

The Sum Assessment System
(Technical Paper)

Destructive Implications of Consumer Wearable Technologies
(STS Paper)

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On my honor as a University Student, I have neither given nor received
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Introduction

There are two aspects of our lives that we can always improve upon, the individual and the community. A respectable community is substandard if it consists of underdeveloped individuals. By the same token, an accomplished individual is miserable if said individual is surrounded by a crude community. Therefore, it is imperative to establish the two parts and develop them by tackling problems or challenges that both aspects face.

The technical project will focus on tackling the community objective, and it involves the use of an assessment system proposed by a non-profit organization based in Charlottesville, called The Sum. The aim of this assessment is to establish individual strengths and inherent flaws in our way of life and way of thinking, and the results will be utilized in consultation in order to create meaningful change in the individual, helping them move beyond guilt and shame in order to become more appreciative and mindful about others around us. This assessment is the cornerstone to achieve The Sum's fundamental goal of "standing in solidarity with ALL people."

Similarly, the STS topic will shed light on the ways in which popular wearable technology like smartwatches can impede an individual's development. It is widely accepted by society that smartwatches and similar wearable technologies exist to benefit the human potential by promoting physical activity and monitoring our progress and goals (Chan, 2012). Without a doubt, these existing technologies have set numerous health-related achievements for many individuals (Rutherford, 2010). However, there are also underlying problems that popular wearable technology has that are being overshadowed by their positive feats (Patel, 2015). By uncovering the problems that these technologies possess, we can create better overall habits and positively reinforce our development process to form a stronger community.

Technical Topic (Capstone)

The organization we are working with is The Sum, led by Elliott Cisneros. The Sum is a nonprofit based in Charlottesville that has partnered with the Heather Heyer Foundation to form the Heyer Voices organization. The goal of the The Sum is to stand in solidarity with all people, no matter their background. Through assessments, workshops, advocacy, and coaching, The Sum empowers people and organizations in solidarity across our differences (The Sum, 2019). One key component of The Sum is the Power of Difference Assessment (PDA). This assessment identifies underlying biases in the thoughts of those who take it. Consultation is provided by either Mr. Cisneros or trained consultants to interpret these results. While there is an existing website to take the assessment, the site has some issues. This includes only one user being able to take the assessment at a time, as well as users being able to skip around the assessment by manipulating the URL. Lastly, when the PDA is completed, Mr. Cisneros manually copies the results into an Excel document to generate figures for the assessment report. While this only takes around five minutes, there is a plan for over 1,000 people to take the assessment by the end of 2020 so that UVA may conduct a study on the effectiveness of the PDA. Both the current method of generating results for assessments and the assessment system itself scale very poorly, especially as Mr. Cisneros is the only one generating reports.

The high-level goals of our system focus on creating a new website for the PDA that reduces the amount of manual work needed to create assessment results, makes maintenance of the system easier and provides a scalable and secure platform. As a result, we chose to build the application in Django, which allows for good organization of code and the ability to add various applications to make Mr. Cisneros's work easier. For the backend portion of our application, we plan on migrating to Amazon Web Services (AWS), which is a reputable and scalable platform

that will be used to host the PDA.

To succeed at designing a product for Mr. Cisneros, we gathered system requirements because it allows us to set system goals for our team. By having the requirements in a backlog, we can organize what each member of our group is doing for a given work period. This allows our group to focus on the requirements that need to be completed earlier and allows us to pace ourselves while meeting them. This organization of requirements prevents our group from neglecting certain tasks, as well as rushing important software updates before deadlines. The minimum requirements for the system, which are to be completed by the end of the 2019 semester, mostly revolve around creating the new system and making it secure. The desired requirements for the system, which are to be completed by the end of the 2020 semester, are related to improving upon the existing system.

There are numerous self-improvement books and material on effective altruism that are currently accessible to many people in libraries and online. However, absorbers of these materials may not be interactive with the ideas proposed or take immediate action to enact the humanitarian objectives. A learning period accompanied by coaching sessions and consultations offered by The Sum would be far more engaging for the individual who is trying to make a larger, more meaningful change. This program is one of the many ways in building a supportive community, but it serves as a self-improvement tool as well. It would be considered a good solution because it places a large emphasis on supporting the individual to become better versions of themselves as well as being empowered to eliminate perceived differences in race, sexual orientation, gender, religion, disability statuses, socio-economic classes, and culture.

STS Topic

Today, users use wearable technology like smartwatches to track fitness, monitor health, and enhance their well-being through the data collection capabilities offered by its applications (Dehghani, 2018). However, much like other pieces of technology that offer data exchange and interaction through the internet, wearable technologies can offer a wide array of distractions as well (Bower, 2015). These distractions, including, but not limited to digital entertainment, games, and social media, lead to problems that range from disruptions in the classroom to more serious concerns like distracted driving (Borthwick, 2015). Psychological issues, expectation of instant gratification, and distracted driving are all well-known topics in critical discussions about smartphones. Hence, the phrase “don’t use your phone while driving” exists and the statistics that accompany this dangerous behavior remain to this day. The modern smartphone already offers all of the distractions that wearable technology carries, but the phones are more mainstream than wearable tech, thus much of the problems that phones promulgated have already been addressed. With the capabilities that wearable technology has now, they are derivatives of smartphones and are able to achieve the same level of catastrophe when used dangerously (Tippey, 2014). Thus, addressing how wearable technology can also achieve this level of damage is imperative to improving the safety of wearable tech usage.

