RECOMMENDED BY DOCTORS

RELIABLE INFORMATION

USER - FRIENDLY

CUSTOMIZED DIAGNOSIS

MARCH, 2018

SYMPTOM HUNTER

Analysis & Design Process

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EXECUTIVE SUMMARY

"Symptom Hunter" is a great healthcare app designed by six passionate young people. While comparing 3 different healthcare apps (WebMD, Mediktor and yourMD), we found out that there are still some limitations in those apps. So we got to work and decided to design a new healthcare app with more reliability and usability.

Healthcare apps' users are people that need to check symptoms/drugs or make an appointment with the doctor. There's no doubt that cell phones have become a part of our bodies, that is why our team decided to design a mobile app instead of a website or a desktop application.

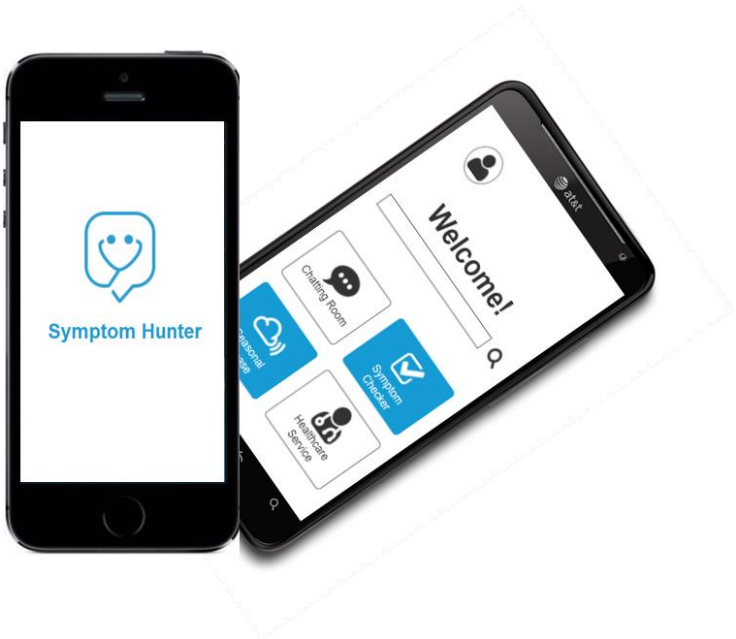
The undertaken studies had these main objectives:

1. Getting to know about the advantages and disadvantages of the other three competitors.
2. Identifying our potential users and the way they would like to use our app.
3. Discovering users' needs and preferences when making use of Healthcare services.

The study outcomes helped us find out what is important to design a great healthcare app. After analyzing the results from more than 20 questionnaires and interviews, we got an overall idea about users' behavior, preferences and experiences. This really helped us build a nice prototype. Designing is an incremental process though, so there is no doubt that out team will keep working on improvements that enhance user experience!

Our "Symptom Hunter" app's design is user-oriented, and its structure allows any person to browse it without any type of required training. Hope you enjoy reading about our work!

Content



1. DESIGN BRIEF

Nowadays, there are tons of information available on the Internet regarding medical issues and diseased. However, the source of the information is not always reliable and it is inconvenient for people to manage their health records outside the hospital.

We are going to design a mobile application to help people manage their health information at home and provide timely medical help. The main function of the app is symptom checking. A personal account will be created to keep track of health conditions. People can check their symptoms by searching by text, pointing at the specific part of a body structure diagram, and by describing the symptoms by voice. The diagnostic report will provide the general description of the disease and some simple measures that can be taken. Also, people can make online appointments with local doctors through this platform.

Potential users:

Almost everyone can be our potential user. Whenever a symptom appears, the user can look it up and then decide whether he/she needs to consult a doctor, go to the hospital, or just take some measures at home.

Here we list several groups of people who may benefit the most from our app:

1) People who live in remote areas far away from the medical institutions
2) Families with kids and elderlies who are relatively vulnerable
3) People who are interested in learning more about a specific symptom or doing more research in a certain medicine

2. COMPETITIVE ANALYSIS

This competitive analysis was conducted to identify the usability of three competing applications in the health field: WebMD, YourMD and, Mediktor. We will analyze them in seven dimensions: efficient navigation, ease of use, organizational clarity, effective visual design, adequacy of information, practicability and, readability.

Efficient Navigation

No matter how good the design of an application is, if the user does not understand how to use it, then no one is going to use the application. Navigation is considered a fundamental pillar of an application for a seamless user experience. The Navigation design should always be direct, simple, to the point and should always help the user achieve their goal.

The Navigation design of the three competitive web applications was analyzed based on the Following factors. 1)The Apparent and easy controls for the user to move from one page to another page. 2)The consistency in layout and the common navigation objects that appear in every page.3) Clarity of the options and instructions of the features that the user intuitively does not know.4) The flow and possibilities of how a user can achieve their goals.

The Ease of control for the user and the consistency in the layout and common navigation objects is seamless, smooth and direct in the WebMD app. It is easily understandable even for a first-time user who has not followed the instructions. The layout the page is same throughout the application. The most important feature of the application is it consists of several external links related to the symptoms and provides additional information.

The YourMD and Mediktor is an interactive application which drives a dialogue between the user and the AI. The ease of control and common navigation of Mediktor is not as smooth as the WebMD. It is also a little confusing to go back and forth in the application. There are no additional links available which are also a drawback. The most interesting feature of the application is it shows a little display of the symptom for the user to understand it better. The symptom checker of YourMD just has one giant dialogue box where it is asking questions and you either have to reply in as a message or select an existing option. Symptom Checker of YourMD is very restricted and does not have a lot of alternatives for the user to explore.

Ease of Use

In terms of ease of use, a well-designed medical application should satisfy the user's need directly, completely and friendly.

WebMD is a quite mature platform which provides various medical services including symptom checker, medication reminders, drugs and medications, relief advisor, even cold & flu map. It seems more like a dictionary than a dynamic medical advisor, although it provides a wide range of information from reliable sources. There's always a trade-off between the ease of use and functional complexity.

In comparison, Your.MD is friendlier because it simulates the chatting between the user and his/her private doctor in a cordial way. The "doctor" greets the user and leads the conversation with simple questions and multiple understandable choices. There are also other materials such as health trackers to support the user's further needs.

Mediktor asks the user directly his/her symptom and triggers a very detailed survey. When it comes to choosing the symptoms, it is silly that the user must check both "Yes" and "No" and he/she can never go back and change the previous answer. After the diagnosis, the user can learn more about the disease and its urgency. Some doctors are recommended to talk with.

Organizational Clarity

While browsing a web/application, the user should be able to easily explore the different site's sections. That is why the menus and graphics must be intuitive and the designers should avoid including doubtful or complex elements. That is to say, one of the core implementation goals should be organizational clarity.

Although some of the app users may be scientists and doctors, it can be assumed that most of them will be patients that are concerned about some unusual symptom. Thus, a good approach could consist in assisting the user by going through several questions about their feelings, pains, doubts, etc. Different organizational schemes have been identified after analyzing three leading symptom check apps.

Regarding organizational clarity, it can be stated that the three competitors have come up with really good layouts and configurations.

Both "Your.MD" and "mediktor" have decided to base their symptom checking on a dialogue with a "cyber-doctor". However, "mediktor" goes through this conversation by using more graphic sections, which could

probably be useful to the patient. Although both apps browsing is well designed, a menu/button that allows the user to come back to the home menu should probably be included in "mediktor".

Finally, "WebMD" has probably the most different organizational structure. Right after opening the app, the user finds a clear and graphic home menu with all the app's sections. After selecting "symptom checker", the patient can check his/her symptom by either exploring a list, looking a keyword up or visualizing a human body. All these three options are perfectly organized and allow any type of user to efficiently use the application. In addition, every section contains additional graphic buttons to go back (a backward arrow), go to settings or ask for help (with the usual? symbol). Although going through a dialogue with the user could be better to avoid skipping some symptom, WebMD has been identified as the best app in terms of organizational clarity.

Effective Visual Design

The effective visual design is also the important part to help the user understand the product as well as the culture of development. The Visual design of the three competitive web applications was analyzed based on 1) Navigation Design, 2) Logo Design

Logo Design:

WebMD also has the simplest style, which uses its name as a logo. However, users should not understand what is WebMD as a first-time user until they open it. Mediktor is a question mark logo, the design idea is that this app will answer any questions that patient asks for the symptom. It gives users opportunity to understand how this app will work. Your MD is a stethoscope, the user could know this is a medical app but they don't know how this app will work.

