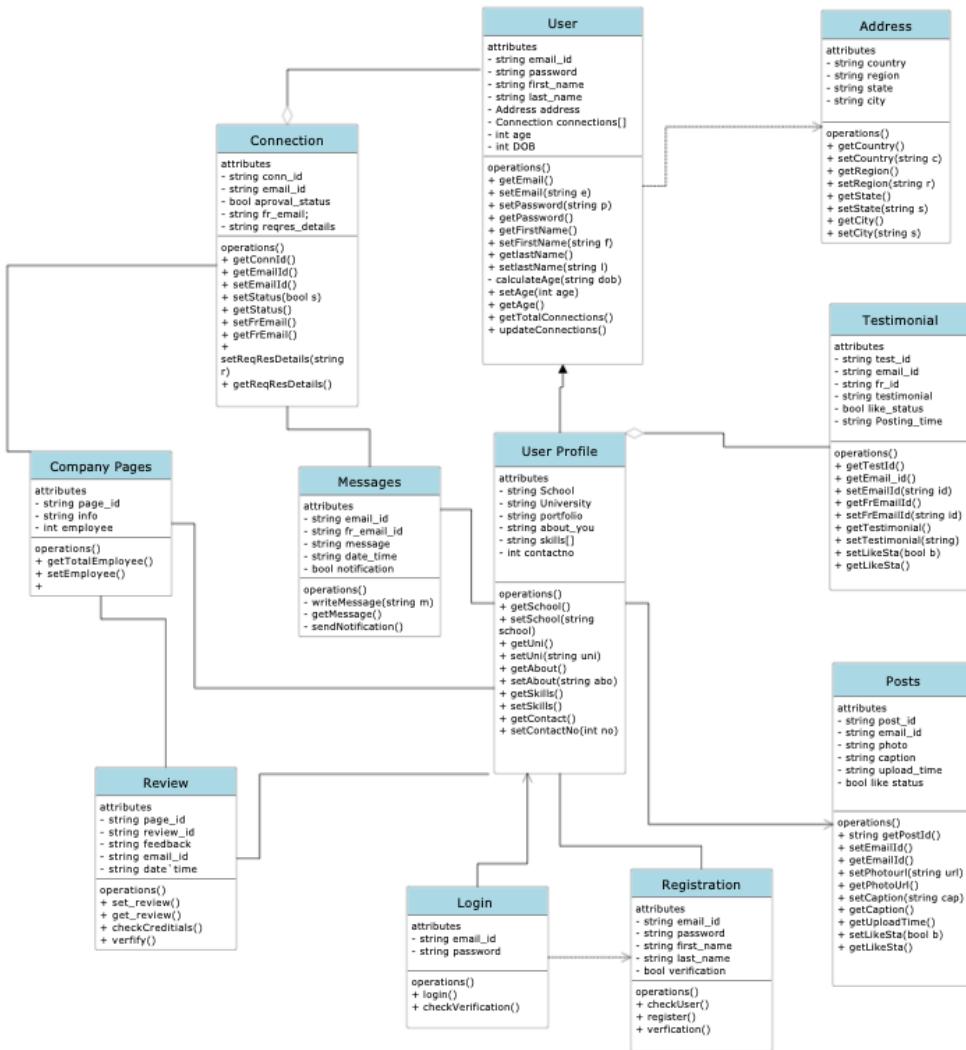


Data base

Interest Based Social Networking Site



Class diagram



Goals for week 9:

Goal	Reason	How to measure success
Justify the transition between Mongo DB to PostSQL	We have run into limitations with Mongo DB and believe Post SQL to be more appropriate	To have some of the back end infrastructure in place with Post SQL
Learn how D3 works	This tool is a more appropriate tool to be used to visualise graphs.	To have created a graph with D3
Continue academic reading into papers	To gain a better understanding of how networks are made	To be able to use this knowledge and apply it over the Christmas holidays.
Create an ethics report	This is to minimise harm done to sociality with our application	To have a report written that acknowledges any negative effects our application may have and to work to prevent or minimise any harm we may do.
Identify certain algorithms we can use for the project	This is to see what algorithms can be used to map people in a network and to identify people of interest.	To have a collection of algorithms we can use.

