Lab 1 Care Corner Product Description

Olayinka Adegun

Old Dominion University

CS411W

Professor James Brunelle

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1.   Introduction

Sexual assault is, unfortunately, prevalent in society today. One in three women have been a victim of rape or attempted rape (*What Is Sexual Abuse, n.d.*). The trauma of the experience leaves many women so confused that they ask, "was I raped". This, according to the President of Rape, Abuse, and Incest National Network (RAINN), is the first question many victims often ask (*Tips for Talking, n.d.*). Despite this alarming threat, again unfortunately, there is nothing out there to help in the fight against sexual assault. This makes many women live in constant fear as they go about their daily routine especially when they are alone. Consequently, they adopt personal method of mitigation against sexual assault when they feel unsafe (*women safety sexual assault awareness, 2019, March 28*). In addition, there are no available tools that can be used to raise an alarm in the event of an ongoing attack. Fore instance, in the event of a fire outbreak, robbery or any other emergency, a victim could make a 911 call to ask for help but that is not the case with sexual assault. Neither are there any tools to provide evidence against an assailant after the occurrence of a sexual assault, hence most sexual assault goes unreported.

Having an application that can help in the fight against sexual assault, especially one that can offer safety tips prior to any outing or being in an unsafe environment, will put the fears of many women to rest and boost their confidence when they are alone. It is against this backdrop that Care Corner was developed. Care Corner is a mobile application developed primarily as a preventive tool to help users avoid becoming victims of sexual assault and make information about what to do, in the event of an assault, readily available. Care Corner features include a time-stamped, GPS based video and audio recording which can be harnessed to provide evidence when it becomes necessary to report an assault. This will lead to a reduction in the number of unreported cases of sexual assault. Care Corner also features a resources tool that can help users

connect to the right resource available locally in their effort to recover from the trauma of sexual assault.

2.   Care Corner Product Description

Care Corner features includes Armed Safe Mode, Fake Phone Call, Mombot, Journal, Resource, and Education. The design focus on preventive measures, helping users avoid becoming victims of sexual assault. But in the event that people get ensnared and becomes victims of sexual assault, they can take advantage of Care Corner in-built tools to provide evidence against an assailant. They can also get education on how to go about reporting an incidence. Victims can also be connected to local resource or assistance available to people going through sexual assault.

2.1 Key Product Features and Capabilities

In the Armed Safe Mode, a user can share information about a trip with friends and family. This mode offers a panic button which can be activated by simply saying a key phrase or clicking a button. The panic button when triggered sends scripted messages with the user's current location and destination to a specific recipient --alerting the recipient of an unsafe situation. The recipient can then make 911 call or use the location info attached to the message to offer safety assistance to user. The message recipient can choose to physically go to user's location to actually help. The panic button also automatically triggers a time-stamped audio and video recording which a user can use to provide evidence if it becomes necessary to report a situation.

The Fake Phone Call feature enables a user to legitimately get out of an uncomfortable situation or environment. The user can set up an incoming fake phone call within a specified time which appears as a real call; this can be a good excuse for escaping from an unsafe situation

The Mombot offers safety advice to users as they verbalize their plans to the application. The user receives feedback which can include "Do you want to start an armed journey?" or "Do you want to schedule a fake call?" Depending on the user's response, they will receive an answer tailored to their needs.

The Journal offers a secure, readily available logs for users to document key fact about an incidence when they are still fresh in the victim's mind. For instance, if they were at some point a victim of sexual assault and they are going through a recovery process, they can document what matters to them at any point during this period.

Resources is one of the main features of Care Corner. Many times, when people are traumatized, they have difficulty in thinking clearly and they need assistance. But because of ongoing issues, they are unable to think straight or make the right decision. The Care Corner resource tool can be harnessed to link the user to the most appropriate and available resource close to home. This feature uses geofencing to connect a user to the closest available resource. Resources can be in the form a shelter, books that offer a recovery guide for the victims, education, and reporting assistance.