Navigation Design:

WebMD has the great navigation design, the logo for each function such as a biological person for Symptom Checker, a clock for Medication Reminder remind users to select each function very straightforward

Mediktor's navigation design is based on the text window when the user tries to type the symptom. There are several choices come out. users could follow the selection of symptom to finally see the result

YourMD has the most confused navigation design when a user opens up the app, it only has the chat windows. There are not any choices for the user to find out the symptom or another function.

Adequacy of Information

The main purpose of these symptom-check apps is to analyze the symptoms of the user and provide the user with suggestions to their disease. Therefore, providing adequate information to the user is the core value of these apps. When analyzing how much information is provided from these three apps, we are specifically focused on the adequacy of information in the symptom-check results regardless of the procedure how these results are achieved.

All these three apps can provide sufficient basic information for one disease. For example, general introduction, common symptoms, diagnosis, the suggestion for treatment, the severity of the disease. However, each app still has differences in providing information. Obviously, "WebMD" provides the most detailed information for one disease. Other than the information mentioned above, "WebMD" also provide the epidemiology, risk factors, ways to take care of the user him/herself, what can make it worse, when to see a doctor, questions to ask the doctor, and what to expect for the disease, also some useful facts and suggestions for the disease. "Your.Md" and "medikor" provides similar depths of information. The major difference is "mediktor" provides epidemiology, associated kind of specialties, and probabilities of signs and symptoms, which makes this app a better rate than the "Your.MD".

Practicability (provide help)

All these three apps are very helpful for users who want to check their symptoms, find out what disease they may have, and realize how to treat it. "mediktor" offers online chat service with specialists, and it also suggests some online specialists according to the user's symptoms, though most of them are abroad, and not free. This online chat service offers lots of convenience to its user, however, the reliability of those specialists is questionable especially considering the limit of online chat. Different from "mediktor", "Your.MD" offers links to other apps which are specialized in online healthcare services. Those specialized apps might be better in contacting doctors, but this approach causes more operations for the user. "WebMD" offers information of local physician, hospital, and pharmacy according to the user's location. It gives the user very useful information for those service providers, like contact information, experience, ratings, insurance, office information, etc. In our opinion, localized doctors can offer a much more accurate diagnosis to the user, but it is not quite convenient. These three apps used three different ways to connect their user to the doctors, each way has its own advantage and disadvantage. Since the accuracy is most important in diagnosis, "WebMD" is slightly better than the other two.

Readability

The navigation, layout, as well as the good visual design, are very important for the designer to make the content of app becomes readability by users. These functions should be simple for users to walk through in order to achieve their goals.

The WebMD app have the great layout, navigation objects, as well as the good visual design to help users understand the symptom. They could read through any definition and easy to select the classification they want to check the symptom.

The YourMD and Mediktor provide users opportunity to speak with the AI. However, it is not readability for the first-time user. it requires users to understand their symptom instead of directly looking for their symptom. As we mentioned in navigator part, the navigation also confused for users to go back and forth in the application. They gave users some choices to select during speaking with AI, but once users' question goes outside the choices, it will return an error and the page is not readability. So, the simplest way is better to understand.

Conclusion

The following table summarizes the undertaken analysis by grading several app's categories from 1 (very bad) to 5 (outstanding):

	WebMD	mediktor	
Efficient navigation	5	4	5
Organizational clarity	5	4	4
Effective visual design	4	3	2
Adequacy of information	5	4	3
Readability	5	3	2
Ease of use (facilitate user task)	4	3	5
Practicability (provide help)	5	4	4

Table 1 Competitive Analysis

3. USER RESEARCH

Methodology

In this user research, we have used two methods: interviews and questionnaires. These two methods will be complementary together and provide us with a more comprehensive analysis.

Design of the interview protocol and questionnaire

The interview is a qualitative way which is more flexible and contextual. By talking and observing the interviewee, we can probe on behavior and adjust the interview protocol as the flow goes. Therefore, we prepared some basic categories of questions and ready to improvise and develop the questions according to the response of the interviewees. In terms of the interview, we conduct it in two ways, Skype and face-to-face. We develop our own interview protocol and took notes.

The questionnaire is a quantitative way which depends on mathematical analysis to come to a result. People are free to answer or skip any question, and they tend to spend little time on questionnaire. Therefore, we take the form of multiple choice to simplify their process of thinking and facilitate our own statistical summary. The questionnaire is made on google form so it is very easy to share and retrieve. The whole results will be kept clearly in a spreadsheet.

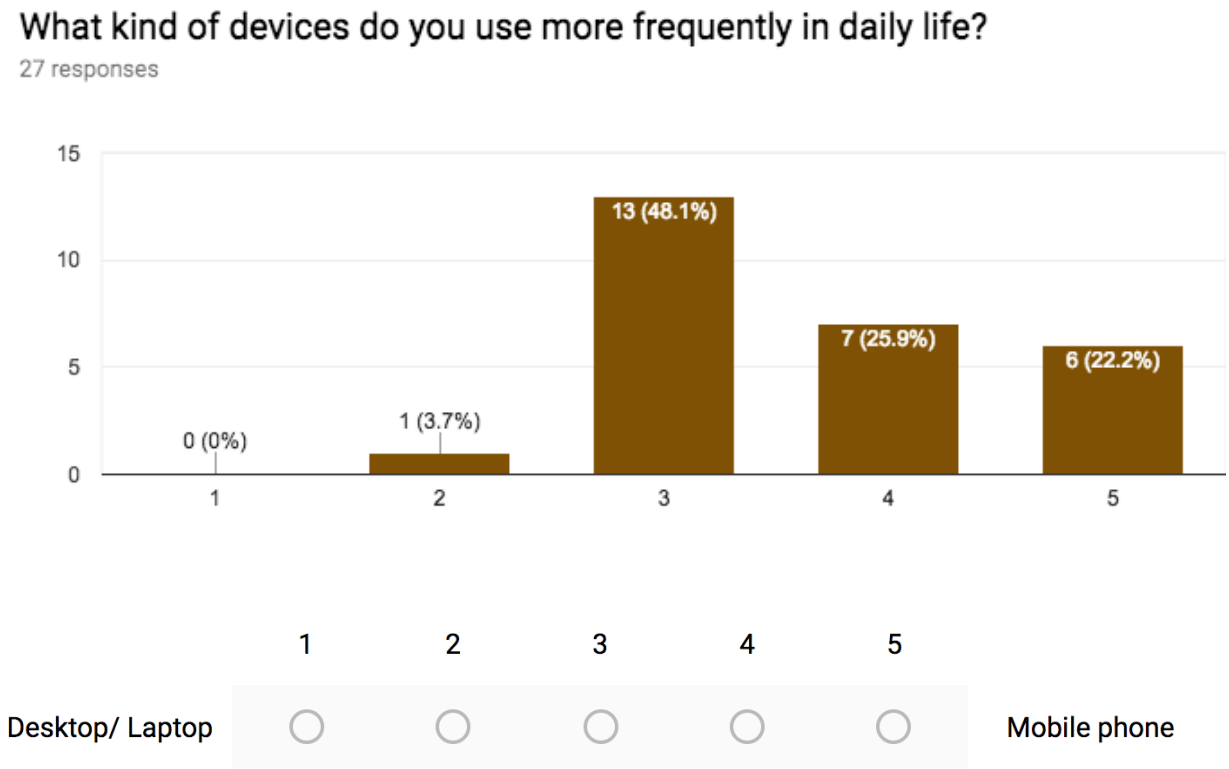
Goal and participants of the research

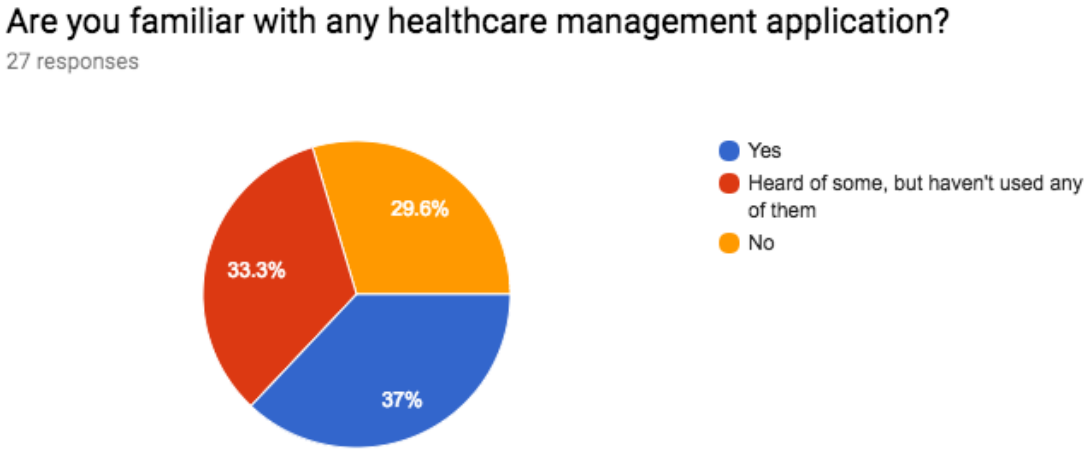
The purpose of this user research is to inform our design decisions. Thus, we will try to understand the true need of the potential users and to solve their problems effectively. The goal of our design is to make the symptom checking process easier and provide reliable and useful information for the user. Therefore, our research will first try to understand deeply what is truly required within the daily scenarios, then focus more on the users' inconvenience faced with the traditional health service (treatment etc.), the habits and difficulties related to health information searching, and the attitude towards certain kind of healthcare application.