Week 9 report

Review of week 8:

Goal	How to measure success	Level of success	Next steps
Justify the transition between Mongo DB to PostSQL	To have some of the back end infrastructure in place with Post SQL	We have tried to use Mongo DB for the back end but have run into certain limitations	To become comfortable with Post Sql
Learn how D3 works	To have created a graph with D3	Learning this library has taken longer than anticipated. More resources need to be allocated	To have two people become comfortable with the tool to avoid burn out on a single team member and to provide more time.
Continue academic reading into papers	To be able to use this knowledge and apply it over the Christmas holidays.	Some successes. We have been able to go over a collection of different papers that introduce us into the field but not enough to apply the knowledge.	To begin to apply our understand over the Christmas holidays.
Create an ethics report	To have a report written that acknowledges any negative effects our application may have and to work to prevent or minimise any harm we may do.	Successful. We have a report that has taken into consideration possible harm our app may have.	To have a conversation with those with a better understanding of social structure to identify any other harm we may do.
Identify certain algorithms we can use for the project	To have a collection of algorithms we can use.	Some success. We have a collection of certain algorithms but need to apply them and test how effective they are	To begin applying this knowledge

Tech:

MongoDB and PostgreSQL differences

MongoDB

- Risk of inconsistent information due to the high amount of flexibility and therefore very scalable
- For some operations, it is faster
- Document-based Collections
- MongoDB uses methods to get collections and interact with the database (<https://www.mongodb.com/compare/mongodb-postgresql>)

PostgreSQL

- Has more consistency
- Complex transactions are supported (e.g., nested SELECT statements)
- PostgreSQL is significantly faster when requesting large amounts of data, which we will need as part of our system to make quick calculations of how many connections someone has, which could be in the hundreds or thousands. As an improvement to this process, these numbers could be cached for easy and quick retrieval while not loading the server with requests.
- Transaction performance with PostgreSQL is best with 128 concurrent threads. Transactions per second surpass 25000, whereas MongoDB only reaches 1786. Source: https://info.enterprisedb.com/rs/069-ALB-339/images/PostgreSQL_MongoDB_Benchmark-WhitepaperFinal.pdf Page 17 [Accessed 17 December 2021].

- PostgreSQL uses Structured Query Language (SQL), which is more common and has a vast amount of information and a big community.

In the following image, we can see the columns that belong to the Users table and their respective queries to retrieve all records.



The ethics report can be found later on in the report.

More detailed notes can be found in the research section of the report.

Goals for deadline :

Goal	Reason	How to measure success
Write the report	We need a report for the course work	Our grade

Research into social network analysis

Social Network Analysis in the Science of Groups: Cross-Sectional and Longitudinal Applications for Studying Intra- and Intergroup Behavior Ralf Wölfer, Nadira S. Faber, and Miles Hewstone University of Oxford

Possible groupings / clusters

Ties can be based on affiliations (kinship, friendship), similarities (comembership, co-occurrence), interactions (cooperation, communication) or the flow of resources (information, material)

Important individuals in a cluster

The flow between network members and is rooted in the strength of weak ties theory (Granovetter, 1973) and the structural holes theory (Burt, 1992).

Both network theories emphasize the value of atypical connections, which tend to connect dissimilar others that are more likely to exchange novel information, attitudes, or resources.

Key questions to ask

In this regard, the main questions concern (a) who is directly or indirectly connected to whom, (b) which substructures exist, and (c) how does social influence spread among the interrelated network members within the overall social network?



To address these research objectives, network analysts have to be clear about the network boundary. Having a well-defined boundary does not only specify the elements for the data assessment, but also ensures that we capture the actual population to which we want to generalise our findings

How to conduct research

Step 1: Establish a boundary

Step 2: Collect data



These include questionnaires, observations, or archival analysis that assesses some kind of interdependency information

The most common and economical method is a brief and simple questionnaire that asks all network members to nominate other network members with respect to one or more forms of connection (e.g., friendship).

Current network visualisation tools:

Helpful software tools to visualize social networks are NetDraw (Borgatti, 2002) for small to medium large networks and Pajek for larger networks (Batagelj & Mrvar, 1998). More detailed conceptual and practical information about crosssectional SNA can be found in the seminal book by Wasserman and Faust (1994) as well as in the instructive manual by Hanneman and Riddle (2005)

