

Lab 1 - Care Corner Product Description

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1. Introduction

Sexual assault is far too common, effecting both men and women. It is reported that one in three women have been the victim of rape or attempted rape (Hope Alliance 2018). Sexual assault on women has become so prevalent that a majority of them admit to taking regular steps to avoid being sexually assaulted including always having their phone with them when preparing to walk alone (Mental Health America 2018).

Unfortunately, it is also common that sexual assaults go unreported. Only around one in five rapes are ever reported (Hope Alliance 2018). Not only is there a lack of education in regards to how to report rape or sexual assault, there is also a lack of education on what rape or assault even is. In addition to not knowing if what happened to them is considered rape or sexual assault, victims often have to deal with other barriers including confusion, fear of judgment, and perceived lack of evidence (Amnesty International 2019).

These two elements couple to create a negative cycle amongst assault victims. People live in fear of being assaulted, and if they are assaulted, the assailant is not held accountable. This means that a victim's mental health can be negatively affected, while their assailant is free to continue to victimize others.

Care Corner is a tool that is meant to serve as an aid to reduce the frequency of these assaults, build an appropriate confidence in people as a travel alone, and increase the frequency of reporting attacks, so guilty parties are held accountable. Care Corner offers preventive measures, such as a panic button to notify friends of emergencies, and a fake phone call feature to excuse yourself from uncomfortable situations. Care Corner also looks to assist those who have been assaulted by offering local and national resources to aid and assist with the reporting process.

2. Care Corner Product Description

Care Corner is a mobile app, for both Android and iOS, meant to aid anyone who feels they are at risk of being assaulted. Care Corner was designed with the safety of women in mind because the issue of sexual assault affects them at a higher rate than men. However, Care Corner is not designed for only women, instead it can be used by anyone who feels the need to take additional precautions in regards to their safety. The application consists of two main areas which are prevention and reporting.






Care Corner offers several options to assist in the prevention of assault. This extends from making sure your friends and family are aware of your location, to planning your night accordingly to maximize your safety.

Care Corner also looks to educate it's users and ensure if an assault does occur that the user has all the necessary tools needed to properly report any assailants. In addition, Care Corner also looks to assist users with recovery by connecting them with local and national aid.

As shown in Figure 1, a review of the market in a similar space revealed that there are other applications which look to either aid in prevention or education on the subject of assault. However, Care Corner offers a more comprehensive set of features by comparison. Not only does Care Corner offer features for safety including tracked walks, and a panic button, but Care Corner also offers assistance with reporting an assault, and safety tips.

Figure 1

Care Corner Market Assessment

	Care Corner	bSafe	JDoc	Circle of 6	Aspire News
MARKET ASSESSMENT					
Panic Button to instantly notify those you trust when you need help.	✓	✓		✓	✓
Fake phone calls to excuse yourself from uncomfortable situations	✓	✓		✓	
Automatically connects students to their local Campus Police	✓				
Record a journey with Audio, Video, and/or GPS location	✓	✓			
Interactive system to provide best practices when planning a Journey	✓				
Access to education and resources at a local and national level	✓		✓	✓	✓
Snapshots to record time & location for accurate reporting of an incident.	✓		✓		
Prompted Reporting Assistance to discover necessary details commonly requested by law enforcement.	✓		✓		

2.1 Key Product Features and Capabilities

Care Corner offers multiple solutions to aid in the safety of its users. The first of which is the Armed Journey Mode. In this mode the user's location and destination can be sent to select contacts in order to ensure friends and family are aware of the user's location. The users have complete control over which contacts receive what information.

Care Corner also features a Fake Phone Call feature. This can be pre-programmed to occur at a specified time or can be activated to use in real time. This feature is used by the user

when excusing themselves from uncomfortable situations. It also puts the phone in a more alert state in case an emergency happens.

While the phone is in Armed Journey mode, or in a Fake Phone Call, the Panic Button feature can be activated. The Panic Button feature is used if the caller feels as though they are in any imminent danger. The user can pre-set what the activation of the Panic Button does.

Activating the Panic Button can result in messaging pre-selected contacts, sending GPS location to pre-selected contacts, recording audio video or GPS location, noting the time and GPS location of the activation of the button, and offering emergency services contact information such as 911 or campus police.

Care Corner also provides easy access to information to help educate it's users so that they can make more safer decisions when planning and engaging in journeys or outings. Care Corner also provides access to information to help provide guidance in the case that an assault takes place. Care Corner offers a Mombot feature, which the user can verbally state that plans for the evening, and receive some safety practice in return. Mombot also issues a battery warning so the user may be reminded to charge their phone before starting their journey. Mombot also connects users to a plethora of resources, both local and national, that can assist with everything from locating a local shelter, to reporting and education.

