

**Developing a Safety App Accessible to All**  
**Analysis of the Abduction of Kristin Smart in San Luis Obispo, CA**

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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## **Introduction**

Ensuring students' safety while pursuing their education could easily be the first thought on every parent's mind. In January 2022, UVA was not part of the top 25 college campus safety index (Alarms.org, 2022). For a university that already ranks well in other categories such as education, diversity, etc. This comes as a surprise it doesn't necessarily warrant safety as a priority. Given that, my group and I have devoted our project to an app that keeps students safe when traveling, especially on foot.

The following technical project will delve into the process and development of our app which led to the features it included. Moreover, the STS project will examine a specific case to address the sociotechnical challenge, User Configuration. Had similar applications been implemented into society, certain events would've been prevented due to a higher priority on safety protocols; such protocols are the main purpose behind our app, UVASAFE. We initially intended to base our product around all UVA students, but research indicated that there were more problems surrounding the safety of women specifically across all walks of life than there were for the student body as a whole. Next, I will look at a general view of the University of Virginia (UVA) crime statistics.

Increased crime negatively affects all students at the University of Virginia. According to College Factual (2019), there are 19.67 crime incidents per 1000 students. Of these crime incidents, there are 2.40 arrests for violence against women per 1,000 students. Additionally according to the Associated Press (2021), "One in three women worldwide have experienced physical or sexual violence in their lifetimes". The University of Virginia and all other schools and universities must provide a safe campus for all of its students to create a productive working

environment. Failing to do so not only tarnishes the reputation of the school but simultaneously puts students' lives at risk.

## **Technical Project**

There is currently no University of Virginia security solution that uses a combination of historical data and real-time crowdsourced data from users to increase the safety of students navigating on the grounds. Similarly, at the moment, no hardware device can quickly and efficiently test to see if a drink has been spiked. Additionally, there lacks a platform for students to discuss the 'safe' areas of Charlottesville and the areas which are dangerous to travel through. Despite this information presently only spreading through word of mouth, we envision an all-in-one multi-use security product for students to stay safe when navigating grounds and the larger Charlottesville area.

UVASAFE will be an app that aims to keep students safe when navigating grounds and the larger Charlottesville area. The app will have three main modes. Traveling Mode, Forum Mode, and BAC / Reagent Mode. With Traveling Mode, users will be able to view and upload local crimes as well as search through previous crime data and share their current location with a predefined contact list. For users, Travel mode will increase their awareness of their surroundings by informing them of recent crimes. Also, Travel mode will include Ambassador features where users can summon an Ambassador of their specified gender to walk them home. Forum Mode is dedicated to making the user feel heard. One feature will be a page where the user can send any feedback that would make UVASAFE more user-friendly, convenient, and or efficient. Another feature will be a page solely dedicated to educating any user about what is considered prohibited and consensual for either gender. Finally, through the use of Breathalyzer / Reagent Mode users can check their blood alcohol content as well as check their drink to see if it

has been spiked with a date rape drug using an external hardware device that connects to the app via Bluetooth. This allows users to stay safe in unfamiliar environments where alcohol is being consumed. Through these three modes, UVASAFE aims to foster a community that prioritizes the health of safety of all users and decreases violence against students on the grounds and in the larger Charlottesville area.

When a user launches the app, the initial screen they see is the home page of the Map Mode. On the screen is a map of the general area surrounding the user as well as red circles indicating recent local crime events near the user. The user is instructed that they can click on these circles to view more information about the local crime events. If clicked the user is taken to a separate page that shows a crime report taken from published publically available Charlottesville police information. Under the Crime Report is a list of resources to assist the user if they have been affected by the crime in question either directly or indirectly. When on the home page of Map Mode the user is shown a menu along the bottom of the screen with five buttons. These buttons allow the user to access different features including uploading information about a crime, searching for a specific crime, entering Ambassador mode, sharing current location with a predefined contact list, as well as modifying app settings. When using the search feature the user can search by keywords as well as toggle different types of crimes on and off. By clicking on the middle button in the bottom menu the user enters Ambassador mode and is taken to a separate screen. On this screen, the user can see their current location, set the location of their 'home', and request an Ambassador to come to walk the user home. When the user summons an ambassador to walk them home all Ambassadors are sent a text that a UVA student is requesting an escort home, identified with a specific case number. The text additionally contains the student's address for the Ambassador to put in their GPS/mapping software of