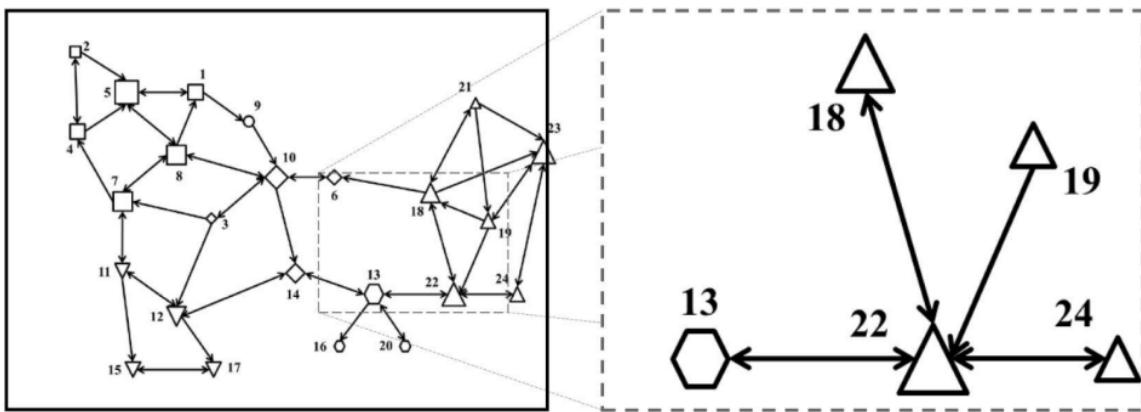


Figure 1. Left: Complete social network; Right: Ego network of network member #22. Nodes represent network members whose size is proportional to their indegree and whose shape denotes their group membership (the circle is an isolate with no group); lines represent relationships that are connected by double-headed arrows in case of mutual relationships.

Network descriptions :

Micro-, meso-, and macrolevel or, in network terms, as individual, group, and network level,

Individual level :

N-step ego networks

This information specifically addresses an individual's connections in the network, with n specifying the number of linking steps from ego.

The assessment of extended contact may be inaccurate when relying on self-reports, because individuals are likely to have difficulties in reporting accurate information concerning the friends of their ingroup members

can enrich the assessment of extended contact, either with 2-step ego networks

To see how important someone is see how many connection they have and have how many groups do they connect



It is advisable to concentrate on one network centrality parameter, which is best suited to operationalize the respective research question

Group level:

Beyond the individual level, network members appear together in clusters with stronger in-group than out-group connections and consequently form the next mode: the group level

researchers can also identify isolates that do not belong to any group

Methods to map out-group level:

social–cognitive mapping (Cairns, Cairns, Neckerman, Gest, & Gariépy, 1988) for data produced with a group nomination technique and the hierarchical clique clustering approach (Everett & Borgatti, 1998) for data produced with an individual nomination technique

How to store the information: The information can be stored in a matrix, where a number can represent how many connections there are between each person

Asaf Shapira social network analysis notes: <https://en.snapod.net/transcripts>

Current approaches to solutions use a linear approach. This makes sense for basic systems. Network thinking allows us to look at systems in a more complicated way.

People of importance may be adjacent to a person interested in the network.

Network science can be used by intelligence agencies to find people of importance

Key definitions



SNA (social network analysis)

Network / graph: nodes (vertices) and edges (connections)
each edge has a weight

When the direction is important it makes it a directed network

<https://en.snapod.net/post/episode-2-is-it-really-a-small-world-the-truth-about-the-network-1>

Network laws established by early research:

milgram letter experiment

The small world problem: aim to get letter to someone from boston from Nebraska

conditions: sent to people they know on a first name basis and can send on the letter

conclusion:

took fewer than 6 steps to find someone, avg 5.2 steps

kevin bacon game

geographical proximity had the shortest networks

professional connections shows a key chain but were not shorter in comparison to other chains

3 people took part in 50% of chains

most people took part in 2 chains or less

Why was this?

milgram's experiment did not represent the power law but he reduced the sample size
sample size is important

epi

the hidden kansas experiment by Judith Kleinfeld

episode 2, 8:59

Jacob moreno socialgram

Mapping of class mates of students in Brooklyn, socialgram

<https://www.historyofinformation.com/detail.php?id=3334>

was about small children and which children sat next to other people

showed the friendship ties

would show "starts" 2- 4 people that everyone wanted to know/sit next to
other students had few connections if not none

This shows clustering in the network

In this scenario the defining characteristic is gender

people in networks are not distributed randomly

the students did not have a normal distribution but had a power law distribution,

unpopular students are 2-3 x less popular than the stars

out of hundred of student's 3 students made up 50 % of the chains

episode 2,11:22

Erdős–Rényi model

The model assumes that network edges are formed at random, equal chance that any node can be connected to others, this distributes the network evenly, this gives the network equal distribution, this was the assumption for networks before big data

Networks are not distributed randomly, this was shown not to be the case with the introduction of big data

We use the [albert barabasi network model](#), based on his research, which is used for a base of understand, showed how connections are on the internet.