There are in all 27 participants in this user research, 13 males and 14 females. The detailed information about them are shown in the next section.

Findings

[Selected results of the questionnaire]



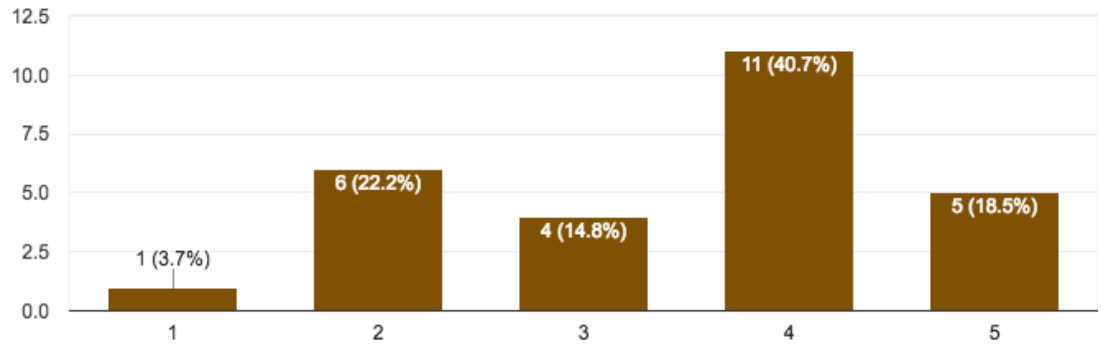


If you observed a certain weird symptom, what would be the first thing you do?

27 responses

When describing the symptoms, what part will be harder to describe?

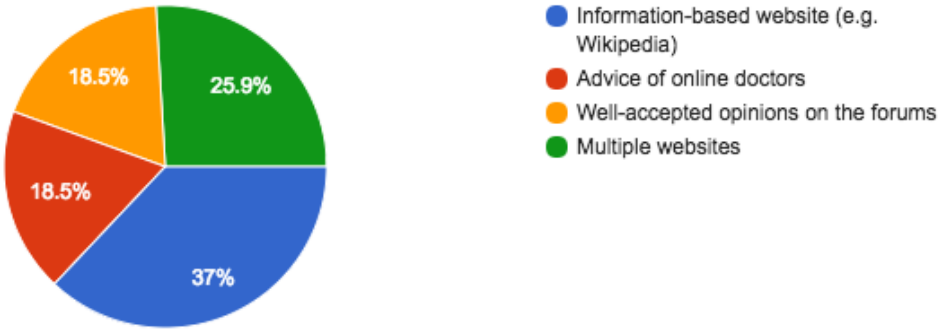
27 responses



	1	2	3	4	5	
The exact body part	○	○	○	○	○	The symptom (e.g. degree of pain, the color or size of the stain)

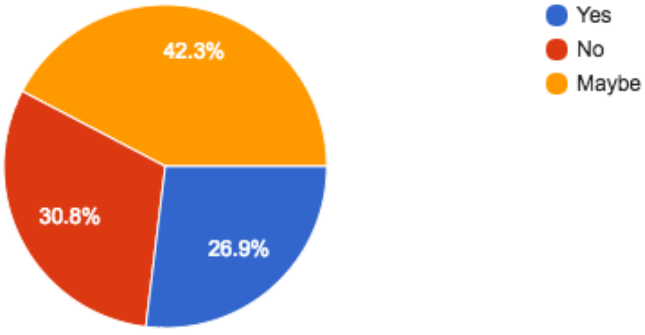
What source of information concerning symptoms and measures to take, is most reliable to you?

27 responses



Would you use over the counter Medications (medicine that you can buy without a prescription) specified by an online source?

26 responses



What kinds of difficulties did you faced when searching for health informations(symptoms, drugs, health service.....) online?

23 responses

I can't anwser questions.
Too much general information
lots of different answers, dont know take which one
The accuracy is uncertain
The information online is exaggerated and often scary
Drugs
symptoms, drugs, health service
Not knowing which sources to trust
Symptoms
Unreliable information
Reliable sources.
Sorting out useful information

What do you think are the restrictions of the common treatment in the hospitals?

12 responses

The period of treatment is long.
Contact time is not enough
I will listen to the doctors.
Need to make appointments and wait for a long time
Too many people
too many people
price
expensive
Expensive and Time consuming
Insurance
Impossible to get appointments in the US, and healthcare is too expensive
Too Expensive

Key insights from the interview

After conducting the interview, we use the post-it to collect the key insights. We categorize the insights into three types: user information, user behavior and user need. Here is the summery:

USER INFORMATION

- Most of users: students, international students, 18-30 years old
- Good health condition, not chronic diseases
- Some of them with medical education background, some of them not
- Most people got sick once in a couple months

Less frequent

- Students usually get significantly worried when feeling sick
- Some interviewees had children

USER BEHAVIOR

- Mobile phones as the preferred electronic device
- Most of them know Healthcare websites, just a few knew about apps
- Googling the symptoms as the first step
- Older people use these systems more frequently
- The mostly known website is WebMD

Less frequent

- Use of drugs online stores
- Use of Healthcare forums

USER ATTITUDE

- A lot of people consider the information to be unreliably and inaccurate
- Hospitals drawbacks: smell, time consumption, cost
- Symptoms description to be the hardest task
- Students are willing to try a new app/website if recommended by a friend/family member

Less Frequent

- Exaggerated and scary data

USER NEEDS

- Some users prefer websites full of information, others prefer basic and simple contents.
- Importance of a chat tool to help the patient describe his/her symptoms

Implications

Pervasive usage of mobile phone

Most of the participants use mobile phone most frequently in their daily life, and in most cases, computer is used more in work. Most of them only heard of certain healthcare-related applications or websites, but they are willing to at least try a new health app if it is recommended by their friends and medical authority.

Recommendation: We can stick to our initial idea of designing first a mobile application rather than a website. And we can consider collaborating with a well-known medical institute in certain kind of way to introduce our design to the public in the future.

Different pre-treatment behavior (after observing a symptom)

If some symptoms occur (they might be wired), young people tend to search online for more information, relatively older people tend to turn to others (their friends/family) for help, and people whose specialty is related to medical science tend to look for information from serious sources (e.g. authorized magazine, published paper in NIH)

Recommendation: To satisfy the need of different types of user, we should at least have three sections in our app: basic searching function, a chatting function and scientific dictionary of knowledge and lately published news.

Unfamiliarity with the body parts and symptoms

When it comes to symptom description, people have difficulties identifying where the symptom lies, especially in the case of inner organs. And it is hard to specify the degree of pain or size of the stain.

Recommendation: We should design a switchable page which includes a human body-structure diagram and a list of symptoms to help people identify clearly their symptoms.

Sensitivity to drug/treatment information

People search online to find out what might be the disease and how serious it is, and also, they try to find simple measures that can release the symptom that they can take at home without going to the hospital or taking drugs.

Recommendation: We should include a seasonal disease section to remind the users of the flus and provide simple precaution suggestions. Instead of selling drugs on the application, we offer reliable and timely information for the user and let them decide what to do next.

Need of dynamic feedbacks and accurate medical information

People complain sometimes about the time limited during the appointment with the doctor and the websites are always static. Therefore, their real need is to have dynamic feedbacks. More importantly, there's no meaning if the medical information is not reliable or accurate.

Recommendation: We will probably allow the user to have a "private doctor" which is an AI and give them timely and up-to-date information and diagnostic reports. And if the disease is serious, people can make appointment directly with nearby health centers with our application.