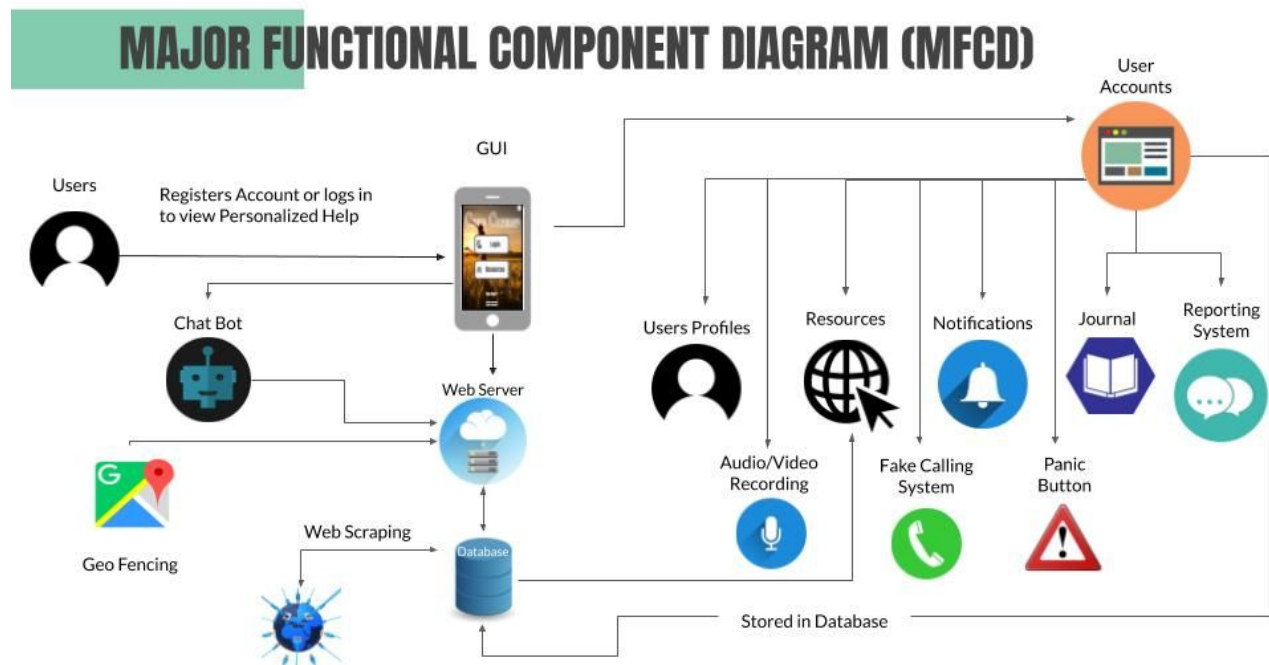
In the case of an assault, Care Corner assists with the reporting process. First, when the Panic Button is activated, the GPS location and time will be noted. This is instrumental in reporting exactly where and when and assault took place. Care Corner also prompts users to fill out a log, in order to note relevant information as soon as possible. This helps reduce the chance of the user forgetting important details before those details can be reported to authorities.

2.2 Major Components (Hardware/Software)

Care Corner is a mobile application that runs on both Android and iOS devices. Care Corner's server infrastructure will be supported entirely through Amazon Web Services (AWS.) The web server for the Care Corner site is provided through the AWS- S3 web service. The database server runs on AWS- RDS servers using MySQL. The file server is also hosted through the AWS-S3 service. These relationships are outlined in Figure 2

Figure 2

Care Corner Major Functional Component Diagram



The Care Corner website, which serves as an information landing point about the app, is constructed using a combination of HTML, CSS, JS, and PHP. The development of the app takes place primarily within the Windows operating system. The Care Corner team utilizes GitLab for development and software control. Gradle is used as the primary build management tool, and the organization regarding the development of the app is also done in GitLab.

Care Corner also relies on external dependencies and APIs. The user's GPS location is used in conjunction with the Google Maps API to geofence local resources for the user. Twilio service is used to message users contacts in case a journey is started, or the panic button is activated. Care Corner utilizes web scraping and RSS feeds to gather resource information and educational information for the users

3. Identification of Case Study

Care Corner is useful for anyone who feels the need to take additional precautions in regards to their safety. The features offered with Care Corner directly impact it's users but, indirectly have a positive impact on the user's friends and family. As the user is safer and more open about their safety, the comfort of their friends and family is increased as well.

Since care corner is a tool to aid in the fight against assault, it can be used by professionals in related fields as another tool for their clients. This means entities like health organizations, law enforcement, and emergency response workers can offer this to those in need to assist.

4. Care Corner Product Prototype Description

Within the Care Corners Prototype a new user can create their profile. All user credential and information is stored within the AWS database. Encrypted user authentication is also fully implemented when a user needs to access their profile.

The Care Corner Prototype includes our Safe Walk Feature. This will send the user's trusted contacts an SMS message when they are traveling. The Panic Button is also included which will automatically notify contacts in case of an emergency. Audio, video, and GPS information is also automatically stored when the panic button is activated.