A crawler was used to map out a network, google did the same thing but indexed each page

The internet was not as messy as we thought, assumption was that most pages would have an equal number of links, where some had few and some had many

they were distributed with the power law, 1 to 99

nodes on the x axis and connections on the y axis, they form a long tail in terms of connections



Duncan Watts, important person to sna

experiment to do Milgram's experiment but for email

https://www.researchgate.net/publication/10622002_An_Experimental_Study_of_Search_in_Global_Social_Networks

only saw a success rate of 1.5% close to a power law distribution

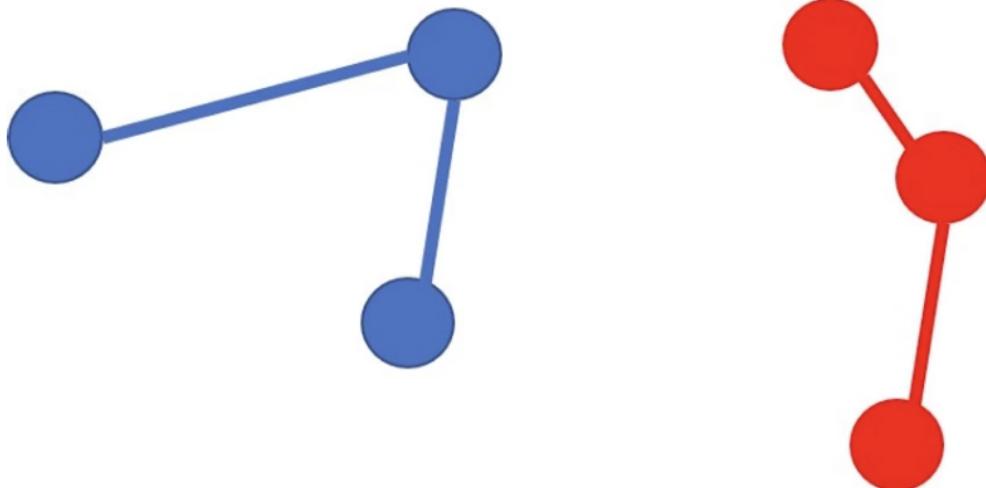
Kleinfield had the theory that the clusters were distributed like oat meal, made out of lumps, some lumps are highly inter-connected but the connections between them and the other lumps are weak to non-existent

Lumps can be more formally known as connected components. The world is not small but distant and made out of connected components



"Lumps of porridge" she meant that there were large number of such connected components or "islands" that are intra-connected but not inter-connected. According to her assumption, the world is not small but is made up of distant galaxies.

In contrast, the 6-degrees theory claims that the human network is a huge connected component and its diameter is 6 steps on average, which makes the connected component a "small world".



This graph has two connected components: the blue (left) and the red (right)

Which model should we follow? It is complicated

Meta (Facebook) shows that you can connect to any other person with an average of 3.75, shorter than what Milgram found
<https://research.fb.com/blog/2016/02/three-and-a-half-degrees-of-separation/>

https://www.researchgate.net/publication/10622002_An_Experimental_Study_of_Search_in_Global_Social_Networks

small world paradox, the larger the network grows, the shorter the average length



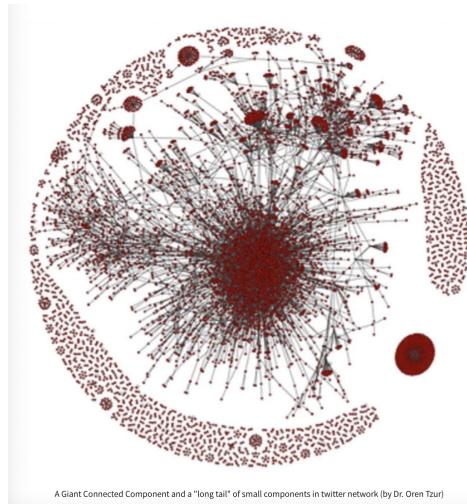
Meta (Facebook) measured the topology of the network, the chain experiments measured the network's flow.

