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Oct. 4 2019

[github.com/CatWeng/CART360](https://github.com/CatWeng/CART360)

## Personal Space

- Think of a context and an environment where you would like to intervene. Where will you present your project? Who is it made for?

The context and environment I'd like to intervene in is the public space. In crowded, public areas, there are always people trying to squish and squeeze their way past and around you. The Personal Space cape offers a physical layer of protection against the people around you. A spacious hood offers the ability to shut out the outside world and a floor length cape to keep stray limbs from getting too close to your person. This project could be presented in any area that fits these conditions such as the metro, downtown, a busy mall. Anywhere a person might feel overwhelmed with too many other getting too close to their Personal Space. It's made for people who feel similar frustration when others are careless or in a rush and just trying to get places without being harassed. Introverts that just want to run an errand and get home without being bothered. Also good for someone who may be in circumstances where they feel unsafe wearing certain clothes, such as going home after clubbing the cape offers handy coverage. Useful even inside the club if someone unwanted is getting too touchy. It also offers a convenient shelter from the cold and wind if you haven't dressed for the weather properly. Further extensions to the Personal Space cape may include a scented face mask to counter the enemy of all public transit users: bad body odour. The inside of the cape may also include handy pouches for deodorant, napkins, hand sanitizer, cough drops- anything you may want to distribute to make your experience being outside a more pleasant one. Noise cancelling headphones could be incorporated in the hood for a totally immersive people-free experience.

- Think about the kind of relationship you wish to foster between your users and the artifact or installation. How can you use your project to destabilize the users and make them reflect on themselves, their environment and society?

The Personal Space cape should be a handy companion to everyone who wishes to use it. Easy to whip out and put it on to shut out whatever unpleasantness is happening around them.

However, the user should also consider their effect on the people around them. Realistically, anyone wearing a cape is going to be stared at, or given funny looks at the very least. It's out of the ordinary and anything out of the ordinary is liable to be given attention to, so the cape may very well have the opposite effect of what the user wishes. Perhaps they won't be bothered but they will definitely attract more attention than they would otherwise. The artifact is to be used at the user's discretion. The creator bears no responsibility for unwanted side effects. The users have to judge for themselves whether it's worth putting on or not. A cape also occupies a lot of space, it's not like a small device that can be tossed in a bag and forgotten. The user must make a conscious decision regarding the relationship between themselves and strangers and decide that they really do not want to be bothered that day. The user would also have to consider others in the same position as them, who just want to go about their day without being bothered. People who want their own personal space. But a cape is a somewhat bulky garment that can take up room that would otherwise offer more breathing space to others. The user has to consider the selfish aspect of this artifact, taking up extra space when everyone else also just wants to get home and must brave all the squishing and squeezing regardless.

- Think about the notion of empowerment. Is your artifact really helping or challenging its users in any way or is it just another psychological prosthesis?

This artifact empowers users to protect themselves from uncomfortable situations by offering a physical barrier between themselves and the situation. On the other hand, it can be seen as the user running away from their problems by blocking them out. But even then, some problems are best ignored, such as when you're not involved but watching from the sidelines. It only stresses you out because they can't be helped with your involvement and perhaps it's a toxic situation, so sometimes it's just best to remove yourself entirely. These are all metaphors the cape offers when the user makes a decision to put it on. It is up to the user what they want to make of it and what situation they want to use it in. For one person, going from the stares and catcalls of creepers on the street to stares and screams of "Harry Potter" for looking weird may be a world of difference. It takes a certain amount of mental fortitude to brush off the attention you get from simply being different in a crowd of normal. It challenges the user to think about their position whenever they decide to trigger the cloak and what that means for them and their surroundings. Whether its empowering or not is really up to the context it is used in and how they feel about the artifact. It shouldn't be used as a crutch to avoid all social interaction but it gives the user the

power to do so. How confident they feel wearing it and whether it improves their experience in the public sphere can only be decided by the wearer.

- Think about something meaningful. What are you trying to tell us with your project?