4. PERSONAS, SCENARIOS & USER FLOWS

PERSONA 1: EMMA ISABELLA

Emma Isabella

Xtensio

"A software engineer wants to take care of her children"

Age: 31
Work: Senior Software Engineer
Family: Married, 2 kids
Location: Philadelphia, PA

Personality

Introvert	Extrovert
Thinking	Feeling
Sensing	Intuition
Judging	Perceiving

Behaviors

- Emma is impatient in daily life. So she doesn't want to get goal with so many steps.
- Emma is interested to try new healthcare app.
- Emma loves her children and she feels they are the most important.

Profile

Emma uses mobile phone every day, and she knows how to get information from Internet and she always do it. Every time when her young child feels pain, she tries to check symptom from Internet and healthcare apps.

Wants & Needs

Emma wants to find a good healthcare app which could help her check symptom fast and accuracy. Also she doesn't want to use a complicate app because she is busy every day and couldn't spend a lot of time during it. She also wants to make appointment with doctor easily when it is necessary. And she wants to know what medicine should be used for her young child.

Attitude

Emma's company used to develop a healthcare app and she is familiar with this kind of software.
She finds a lot limitation when using the old software.
These days she is searching new healthcare app for her young child because her young child always feel pain of his left leg when he is working or running.
She tried the WebMD and found there are so many questions need to answer and hard to determine what kind of symptom her child got.

Motivation

Incentive
Fear
Growth
Power
Social

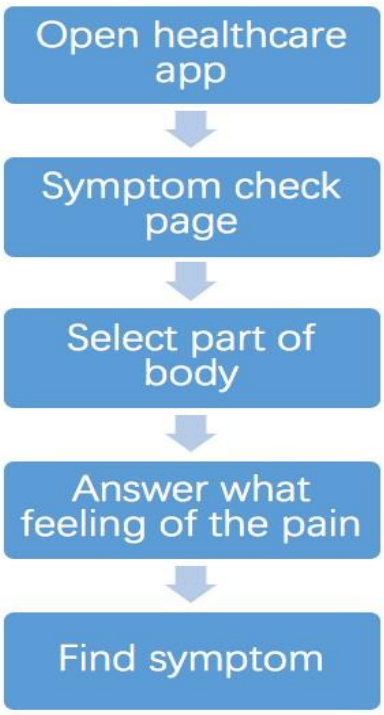
Preferred Medical Apps

WebMD
YouMD
mySymptoms

SCENARIO 1

Emma's family loves taking exercise every day. There are four people in her family: Emma who is 31 years old, Steve who is 33 years old, Annabelle who is 6 and John who is 7. One day, they prepare to run outside in a big playground near their community. As usual, Steve runs at the first place and Emma runs at the last for taking care of her children. While Annabelle runs in second lap, she stops because of the pain of her leg. Emma wants to know what happen so she opens a healthcare app to check the symptom and try to find out how to deal with it. Emma would like Annabelle to stay away from any pain. After use app "Symptom hunter", Emma finds what happen and massage for her. Then Annabelle feels better.

USER FLOW



PERSONA 2: CAITLYN HAITHOSPITAL

Caitlyn Haithospital

"I do not want to go to hospital every time I get sick."

- **Age**: 29
- **Education**: BS in Computer Science, PhD in Biomedical Engineering
- **Occupation**: Scientist in a Biochemistry company
- **Family**: Single
- **Incoming**: $90000 + per year
- **Activity**: Gym, Hiking, Reading

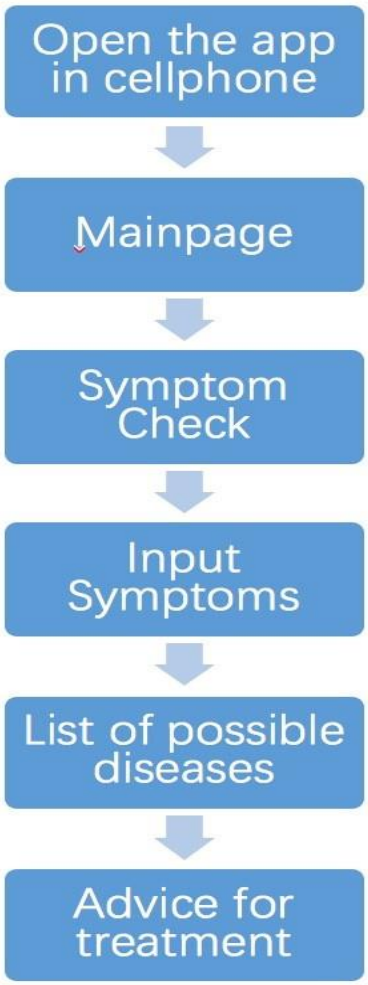
- **Profile**: Caitlyn has worked in a biochemistry company as a scientist ever since she graduated with PhD in Biomedical Engineering. Since she has worked in the field of biomedical for so many years, she is quite experienced in the field of medicals and pharmaceuticals, but she could not make diagnosis by herself.
- **Internet Usage**: Caitlyn cannot live without Internet. Though Caitlyn has computers both in office and at home as well as laptop, she is a heavy cellphone user. She prefers to searching the information in her cellphone before looking to a computer.
- **Medical History**: Caitlyn has a very healthy life style. But this could not absolutely prevent her from getting sick. Unfortune sickness and uncomfortable symptoms find her several times a year. She does not like going to hospital, as it is inconvenient and time consuming.

- **Wants & Needs**: Caitlyn would want to make a pre-diagnosis by herself whenever and wherever she feels uncomfortable and sick. She wants to be able to check her symptoms at home and know what possible disease she has, so she could make a decision whether she should go to hospital or just buy some OTC medicine at a nearby pharm store.
- **Learning Skill**: Caitlyn is always enthusiastic in learning new skills and new technologies. "I like new challenge" as she always said to her friends.

SCENARIO 2

It is a busy week for Caitlyn as she is in a foreign country for a business travel. It is the first morning after she arrived in the new place. She suddenly feels uncomfortable when she wakes up. With running nose and sneezing, she feels like she gets a cold after she moves to a new place. As she knows many diseases can have similar symptoms, she could not decide what she really gets. If she is at home, she could just call her physician and get some help. However, she is in a foreign country and she could not speak the native language, which makes it difficult for her to get local medical services. She hopes there could be a way to check her symptoms even in her hotel.

USER FLOW



PERSONA 3: LISA NOBOTHER

Lisa Nobother

Age: 21 | Location: Manchester, UK | Major: accounting

International student in UK

Frustration:

1. Being afraid of ask for help when feeling depressed
2. Difficulty making new friends in a new environment
3. Feeling anxious about the schoolwork

Internet usage:

When Lisa uses the internet, she watches videos, search for various information, and does online shopping. However, she seldom uses social networking software applications. She likes photography, so sometimes she shares her work on Instagram.

"When I'm depressed, I do need someone to talk to but I don't want to bother people."

Life goals:

1. Have close friends to share feelings frequently
2. Pursue a career in media art

Experience goals:

1. Not feeling alone
2. Be positive and happy

End goals:

1. Find more people like me (sensitive and introvert) to share experience
2. Have access to a professional psychologist easier and less costly

SCENARIO 3

Lisa moved into a new apartment in Manchester on her own without anyone else's help. She felt so exhausted and alone sitting on the floor, in an empty room. She wants to talk to her friends about the day, but she thought over and decide not to bother them with her bad mood. She has a number of a psychologist in her phone, but the psychological counseling is quite expensive and the clinic is far away from her place. She doesn't even want to move a finger right now. Lisa opens her daily, and starts dumping all the metal junk into the paper. At this moment, she got an email from the school where

there is a link to download a healthcare mobile application……

USER FLOW

PERSONA 4: NIK GLOBETROT

SCENARIO 4

Today was extremely busy at school, so Nik decides to text some friends in order to meet and play volleyball at the Drexel's sand courts. They have a really good time, but leave earlier than expected due to the cold weather. Once back at home, Nik starts to feel a little bit sick. Despite not being a great discomfort, he experiences a great concern since he has a lot of work this week, and being ill won't help at all. He doesn't like to take medicines without previous medical prescription but, at the same time, he doesn't really want to go to a Health Center: last time he went to the doctor he had to wait for three hours and got charged $120, even though he has a health insurance plan. To be honest, Nik would rather spend all that money on traveling to Chicago next weekend. While trying to find a solution, he remembers a Symptom Check app a friend recommended him a few days ago.