This is like the difference between trying to find the fastest route by using a map (as done on Facebook) versus using traffic data (as in Milgram's experiment). Obviously, road maps will allow for shorter routes, at the very least, but keep in mind that maps are indifferent to the obstacles and traffic congestions on those routes.

How do giant networks look today, the network is made out of connected components

the connected components are distributed with a power law

The network contains a giant central connected component (also called the GCC)



The network becomes sparse at its edges,



There are nodes that will never reach an infinite steps because they are in separate connected components

Because they are in separate connected components to work out the diameter of the network, we can work out the GCC

What is the size of the GCC

It depends

Depending on if we look at the network topology or its traffic

In other words, is the network stable or temporal

"Studies have shown that 90% of the network will be in the GCC."

1. The #1 Rule is the power law. There are a few key nodes in the network, and the rest constitute a "long tail" with few to non-existent edges. It is a fascinating topic, so we will dedicate an episode to it.
2. Networks are made of connected components, or "islands", that also comply with a power law, meaning that there is one giant connected component and the rest constitute the long tail of small and negligible connected components.
3. The edges within the giant connected component comply with the small world paradox. The larger this component is, the smaller its diameter. The more nodes and edges in the network, the smaller the number of steps required to get from one node to another.
4. Inside the giant connected component, there are communities (or dense clusters) with unique characteristics — for example, geographical-based characteristics in Milgram's experiment or gender-based characteristics in Moreno's sociograms.

How did development go

Written by project manager

The initial stage

The beginning of the project went very well. The group was very motivated to begin working on the project and dived into the work very quickly.

Communication was unambiguous at the start, with the use of weekly reports to keep the group up to date on all development.

The main issue we had at the start of the project was managing the project's scope. Because we were all still learning about the field of network science, it was not easy to pin down what we needed to do and how to do what we needed. This resulted in resources being spent on tasks that could have been avoided.

Reflecting on this, we regret how much time was lost on these side projects, but they allowed us to learn and gave us the freedom to explore particular interests. Given the chose I would not have prevented this. I believe having that opportunity to learn as a group was important.

Middle of development

The middle of the development was when the group ran into problems. Each member has commitments outside the group, such as jobs and university work. This made it difficult for all the group members to commit the full time needed for the project and resulted in team members missing a meeting and falling out of the loop.

This made it very difficult to make progress at times and allowed for a splintering in the project's vision. In addition, this allowed for our workflows to fall out of sync, making it more challenging to combine our work.

In addition to this, motivation dropped, and I fell behind on the weekly reports, which allowed the initial stage to thrive so much.

Looking back, I would space out our tasks more and allow for more time to work on given tasks to maintain motivation. I could have also planned more casual meetups within the group, such as getting coffee or a drink to motivate the team to keep in the loop.

Having a more personal relationship could have also helped with group motivation.

End-stage of development

The end-stage was a sprint and required lots of backtracking. A lot of the technologies chosen at the start were not suitable by the end of the development. This was because as the project went along, we learned of a more effective way to implement the group's vision.

Although it is tempting to say we should have stayed focused on our original technologies and power through with development to save time on backtracking, overall, I believe we will save more time for ourselves later on by backtracking now. The motivation to get work done was better but was driven by the deadline. More organic motivation would be preferable.

Ethical audit:

For this term, we have decided not to collect data. This is because, according to GDPR, to be able to store peoples data, you will need to have a justification to collect peoples data, and if there is no longer the need to keep the data, it should be removed. We could not justify each piece of data we would collect at our current stage because we need to do more testing with practice data to see the most relevant data to collect.

Once we are able to justify why we are collecting the data, we will feel conformable enough to collect data.

Other ethical considerations we had were how does this affect greater society. For example, currently, with the role of algorithms around the structure of people, a lot of these algorithms run into the problem of bias.

As a group, we want to avoid bias to one group of people based on traits that cannot be controlled. This is because we are going to be identifying clusters of people and creating recommendations based on those clusters. Based on our reading, some clusters can form around race, gender, and religion. We do not want to create a program that promotes certain people based on race, gender or religion. We do not believe this would be ethical and would not be constructive for the greater society.

To avoid this, we may collect data like race, gender and religion, and if we see clusters forming around these things, we may have to remove it from our suggestions.

We also want to avoid reinforcing structures that encourage discrimination. A cluster may have formed from preexisting systems, which encourages bias. For example, an industry may be male-dominated. If we make suggestions based on the clusters, we may run into the risk of only suggesting other men. This would reinforce the current biases and would be unjust. Instead, suggestions should be based on skill. This is more challenging to address because the problem is much larger than our group. We would need to educate ourselves on these issues more and talk to those more educated about these topics than us to avoid reinforcing biases.