This topic will address the negative effects surrounding the usage of popular wearable technologies. Since it is commonly accepted that modern wearable technology exists to benefit users by augmenting their world around them and providing more information about themselves to improve and meet personal goals, discussions about their risks are largely unrecognized (Jayaraman, 2003). From its origins, these technologies are built on and enforce a theory of the social construction of technology. This theory, also referred to as SCOT, advocates that human

action shapes technology, rather than technology being the influence that determines human action (Klein 2002). Smartwatches exist because humans desire a convenient tool to help them keep track of their fitness goals and the like; thus, society typically sees smartwatches in a positive light and believes that we are the ones controlling this technology for our own ambitions. Langdon Winner, a critic of the SCOT theory, would argue that this view on smartwatches only explains how the technologies arise, but ignores the potential consequences of their existence and usage (1993). He could even propose that the emphasis on technological determinism is stronger here because wearable technology can just as easily govern our lives and shape our habits with its constant monitoring and data communication prowess, leading users to want to continue operating and spending time with its functionalities. Technological determinism is a term used to describe the relationship between technology and society such that the development of technological artifacts leads to social changes (Dafoe, 2015).

Wearable devices are very efficient with communication, allowing users to respond to text messages quicker and use voice-activated controls (Tippey, 2014). However, this type of efficiency does not necessarily constitute an advantage in our case because the ease of responsiveness could correspond with higher usage (He, 2018). When coupled with driving, the driver would be encouraged to use it more than their cell phone. If a person driving a car does anything besides driving, then they are driving distracted. Distracted driving has claimed 3,166 lives in 2017 and 391,000 were injured in motor vehicle crashes involving distracted drivers in 2015 (National Highway Traffic Safety Administration, 2019). With increasing smartwatch sales and usability, these casualties will continue to rise if the technology companies or the US government do not restrict some elements of their features (He, 2018). There are countries in Europe, like the United Kingdom, that have laws prohibiting smartwatch usage while driving,

but the United States does not enforce any laws of this nature besides penalizing smartphone usage when driving (Gaff, 2015). In turn, it would slowly paint these popular wearable technologies in a negative light rather than its dominating positive image.

When it comes to driving or any other real-world activities, doing anything else but engaging in the current task at hand is considered being distracted. We can alleviate this problem through law enforcement, as well as by creating logical triggers for these technologies when users carry out an event such as driving a car or entering specific study spaces. Cars have Bluetooth nowadays and can use it to connect with mobile devices, but I propose that Bluetooth should be enhanced to detect smartwatches and then subsequently turn off distracting modules such as social media and other communicating applications. Wearable technology should be used to facilitate and improve our lives, not become one of the catalysts for our demise (Starner, 2002).

Research Questions and Methods

The main research question that needs to be addressed is determining the degree in which wearable technology has taken over our everyday decision-making. In order to investigate this research question, the method of documentary research will be applied to uncover evidence verifying what wearable technologies have accomplished, who uses these technologies, what makes them popular, and other smaller inquiries pertaining to the main research question. An article found on ScienceDirect that documents the research and development of such smart wearable systems answers many of the smaller inquiries that stemmed from the main research question, though specifically for health monitoring. This article along with many others will provide information on the current status and future implications of smart wearable systems

which will be used to address the extent of their influence on human behavior (Chan 2012). This topic can also be analyzed with the use of specific case studies. For example, a study was performed in the United States and South Korea to gain cultural insights into the perceptions of on-body technology usage. The study explores the users' interaction with a wearable technology in a form of an e-textile and examines the societal perceptions of the individuals using this technology (Profita, 2013). The level of detail offered by case studies will be valuable in demonstrating how the interactions between the users and wearable technologies change over time.

Conclusion

The technical deliverable will be a new and improved assessment system taking the form of a web app developed using the Django framework. Upon finishing taking the Power of Difference Assessment, the user can set up a consultation and examine the results of the assessment as details to find areas of personal improvement during the coaching process. The STS deliverable will improve our understanding of the downsides of popular wearable technologies that are left overshadowed by their overwhelming beneficial aspects. When more of these unpopular notions are addressed, our perspectives broaden in a way such that we do not just see the world with a limited set of thoughts, but rather start to consider other views and aspects that are outside of our own lifestyle. Through this facet, we identify how personal behaviors and habits of using wearable technology can create impairment to our overall well-being. Therefore, these projects widen our scope of the world and help determine what new ways and habits we can develop to benefit the individual and society.

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