USER FLOW

PERSONA 5: KYLE JACKSON

Kyle Jackson

"Consulting is a tough work, I don't have time to take care of my family as well as my health"

Age: 35

Occupation: Kyle is a senior consultant, his average work time is 12 hours per day and 80% of his time are in business travel

Education: Kyle held a MBA degree in Wharton Business School and bachelor degree in Information Systems, He was highly sensitive to the new technology

Family: Kyle lives with his wife and has two children, his wife always complain his work because he come back home very late, his wife is an accountant and has times to take care of their children

Household Income: The total aftertax household income is $150,000

Profile: Kyle works as senior consultant in the technology department. His current clients located in Austin, Texas. So most of his time are in travel to Austin.
Kyle prefer to use mobile app to improve his work, life, and health. But he'd like remote help that he can ask help anywhere and anytime

Technological Usage: In order to give proper advisory, consultant must be familiar with new technology evolution. Moreover, Kyle believed that technology development are changing human's life, so he prefers to use mobile app to improve his life.

App Goals: Kyle would use healthcare app to check his symptoms, it is difficult for him to accurately identify his symptoms, he doesn't have time to consult doctors. Additionally, working in the high pressure industry, Kyle sometimes feel depressed, he does not want to tell anybody about his symptom, so he prefer to consult online doctor anonymously

Wants & Needs: Because Kyle is very busy, he wants to identify his symptoms directly and clearly and could understand what to do next. So he wants to see easy-to-understand function for our programs and symptoms description, helpful links and FAQ and online discussion board that help him to ask questions, and online doctor that could consult his symptoms anytime and anywhere

SCENARIO 5

When Kyle finishes the telephone conference and looks at the watch, it is 10pm, he still remains a PowerPoint that will present to his clients in tomorrow morning. He is very tired, both mentally and physically, so he prepares to bring the work to home. When he gets back to home, two children caught a cold and keep crying, but he doesn't have time to take care of them, he has to finish work.

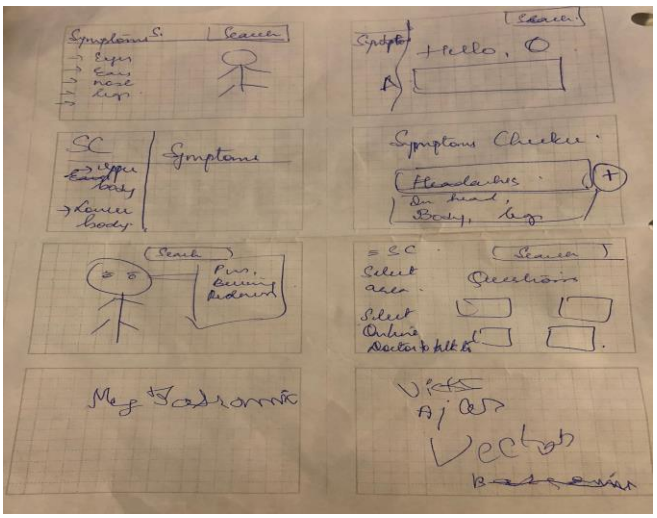
However, his wife does not understand him and complain about his work. He is insomnia in that night and very pressure in both work and family's burden. He feels anxious in his current situation.

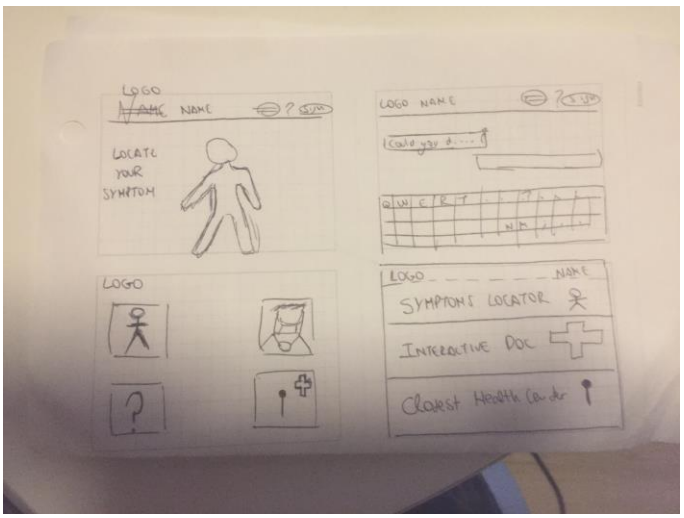
USER FLOW

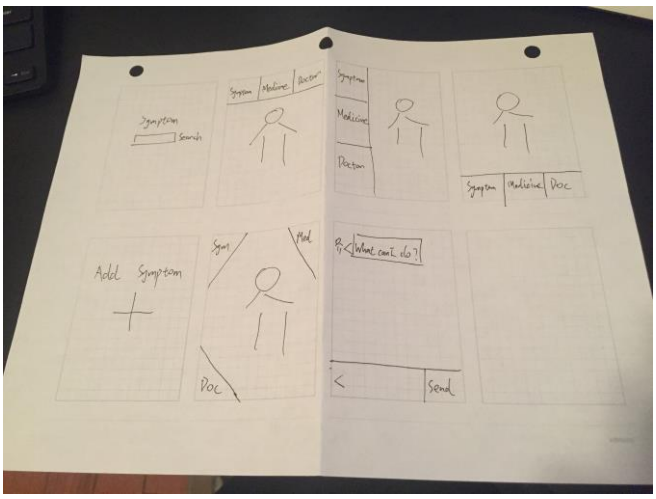
5. SKETCHING

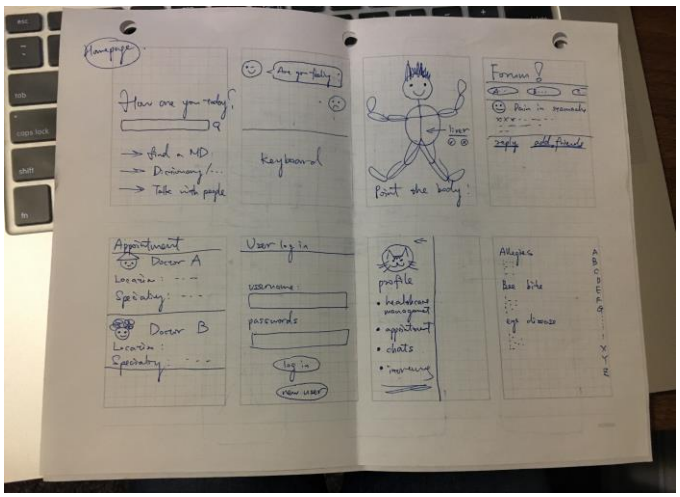
STEP #1: 6-8-5 PAPER SKETCHES

The process of sketching for our prototype started as a class activity. All the team members had their own perspectives and ideas about the application should look and feel. In class, we were all spread out and we each individually used the 6-8-5 sketching method to pen down our spontaneous rough ideas on the papers. By the end of this activity, we each knew which ones looked better or which ones could be improved.