Formative evaluation

Did we achieve our goals / MVP

We made progress to our MVP. We have created a clear vision for our back and our front end. More work needs to be done in research in order to do social network analysis, but we are on track to create our MVP.

How do we feel about the current product and where it needs to go

The group feels good about the current stage of the product. We have managed to get the key parts of the product ready for development in term two.

Communication

Communication has varied throughout the project. With the use of regular meetings and weekly reports, we can keep the group on the same page. However, communication suffers when motivation in the team drops and external pressures act on the team.

More casual meetings should be set up to keep motivation and reduce the stress of external pressures, allowing for deeper conversation amongst the team to create a more robust support structure.

Conclusion

In terms of developing the product, we would say we have successfully made significant progress. We, as a group, have learned a lot and are excited to see where the product goes. What the team struggled with was doing enough user testing in order to get feedback on our product. For the next term, we would like to integrate more user testing to identify issues with the product.

We aimed to have to design on our evaluations. However, as communication broke down, we began to evaluate our designs. Communication needs to remain strong to avoid this.

Next steps for term 2

For term 2 we would like to make iterations of our prototypes faster and avoid trying to make a perfect product the first time around. This allows us to conduct more user testing to help us identify any issues.

We would also like to start applying the algorithms and the analysis skills we have developed throughout term 1.

Reference list

Nielson Norman group (2006). Why you only need to test with 5 users.

Retrieved from <https://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/> October 11th 2021

LinkedIn advertisement 2011

Retrieved from https://www.youtube.com/watch?v=PC99Nw2JX8w&ab_channel=LinkedIn October 13th 2021

LinkedIn Inmaps closing statement

Retrieved from https://techcrunch.com/2014/09/01/linkedin-is-quietly-retiring-network-visualization-tool-inmaps/?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xI.lMnvbS8&guce_referrer_sig=AQAAAFb_O6xwqXq71o70Ktg-sbz4vHUN208nfA03VoGX1UDOkFnB4KIWWr65ClyNEUscPNt3UQSYMnKX9_2rf34ui0-TSKtGAo5bkLYEdnkH7q59HpETrmnHCDZZAPZeMmRcp-exs1F916uZJSCJ60H1PWIazIXmTf940JJ952apf7 October 13th 2021

Democracy Youtube game review 2013

Retrieved from https://www.youtube.com/watch?v=zjEGCblyqzg&ab_channel=JamesAllen on October 12 2021

The Magical Number Seven, Plus or Minus Two Some Limits on Our Capacity for Processing Information by George A. Miller

Retrieved from <http://www2.psych.utoronto.ca/users/peterson/psy430s2001/Miller%20GA%20Magical%20Seven%20Psych%20Review%201955.pdf> on October 18 2021

Uzzi, Brian. "Social Structure and Competition in Interfirm Networks: The Paradox of Embeddedness." *Administrative Science Quarterly* 42, no. 1 (1997): 35–67. <https://doi.org/10.2307/2393808>.

House, James S., and Jeylan Mortimer. "Social Structure and the Individual: Emerging Themes and New Directions." *Social Psychology Quarterly* 53, no. 2 (1990): 71–80. <https://doi.org/10.2307/2786671>.

Appendix :

Notes on social influencers on how to network :

General Notes Human, social interactions Insight to networking

General Practices and Advice for Networking on LinkedIn

Gaining your first 500 connections on LinkedIn

- Connecting with people that you know (this video mentioned friends)
- Connecting with people within your niche - sending them a custom message as well
- Having an active profile (actually posting on your account)
Why nobody is accepting your LinkedIn request @ alexshoen
- Most working adults use it as if it's facebook - connecting with friends and acquaintances (people they've actually worked with or met in a meeting etc)
- Mainly use it as reference?
- No one would accept from a random person (may be difficult to prevent spamming requests)
- Connecting only to ask a question and it doesn't go further than that
- Sending personalised note when connecting
- Connecting within their school
Methodology of LinkedIn Networking @ pipercassidyphillips
- Strategically choosing who you want to reach out to
- Filtering the search to find common ground (school, mutuals, location, companies)
- Personalised Message by bringing up that common ground
Network without being creepy @ wonsulting
- Mention past post in featured/activity
- Go to university pages and find people
- Both methods needed a personalised message attached
- Join company groups on LinkedIn
Reaching out on LinkedIn @ careerbabe
- Intro with point of connection (school, societies, etc)
- Why speak to them specifically (message)
- End with a direct ask (e.g. I'd like to know about what you do and your career path...) Things you should never do on LinkedIn @ j.t.odonnell (for new connections)
- Don't ask them about helping you meet the hiring manager in the first message
- Asking them too many questions expecting them to respond in a timely manner
- Not to get upset if they don't accept your connection straight away, or at all