2.2 Major Components (Hardware and Software)

Care Corner is designed as a mobile application for iOS and Android Smartphones. Its software components requirement are as follows: its UI/UX and code is on Android studio IDE with Java as the programming language. The Database utilizes MySQL on AWS, the build manager is Gradle, the version control is Gitlab. Other software includes HTML, CSS, and Java Script for the web programming, Junit framework for testing. The development employs both Windows and Linux platform. The hardware requirement includes file server, web server, cloud-

based database server, and an Android Phone. The Major Functional Component Diagram

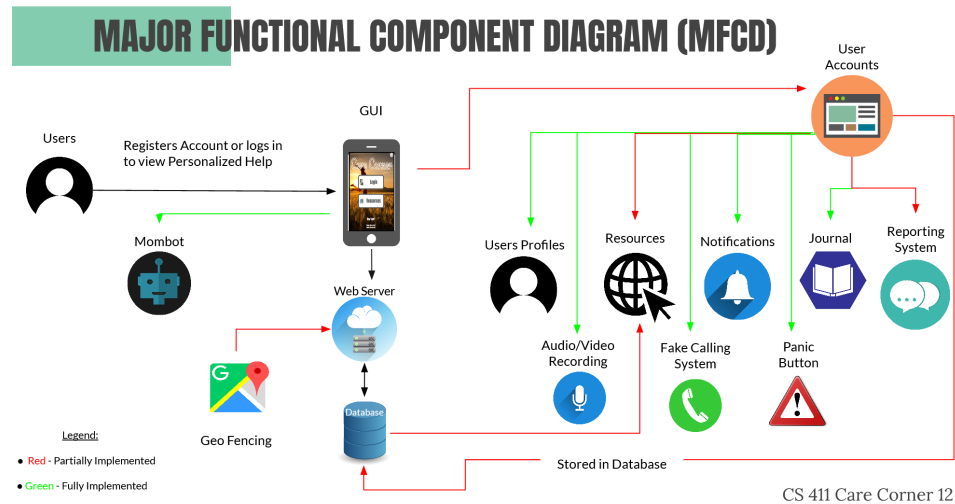(MFCD) shown in figure 1 captures how the devices will interact.

Figure 1

3. Identification of Case Study

The Case Study for launching the Care Corner application will engage a small group of

women to use and evaluate the product. The application will initially be deployed at Old

Dominion University (ODU) for ease of feedback and data gathering. ODU provides a good

example of an environment where students are often walking between classes and to and from

parking facilities, often at night. Both situations can be unsafe and thus, provides an immediate

test running environment for Care Corner. As the application gets accepted within the campus

community, its use will be extended to the public locally. Others who can be part of the initial

test running of the app include family and friends of ODU students. They get indirect usage of

the application when they get automatic alert as the primary user triggers panic button.

The design of the application makes it easy for anyone who feel unsafe in similar situation be able to use without any further modification necessary, as such the application can be extended to nearby campus and business organization for test running. This will give opportunity to see areas that may need improvement or expansion. For instance, the Mombot could be expanded to full AI feature that offer intelligent feedback when interacted with especially when user travels outside their base to unfamiliar places.

4.   Care Corner Prototype Product Description

The Care Corner prototype is going to focus on the major functional units to depict the most important features of safety, reporting assistance, resources, and education. Some features of the real-world will not be implemented.