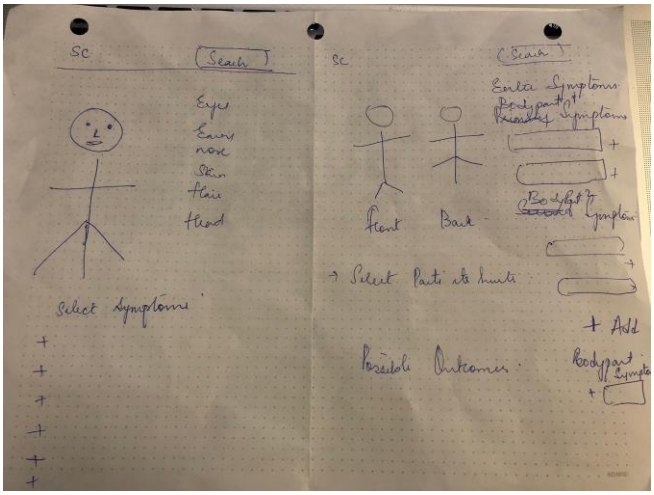


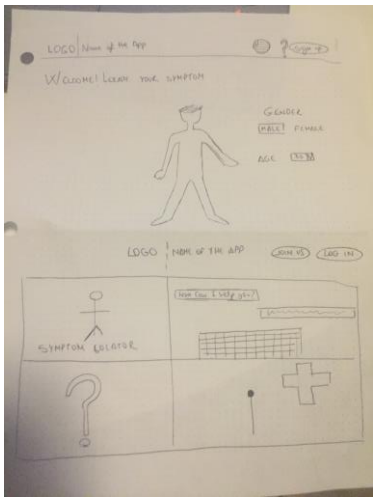


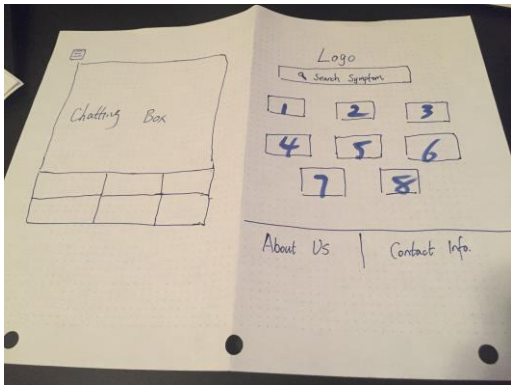


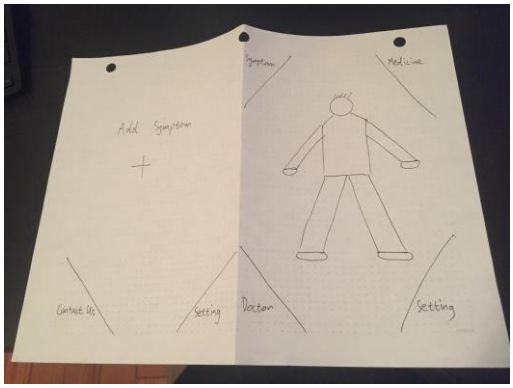
STEP #2: TWO PAPER SKETCHES

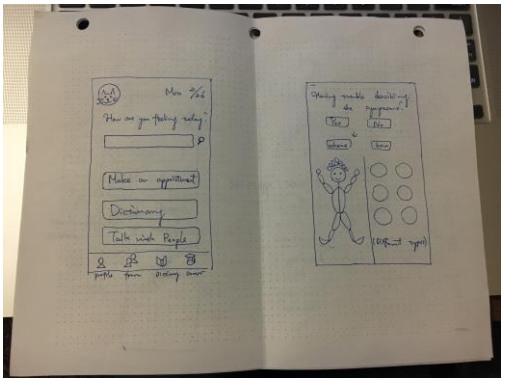
The second part of the activity was to sketch 2 designs with a little bit more detail. Since after the first activity we knew what we liked, this part was very easy.

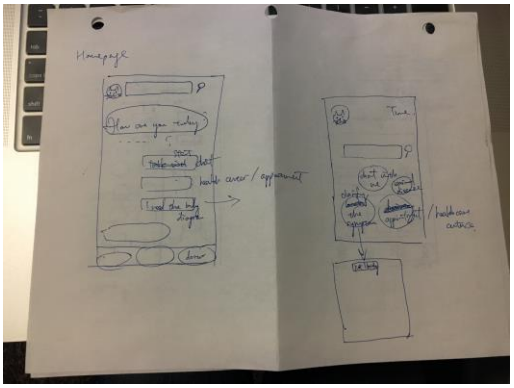












STEP #3: FINALIZING A SKETCH

Once we were all done with our individual sketches, we went through the sketches of the other team members and surprisingly most of us had the same ideologies and features on what our application should contain. We combined the features and design of the best sketches and started working on next step.

STEP #4: DIGITAL SKETCH ON AXURE

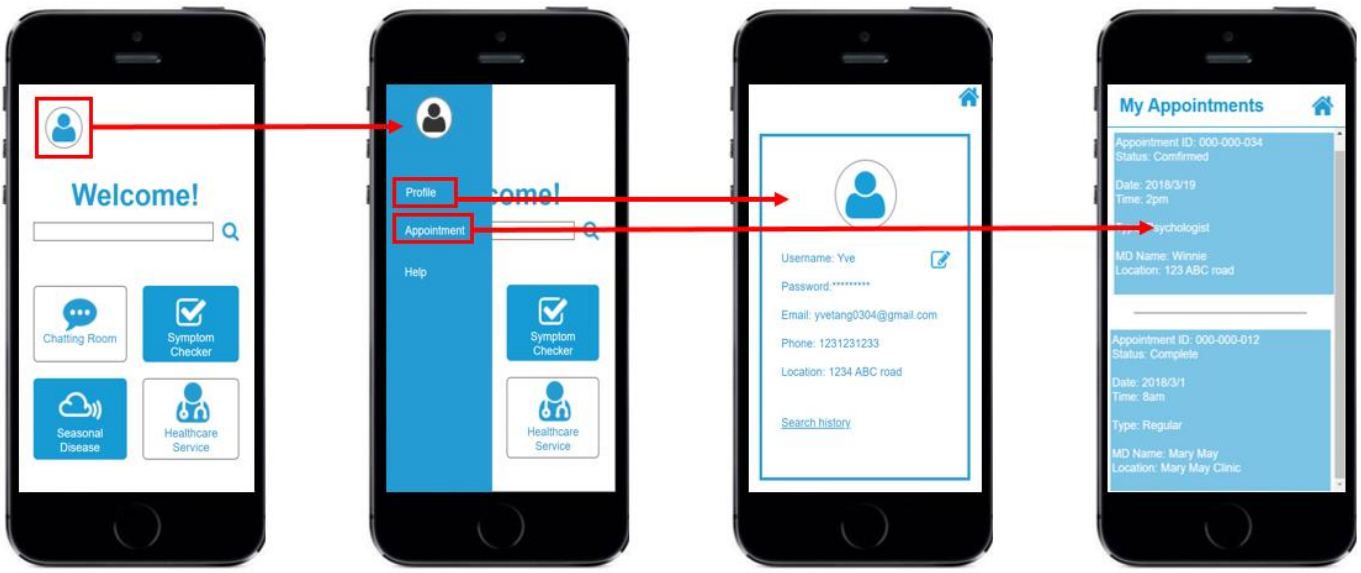
While all of us were figuring out which application to create our prototype in, Yve suggested we use Axure and that she has come with a sample digital sketch of what we decided in the class. In our next meeting, she showed us the digital sketch and all of were very excited on how it looked and felt. We divided our work and got started with our respective parts.

6. PROTOTYPE

After understanding the users' needs and preferences, analyzing the competitors and getting some feedback from other human-centered design professionals, we have come up with an attractive and user-friendly prototype. The following pictures provide an overview of how the navigation through **Symptom Checker** looks like:

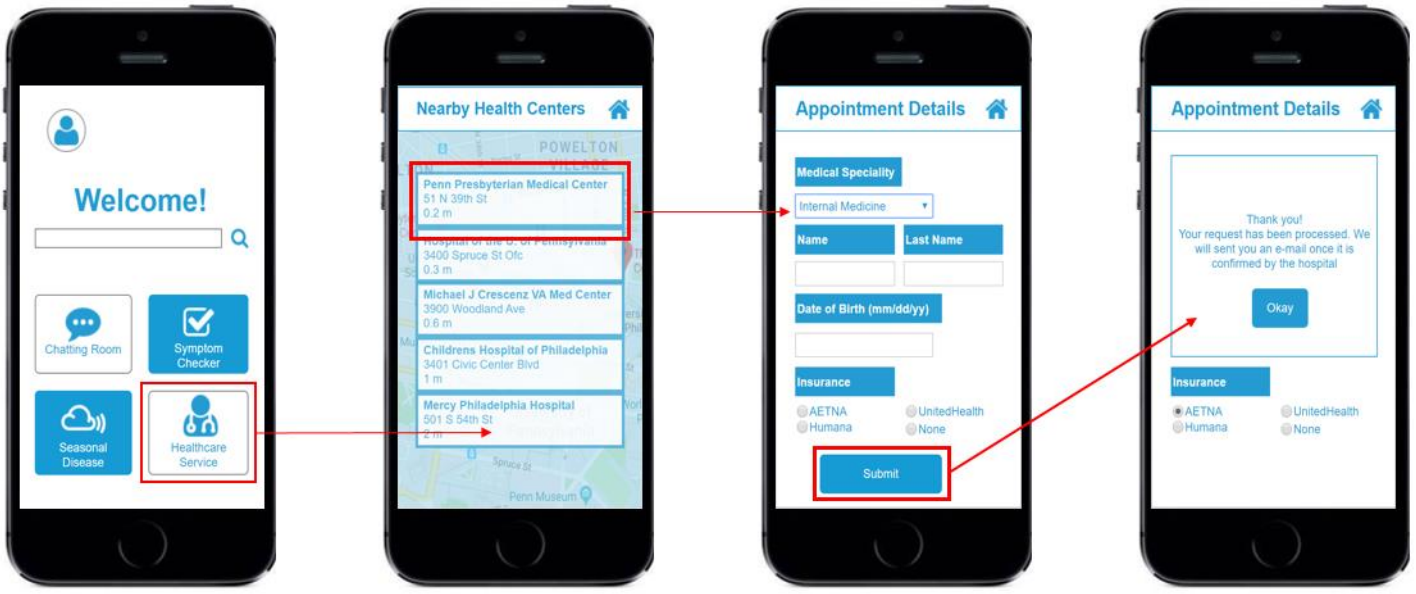
PERSONAL AREA

The following screenshots let us take a look at the user profile section of Symptom Hunter. Signed up users have the possibility of visualizing their information, appointments, etc.