choice (Google Maps/Waze/etc). The first ambassador to respond 'yes' (indicating that they are not currently involved in a situation) is then assigned to the user who requested the Ambassador and all other Ambassadors receive a text that that case number is being helped. The Ambassadors do not use the UVASAFE but instead, the Ambassador network is tapped in by texting the Ambassador's phone numbers. This database, containing the active Ambassador phone numbers, will be provided by UVA Officials. From the home page of the Map Mode, the user can swipe to the right to enter the Breathalyzer / Reagent Mode. This mode works through an external Bluetooth-connected hardware device. The hardware device has two ends to it a thick end with an intake hole and a thin end with a chemical probe. In this mode, the user can test their blood alcohol content (BAC) by blowing into the intake hole to see if they are safe to walk home or if they should find alternative transportation. When using this feature the user is shown their resulting BAC as well as what this categorically means in terms of impairment and how they should proceed. In this mode, the user can also test a drink for the presence of a date rape drug to see if their drink has been spiked.

### **STS Project**

An article written a few months ago in May of 1996 highlighted tragic outcomes from a society disregarding safety. According to an article published by KC Baker from the People's news, Kristin Denise Smart, who at the time, was 22 years old when she attended California Polytechnic State University in San Luis Obispo, California as a freshman was living her life as an ordinary as a college student can. However, on one tragic night, Smart was attending a party off campus where she met Paul Flores after she passed out on the lawn at approximately 2 a.m. She later went to his residence after the party and was never seen since. It wasn't until an investigation shortly after Smart went missing that she most likely didn't give consent to Flores

due to the findings of video recordings from a search that was conducted. During the trial, it was uncovered that the extent of the initial kidnapping resulted in Smart being raped and murdered (Baker 2018); her body was never recovered. Flores was later convicted of first-degree murder and sexual assault. This case has made UVASAFE's intention clear of protecting and preventing incidents where possible; in short, this case was possible to prevent. Granted, the end of the 90s didn't have the technology for such applications as we do today, however, many similar cases of abduction, rape, and murder are still occurring. One of the features that would've contributed to Smart's safety is the notification sent to a predefined set of contacts to inform her of her location since she is not yet home and her phone's battery level is decreasing yet idle. This would've allowed her friends and families to physically check up on her virtually and shortly after. While researching other abductions from parties alike, we thought this app would provide all the utility needed to stay safe, especially in scenarios like these. However, I see things clearer now, an implementation of a panic button would serve well in the heat of the moment when someone may be overpowered. From a logical standpoint, this "panic" button should make a local call to the police under the given premise that the caller is under duress and will record the episode as well as being communicated to the local police live. This will be a contribution to the Technical project. Also, if the victim were to hopefully survive the encounter, upon further research I discovered that suicide is the leading cause of death for young women between the ages of 15 and 19 (Vijayakumar, 2015). We are currently deciding whether to add links for therapy sessions as we recently became aware to us that depression is a major risk factor for suicide which disproportionately affects women. This has become much more apparent when we realized that seventy percent of antidepressant prescriptions are given to women in the US (Centre for Suicide Prevention, 2022).

## **Conclusion**

UVASAFE uses security measures to keep communities assured and safe. The Technical proposal goes into clear detail about most of the main features it has to offer such as avoiding high-risk areas, informing friends and or relatives of a user's whereabouts, spreading general knowledge for the safety of the public, etc. Whereas the STS project's previous findings substantiate that a safety app is necessary for anyone in a moment of vulnerability. User Configuration played a vital role in what users need from our app since the worst-case scenario is to assume the user is in danger, this led us to always have the initial screen be in Map Mode to request assistance immediately (a ride home or call to local law enforcement). Other User Configurations encapsulate other ideas as well, whether it be adding a feature to accommodate certain situations or integrating basic safety functions to all general safety apps.

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