The Prototype includes the Care Corner Mombot feature which provides safety tips for the user upon request. Also included is a section for Reporting Assistance which has a set of fields for the user to fill in. These fields are based on facts about an incident, and are designed to assist in recording as many details as possible for accurate reporting of an incident. There is also a Resource Archive so users can access external resources for additional assistance and information.

4.1 Prototype Architecture (Hardware/Software)

The Prototype for Care Corner runs on any Android device that is API version 21 (Lollipop) or higher. The prototype was developed on Android Studio within the Windows 10 operating system. The app is built primarily in Java, with the occasional use of Kotlin.

The prototype utilises several AWS products to coverage data storage and access. The database is stored within AWS RDS and built using MySQL. The server for prototype is an AWS S3 server, which is primarily used to store audio and video. The computing functions will be handles by AWS Lmbda serverless computing. Any audio or video streaming is managed

with AWS Cloudfront. Sms messages are sent via Twilio. All mapping associated with GPS use is handled via Google Maps API.

4.2 Prototype Features and Capabilities

As mentioned, the prototype for Care Corner includes the user creation options. The New user info is stored on our cloud database, so a user can change devices, log in, and have their profile accessible from their new device.

The Journal on the prototype is full implemented. This means that users can create, ready, update, and delete all entries. Access to the Journal is also password protected that times out after 30 minutes on non-use.

The Panic Button and Armed afe Walk are almost completely implemented in the prototype. A user's location can be tracked. Audio and video can be captured and stored locally on the users device. The GPS information, as well as the audio and video can all be stored with our cloud servers as well. However, within the prototype, certain options aren't available like choosing which contacts get sent a message, or choosing the contents of that message.

The Fake Phone Call feature is also fully implemented. Users can choose when a fake phone call will occur. They can also choose what name will display on the call, and what phone number. When a user goes back in to set up another fake phone call, these options will auto-populate based on the information that was filled in on the last phone call.

The Mombot, Reporting Assistance, and Resource Archive are included in the prototype, but are primarily included to show their functionality. Mombot will provide helpful information, but the range of information that is offered is limited. The questionnaire included as part of the reporting assistance feature is also limited in scope. The Resource Archive only includes a few resources as well.

4.3 Prototype Development Challenges

The first challenge when developing the Care CORner Prototpye, is the proper set up of Android Studio with Git capabilities. The team is unfamiliar with the IDE in general. An additional level of complexity is added with the integration of GitLab.

The external resources also provided a challenge. Unfamiliarity with AWS setup, configuration, and integration with the app via APIs served as quite a hurdle. Similar hurdles are also experienced with Twilio and Google Maps, albeit on a lesser level, due to less dependence on these products.

5. Glossary

Agile: Set of frameworks and practices where solutions evolve through collaboration between self-organizing cross-functional teams

Amazon Web Services (AWS): Cloud computing platform provided by Amazon

Android: Mobile operating system primarily developed by Google

API (Application Programming Interface): A set of functions that allow one program to access data and interact with an external program

Client-server: Computer system where a central server provides data to a number of networked workstations

Cloud Based Database Server: Virtual infrastructure that performs application and information-processing storage

Data Retention: Storage of an organization's data for compliance or business reasons

Database: Structured data held in a computer

File Server: Controls access to separately stored files

Geofencing: Using GPS to create a virtual geographic boundary

GitHub: Web-based collaboration platform for software developers

GPS (Global Positioning System): Provides users with positioning and navigation information.

Gradle: Build automation tool for multi-language software development

GUI (Graphical User Interface): The set of interactive visual components in software to improve the user experience.

HTML (Hypertext Markup Language): Standard markup language for documents designed to be displayed in a web browser

iOS: Mobile operating system developed by Apple

JavaScript: Object-oriented computer programming language commonly used to create interactive effects within web browsers

Jsoup: Open source Java library used mainly for extracting data from HTML

Kotlin: Object-oriented programming language initially designed for Android and Java Virtual Machine (JVM)

Linux: Unix-like, open source operating system for computers, servers, mainframes, etc.

MySQL: A freely available open source relational database management system that uses structured query language (SQL)

PHP (Hypertext Preprocessor): General-purpose scripting language suited to web development

RSS Feed (Really Simple Syndication Feed): Set of instructions on the computer server of a Web site. The feed tells the reader when new material has been published on the Web site

Scrum: A process framework used to manage product development and other knowledge work

Stakeholder (direct): Those involved in the company's day-to-day activities

Stakeholder (indirect): Those more interested in the result of the production

Twilio: A developer platform for communications

UI / UX (User Interface/ User Experience): The graphical layout of an application which includes components such as buttons, navigations bars, etc.

Web Scraping: Extracts and scrapes data from websites

Web Server: A computer that runs websites

Windows: Series of operating systems developed by Microsoft

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