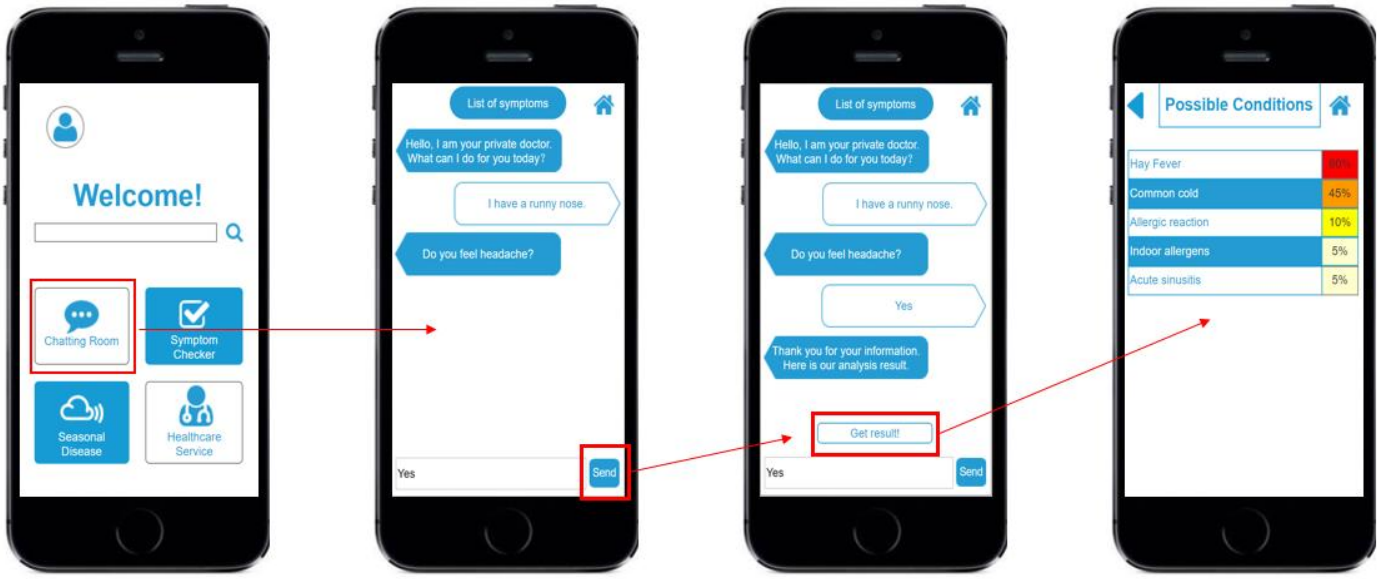


HEALTH CENTERS NEARBY

The user sometimes has no chance and needs to set an appointment with a specialist. Symptom Hunter offfers you the possibility of contacting the Health Centers that are closest to your current location:

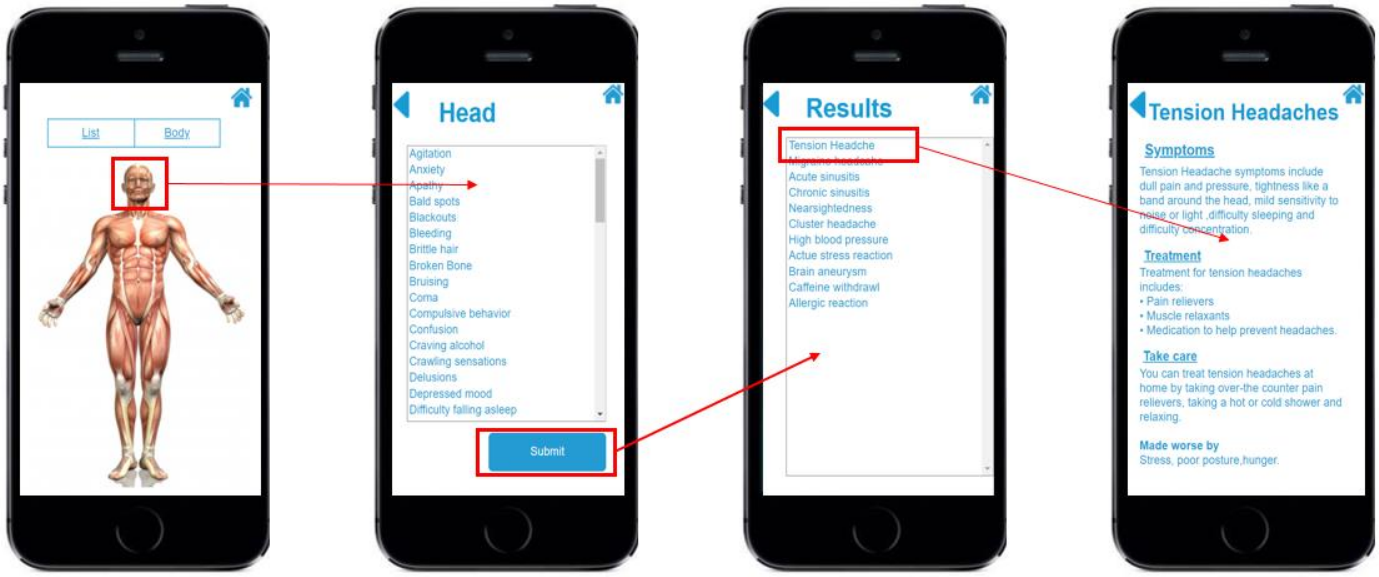


INTERACTIVE CHAT

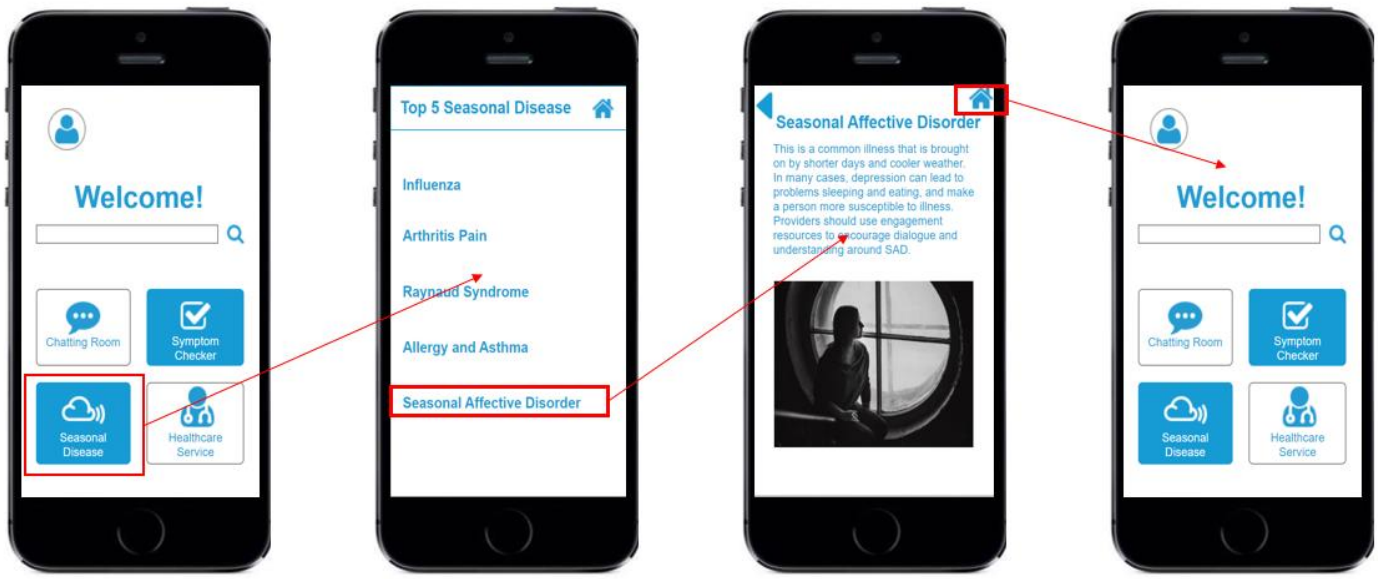


SYMPTOMS CHECKER

As the core functionality of the app, Symptom Hunter offers the possibility of selecting your feelings from a predefined list, or locate them in a body diagram. Once selected, the app will ask you about a few additional aspects in order to get the optimal diagnosis.