- Instead study the person and send a customised invite about what you have in common professionally.
- Tips for non-awkward networking to land a job @ greglangstaff
- Search the company
 - People who work there that you have connections in common with
 - Ask for connection in common for an intro to person
 - Once introduced you can talk to the person about the company
Advice that they have in common - comparing all of the videos
 - Most of the advice became repetitive so to summarise:
 - Most professionals who connect would (prefer) to use it similarly to facebook, so they are more likely to connect with friends, colleagues, classmates.
 - As most people will actively search for the companies they may want to work for, they may also want to connect with professionals in the same industry as they'd like to be in.
We need to find a way to connect suggested accounts to each other - perhaps connecting them through other social media (twitter)
 - Find a way to limit the view of people they suggested to be linked to - may need to do this by filtering by your location/ location of the school. You'll be able to narrow down and maybe provide more meaningful connections; will help (not sure about solving) users from spamming connections to get to 500+.

Key fields on a LinkedIn profile

How linked in will contribute to the attributes

My case study examples are Jonathan Javier and Jerry (Je Hak) Lee who both have a leading role at [Wonsulting](#), who provide training and coaching for how to improve your networking ability.



Accomplishments

28 Courses

Advanced Topics: Management & Decision-Making • Calculus for Business • Competitive and Strategic Analysis • Decision Analysis and Management Science • Ethics and Law: Business/Society • Financial Accounting and Reporting • Financial Evaluation and Managerial Analysis • Foundations of Finance • Industrial/Organizational Psychology • Information Technology Management • Intermediate Macroeconomics • International Finance • Introduction to Business • Introduction to College Mathematics for Business • Introduction to Computing • Introduction to Entrepreneurship • Introduction to Financial Management • Introduction to Macroeconomics • Introduction to Microeconomics • Leadership Development...

6 Projects

Big 4 Research • Universal Academic Support System • Los Angeles Lakers Mobile Marketing Plan • Sherwin-Williams Merger Project • Goodwin's Organics Marketing Plan • Jonathan Words of Wisdom

4 Honors & Awards

Cum Laude • Highlander Excellence Scholarship • Chancellor's Honors List • Dean's Honors List

4 Organizations

Students Consulting for Non-Profit Organizations • UCR School of Business Administration Student Leadership Council • Associated Students of University of California, Riverside • UCR Honors Program

3 Languages

English • Spanish • Tagalog

How linked in will contribute to the attributes

My case study examples are Jonathan Javier and Jerry (Je Hak) Lee who both have a leading role at Wonsulting, who provide training and coaching for how to improve your networking ability.



Skills & endorsements

Public Speaking 99+

Endorsed by Unnisha Nettini D'Alvise, Jr and 43 others who are highly skilled at this

Endorsed by 20 of Jonathan's colleagues at Wonsulting

B2B Marketing Strategy 99+

Endorsed by 8 of Jonathan's colleagues at Wonsulting

Strategic Consulting 99+

Endorsed by 5 of Jonathan's colleagues at Wonsulting

Show more ↴

Recommendations

Received (55) Given (55)

Cheneli Peres Creative Strategic Marketing Coordinator (Intern) Strategy Intern (Intern) President of Business Transfer February 25, 2021

Pavan Jardine Economist Data Science (UC) Previous Retail Strategy Intern (Intern) President of Business Transfer February 25, 2021

Jonathan is amazing! He is not just a coach, but he's truly a close friend at the same time. What he does is unlike any other career coach in the sense that he will help you every single step of the way in your career journey. I loved to... See more

How to rank skills idea : find a list of the most common skills and find a system to rank them

Recommendations, find appropriate ratio of received to given

Possible connection

Link recent recommendations to their

How linked in will contribute to the attributes

My case study examples are Jonathan Javier and Jerry (Je Hak) Lee who both have a leading role at Wonsulting, who provide training and coaching for how to improve your networking ability.