4.1 Prototype Architecture

The prototype is going adopt the same architecture as the real-world product. Software requirement includes Java programming language, Android studio IDE, data is store on AWS using MySQL and various AWS product is being employed. Hardware requirement will include file server, web server, cloud-based database server and an Android
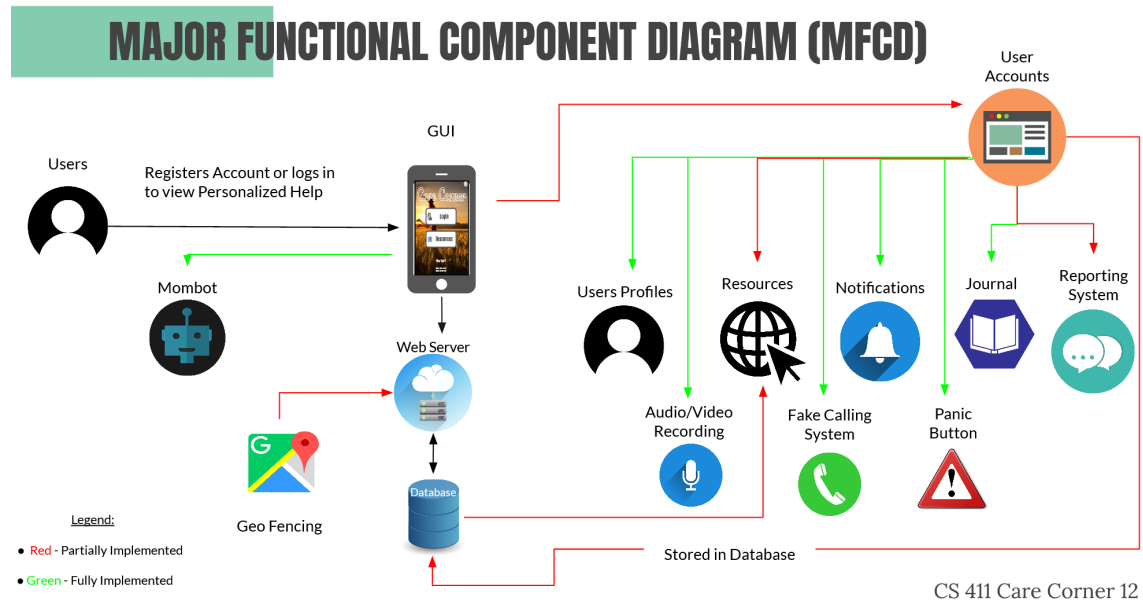
Smartphone.

MAJOR FUNCTIONAL COMPONENT DIAGRAM (MFCD)

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Figure 2

4.2 Prototype Features and Capability

The prototype will not implement all the features of the real-world product due to time constraint and resource limitations. Moreover, the prototype is purely for demonstration purposes; as such features that are unnecessary for this intent will not be included in the prototype. Features expected in the prototype will include demonstration of user login, Armed Safe Mode and Panic button activation, Fake Phone Call, and secure Journal feature. Table 1captures this more accurately.

Functional Element	RWP	Prototype	
Safe Walk (armed) mode			
Notify contacts via MMS	Fully Functional	Fully Functional	
Customize MMS messaging	Fully Functional	Eliminated	MMS messages will be preset
Send location/destination to contacts	Fully Functional	Fully Functional	
Audio Recording & Storage on Server	Fully Functional	Fully Functional	
Video Recording & Storage on Server	Fully Functional	Fully Functional	
GPS data Recording & Storage on Server	Fully Functional	Fully Functional	
If Location/Destiantion is sent	Fully Functional	Eliminated	Location will automatically be sent to all of user's in-app contacts
Panic Button			
Send location	Fully Functional	Fully Functional	
Send pre-set message	Fully Functional	Fully Functional	
Start recording audio	Fully Functional	Fully Functional	
Start recording video	Fully Functional	Fully Functional	
Dial out to pre-set contacts	Fully Functional	Eliminated	
Timestamp location and time of panic	Fully Functional	Fully Functional	
Fake Phone call			
Start recording audio	Fully Functional	Fully Functional	
Start recording video	Fully Functional	Fully Functional	
Activate Panic	Fully Functional	Fully Functional	
User can say key phrase to activate panic button	Fully Functional	Eliminated	
Include fake voice	Fully Functional	Fully Functional	
General			
Cross-Platform Support	Fully Functional	Partially Functional	Prototype will only be developed on Android
Authentication			
User account creation	Fully Functional	Partially Functional	Account creation will omit surveys and school data
User Credential Authentication	Fully Functional	Partially Functional	Credentials will not be encrypted when stored in the Database
Password Recovery	Fully Functional	Eliminated	
File Server			
Audio/Video/GPS data stored	Fully Functional	Fully Functional	
Database			
User/Contacts	Fully Functional	Fully Functional	
Incident/Audio/Video/Journey	Fully Functional	Fully Functional	
School/Resources	Fully Functional	Partially Functional	These DBs will be funtional, but only test data will be present
Mombot Advice	Fully Functional	Partially Functional	This DB will be functional, but only minimal test data will be present

Table 1

4.3 Prototype Development Challenge

There were several challenges with developing the prototype. First, there was inadequate knowledge about the development environment, as a result some difficulties were experienced at the initial set up of development environment. Integrating Android studio and AWS is another challenge, although AWS offers several robust tools but lack of familiarity with AWS possess some challenges. A lot of learning while working on the project became necessary leading to delay process time.

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 opera

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