SEASONAL DISEASES BRIEFS



7. REFERENCES

WebMD from WebMD, LLC

Mediktor from Teckel Medical s.l.

Your. MD from Your. MD

INFO 608 Course Materials. CCI. Drexel University.

8. APPENDICES

APPENDIX 1: QUESTIONNAIRE

https://drive.google.com/open?id=1bfhAgSO5tWcxr4QRYY6ZQIaOtVV5zdUC-Xwgm_ouUO8

APPENDIX 2: RAW DATA FROM THE QUESTIONNAIRE

https://drive.google.com/open?id=1gOi4i09i5YNApxDnJ4jjFgL-wLkW4uRf

APPENDIX 3: INTERVIEW PROTOCOL

1. The interviewer must introduce him/herself, briefly explain the aim of the interview and make some ice-breaking comments (weather, compliment his/her clothes, etc.) to make the interviewee feel comfortable.
2. After this, the interviewer should try to establish a conversation about the user's background, in order to get data such as:
    a. Age, professional activity, nationality, hobbies.
    b. Healthcare related information: allergies, medical conditions, regular medication, etc.
3. The interviewer should now try to get some data about the user's technology use and skills. Some topics that should probably be treated are:
    a. Hours/day invested in web browsing, mobile applications using, etc.
    b. Preferences when getting an app, willingness to pay for an app…
    c. Favorite mobile apps.
4. To close the interview, a final series or questions should be made to get to know more about the interviewee's medical preferences:
    a. Previous use of healthcare apps or online tools.
    b. Main concerns when feeling sick: medicines to take, symptoms cause, closest healthcare center, etc.

Thank the interviewee and ask him/her to add whatever he/she thinks that could be useful for the aim of the interview.

APPENDIX 4: INTERVIEWS NOTES

INTERVIEWEE 1

Q: What is the first thing you do when you fall sick?

A*: I call my mom or look up on the internet regarding my symptoms.*

Q: How frequently do you go to the hospital?

A*: Not frequently at all. Hospitals here are very expensive and time consuming. And*

most of the times I just fall sick because of the change in weather.

Q: How would confirm if your sources are reliable or not?

A*: I try to look into multiple websites to see if the information and the medications they recommend are the same. Or I usually just call my mom.*

Q: Have you ever tried a healthcare app?

A: *No, but I don't mind using one if it is a legit app.*

Q: If yes, what do you like the most about the app. If no, would you consider using an app? Would you like using an app now?

A: *Sure.*

Q: What do you like the most about the app?

A: *I like how you can point at the body part to exactly pinpoint the place and also how they ask you a bunch of questions.*

Q: What are the difficulties you have faced while using this app?

A: *Just couldn't find the symptom of whole body hurts rather than a particular place nor could I write a symptom of my own. That was annoying.*

Q: If you could change one thing about the app what would it be?

A: *I wish you could zoon in the Human diagram and point at multiple parts at the same time so it can directly know what all could be the problem areas rather than one part after the other*

Q: Would you use it again?

A: *Yes.*

Q: Would you recommend it to a friend?

A: *Sure.*

INTERVIEWEE 2

Q: What is the first thing you do when you fall sick?

A: *I usually call my family doctor in India when I fall sick. I don't have sick very often but I tend to strain my muscles often due to intense workouts.*

Q: How frequently do you go to the hospital?

A: *In America, I've never visited the hospital. But back home, whenever I was sick for more than few days I used to go to the hospital.*

Q: What would you do if you fall sick and couldn't get in touch with your doctor?

A: *I would look up my symptoms online and look for the possible illness and do research about the illness.*

Q: How would confirm if your sources are reliable or not?

A: *I will confirm with family or with a doctor. Till then I wont use any medications.*

Q: Is there any recent incident where you fell sick and couldn't get in touch with a doctor or family?

A: *I recently had an allergy and I never had any allergies. I didn't know what to do or which medications to use. I was not able to get in touch with my family also. So I looked up online and didn't know which source to trust. So I waited for an day and half, being all itchy to get in touch with a trusted source to take medications.*

Q: Have you ever tried a healthcare app?

A: *No, but I have heard of them.*

Q: If yes, what do you like the most about the app. If no, would you consider using an app? Would you like using an app now?

A: *Yes sure.*

Q: What do you like the most about the app?

A: *I like how this app is very easy to use and understand. It also directs me varies trusted sites to know more the sickness and severity of it.*

Q: What are the difficulties you have faced while using this app?

A: *No, I found it easy to use the app.*

Q: If you could change one thing about the app what would it be?

A: *It would be nice to be able to include our own symptom too.*

Q: Would you use it again?

A: *Yes, definitely. It is easier for me to use and app than to keep calling my doctor from here.*

Q: Would you recommend it to a friend?

A: *Of course.*

INTERVIEWEE 3

Q: Jeremy, can you give a brief introduction about your background?

A: *Sure. I am an economist as you know. I got my PhD degree in economy from MIT several years ago. I am now working in University of XXX as an assistant professor in the department of economy.*

Q: Do you have any experience or knowledge in medicine?

A: *Not quite too much. Well, I know something as simple as cold, flu. I guessthat's it.*

Q: So, let us make an assumption. If you feel something not good, like getting some symptoms. What will you do next? Go to find a doctor?

A: *Not to doctor directly. I always like to google it and find out what's possibly going on.*

Q: How is that experience? Is it easy to find out what you want through Google?

A: *Not very easy. I mean, it is easy to search a symptom. But a single symptom can be associated with many different diseases. It is hardly to tell what really I get.*

Q: If cannot figure it out through google, what will you do next?

A: *Go talk to a doctor. I guess that is the only way.*

Q: Is it convenient?

A: *No, absolutely no. Sometimes, the disease was very easy one, there was really no need to find a doctor.*

Q: But their advice and diagnosis is quite accurate and helpful, right?

A: *That's true.*

Q: What about a symptom-check app? A mobile app which can help you check you symptoms and give you advice? Would you try it?

A: *Oh, how that works?*

Q: You can enter your symptoms into the app. The app itself will probably ask you some further information, and it will do an analysis and give you a possible disease.

A: *That sounds amazing. I will definitely give a try.*

INTERVIEWEE 4

Q: Mike, would you mind give me a simple introduction?

A: *Of course not. I am working in XXX company as a programmer in the IT department. I got my master degree in Biomedical Engineering from Drexel in 2013. I began my current job 3 years ago.*

Q: So, you studied in biomedical engineering. You must have some experience or knowledge in medicine, right?

A: *Yes, kind of. My study field is closer to programming, not the bio or medicine part. But I know something in medicine, kind of.*

Q: Great. You must be able to help me a lot in my project.

A: *My honor.*

Q: So, what would you do if you got some symptoms?

A: *I probably will search it in Web*MD.

Q: Its website or mobile?

A: *The mobile app, using a cell phone is much easier.*

Q: So you like using mobile phone more often than a computer?

A: *Yes. You can get access to a phone much easier*.

Q: That's true. How about the experience of using WebMD app?

A: *That is good. They have a very professional and a very, very large database in medicine.*

Q: Have you tried other similar apps?

A: *Yes, I tried some others. But I still stay with the WebMD.*

Q: Why? What makes you choose the WebMD than others.

A: *First of all, WebMD provides a lot more information. Very detailed, and very helpful. Second, it has human body image. You can simply touch the part where you feel not good. That is very easy for me.*

Q: How about other apps?

A: *Most of them cannot provide as detailed information as WebMD does. But the biggest weakness to me is that. You know, I am not native English speaker. Those apps used a conversation procedure to analyze my symptom. Sometimes, it is difficult for me to correctly describe my symptom in English.*

Q: So the touch method with the human body image in WebMD is much easier to use for you. You do not need to actually type anything, right?

A: *Yes, totally right.*

Q: Do you have any suggestion for the WebMD app?

A: *Let me think. In WebMD, you have to list all symptoms you have and let it analyze. But sometimes, it is not easy to list all symptoms. Some of them are not easy to feel. If you list only one or two symptoms, the app will give you a long list of possible diseases. Then you have to tell it by yourself, which make the result meaningless. So I think they should figure out a way to ask the users what other symptoms they may have and make the results much smaller.*

Q: I think the conversation procedure you mentioned before may work better in

this aspect, right? By asking, the user may find out some other symptom that is

not easy to tell.

A: *Probably.*