Education

UCR University of California, Riverside Bachelor of Science (B.S.), Cum Laude, Finance, General

Graduated from the University of California, Riverside, major in Business Administration with a concentration in Finance
• GPA: 3.88
• Dean's Honors List
• Chancellor's Honors List
• Helped bridge gap between UCR and top companies; have helped 200+ Highlanders get jobs.

Education can be a cluster

Sub clusters of what their education in, exp BS of science

Volunteer experience

Speaker | Workshop Leader | Panelist Cisco Jun 2019 - Present • 2 yrs 5 mos Education

Lead 3 workshops, specifically for Early Career Network (ECN), Intern Program, and New Graduates on following topics:
• Resume Building
• LinkedIn Branding/Strategies

Volunteering

Active role

How linked in will contribute to the attributes

My case study examples are Jonathan Javier and Jerry (Je Hak) Lee who both have a leading role at Wonsulting, who provide training and coaching for how to improve your networking ability.



About

About page

Hello! I'm currently CEO. It's easier to reach me at my IG [jonathanwordsofwisdom](#) or through text (310-421-0893). If it's career related questions, please reach out to our team at hello@wonsulting.com.

My story: I remember struggling to find opportunities coming from a non-target school/non-traditional background. Applying to hundreds of roles wasn't working, and all I would receive are job rejections.

Does this sound like you in your career? 😊

My name is Jonathan (#JWWW), and I've always strived to work in the top tech companies in each industry (startup, software, hardware) coming from a non-target school to help

Experience

Wonsulting

2 yrs 10 mos

Part time

Length of time at company

Current role

Active company experience :

CFO/Co-founder (Full Time)

Part time

Part time / full time

Active company :

Founder

The20, a Wonsulting Company

How linked in will contribute to the attributes



My case study examples is Jerry (Je Hak) Lee who both have a leading role at Wonsulting, who provides training and coaching for how to improve your networking ability.

Name:

Jonathan Javier

(He/Him) - 2nd

Wonsulting

Active company :

Headline :

CEO @ Wonsulting & The20 | Need a job?

Text: 310-421-0893 | Helping non-traditional

backgrounds/non-target schools land jobs |

Cisco, Google, Snap | Ft: Forbes, Insider,

CNBC, WSJ, Yahoo, The Times, Fox, TikTok,

etc

etc

etc

WONSULTING

WONSULTING FREE Resources

Wonsulting offers free career resources like

Resume & networking templates to help yo...

Featured :

Featured

See all < >

Activity :

Activity

Normalizing sharing rejection stories. Rarely anyone gets...

I quit my corporate

LinkedIn: is creating a

LinkedIn:

Table 1 (continued)

Effect	Description	Illustration
Covariate ego	Preference for ties from network members high on the respective covariate (measure of covariate activity)	
Covariate similarity	Preference for ties to network members with similar values on the respective covariate (measure of homophily)	
Behavior dynamics Linear/quadratic shape	Preference to high values/extremes on the behavioral dependent variable (measures of distributional feature)	
Average similarity	Preference for behavioral similarity to connected network members (measure of assimilation)	
Average alter	Preference for high values on the behavioral dependent variable, if connected network members have correspondingly high values (measure of contagion)	
In-degree	Preference of network members with many incoming ties for high values on behavioral dependent variable (measure of status effect)	
Out-degree	Preference of network members with many outgoing ties for high values on behavioral dependent variable (measure of activity effect)	

Note. Black nodes indicate high scores on the covariate or behavioral dependent variable, respectively.

Table 1
Selection of SIENA Effects for Modeling Network Dynamics and Behavioral Dynamics

Effect	Description	Illustration
Network dynamics		
Outdegree (Density)	Preference for ties to a random network member (measure of the basic intercept)	
Reciprocity	Preference for ties that respond to an existing unidirectional connection (measure of mutuality)	
Transitive triplets	Preference for ties to network members that are the friends of my friends (measure of network closure)	
Balance	Preference for ties to network members with a similar ego network of existent and non-existent ties (measure of structural equilibrium)	
Three-cycles	Preference for ties that form unidirectional cycles (measure of non-hierarchy or generalized exchange)	
Betweenness	Preference for ties to network members, which are unconnected to each other (measure of a member's linking role)	
In-degree popularity	Preference for ties to network members with many incoming ties (measure of status attraction)	
Out-degree popularity	Preference for ties to network members with many outgoing ties (measure of activity attraction)	
Covariate alter	Preference for ties to network members high on the respective covariate (measure of covariate popularity)	