So the Personal Space cape is, at its most basic, a cape with a hood. The cape will have a space-like design on it, with the words “Personal Space” written on it somewhere, perhaps spelled out in the stars. The cape reacts to the proximity of others, opening and closing accordingly. In its resting state it’ll be a normal cape gathered on the wearer’s back. As others come in closer, the cape will expand into a cloak, cover the wearer’s whole body. This action can also be triggered manually by the wearer. This motion, combined with the words “Personal Space”, sends a pretty pointed message although it’s up to others to decide whether or not they want to heed that message. It causes people to think about their position out in the world, in relation to others. You could unknowingly (or knowingly) be making someone very uncomfortable. The cape sends out a signal to the person, as well as anyone within the line of sight. People should think about how they affect others more, even just by walking around. In the metro carts, there are always a few who try to shove their way inside before anyone is able to get out. Groups taking up the whole sidewalk as they shuffle down, or someone next to you on the bus getting just a bit too cozy. This is the kind of situation the cape is trying to send a message about. Of course, people can see the message and still not care because a message is all it is, but it does prompt people to think about the meaning behind the garment.

- Sensors and their Associated Affordances

For this project, the most important sensor would be a proximity sensor. Several proximity sensors covering the different directions would be used to detect how close people are to the wearer. Perhaps some sort of heat sensor or infrared sensor to detect that the nearby object is actually human as opposed to the wearer leaning against a wall or some other inanimate object. Another sensor that could be used to make the experience more personal is a heart rate sensor or other biometric sensors to detect changes in emotional state in the wearer, namely anxiety. Or a temperature sensor that will move the cape to cover the wearer if it detects that they are cold. There are many possibilities within the realm of sensors and many of them could be incorporated into this project. The heat sensor might not be a possibility because it can’t detect

heat from a distance. A bit of research has come up with e-health sensor kits which can include several different sensors including: Accelerometer, glucometer, body temperature, blood pressure sensor, pulse and oxygen in blood and airflow/breathing sensors. One or a combination of these could be used to determine anxiety levels within the wearer. The proximity sensors are the most important though. They should be able to detect a distance up to 1m away from the wearer. Arms-length should be considered enough of a distance so the cape does not feel threatened. Although not a sensor, conductive thread will most likely play a big part in the project and in connecting everything together. A small remote of sorts is also necessary for the wearer to control the cape so it doesn't move indiscriminately. For example, an off mode where the user doesn't need protection and manual controls in case of temperature.

- **Three** similar projects and provide a summary of each

Anouk Wipprecht's spider dress: There are many projects with the concept of personal space in mind. Anouk Wipprecht's spider dress is one of the most beautifully executed versions I've seen. It's a black and white 3D printed dress featured very complex designs across the shoulders and torso that bring to mind bones. Large black globes are placed around the dress similar to spider eyes. On the shoulders are 6 spider legs, with the wearer's arms acting as the 7th and 8th legs. The legs have motors in them that allow the dress to either reach out as if to strike or beckon, depending on how the wearer is approached. It works through a combination of proximity and respiration sensors. If the approach is aggressive, the legs react in a similarly hostile manner. If the approach is calm, then the limbs move much more smoothly. My project takes a lot of inspiration from the function of Wipprecht's dress although I didn't realize exactly how much until after. Unlike many projects where the concept takes precedence over the aesthetics, the design of the dress is minimalistic, futuristic and very visually appealing. I think this is an aspect a lot of art that is trying to send a message regards as secondary. It's not that I find other wearable technology ugly, but a lot of them focus on one or the other. Either it is mainly a fashion piece, or mainly a message. With my project I'd like to attempt to achieve a good balance between aesthetics and functionality which is difficult when bulky mechanical/electronic components are involved.

Siew Ming Chen's Spike Away vest: The Spike Away vest is a bright green sort of plastic mesh vest with spikes all over the material. The design is reminiscent of anti-slip rubber mats and the like, which reflect the creator's background as an industrial designer. The spikes may look threatening but they're harmless and made of plastic. The vest is more of a visual deterrent to keep people away, although the designer has stated it looks so ridiculous she refuses to actually wear it out in public. Like the vest, my cape isn't much of a physical deterrent. It doesn't stop people from making contact with you aside from the fabric barrier. It also has no technological aspect so it's a bit more of a passive take on the idea of personal space. I like the simplicity of the vest, however. It's like a safety vest- It's brightly coloured for visibility and sends a clear, concise message. It's a very utilitarian design but as noted earlier, it sacrifices aesthetic for functionality. The artist herself thinks the vest is too ugly to wear. If a garment meant to protect your personal space can't be worn in public where it's needed, then what's the point? And unlike the Spike Away vest, my project is not meant to disrupt others. Although the spiked vest was clearly a joke of a project given that the artist suggests bad hygiene and aggressive behaviour as alternatives, it is a somewhat hostile solution to the problem of personal space. The Personal Space cape is really more about creating a safe space for the wearer.

Urban Armor collection: Although the urban armor collection is not exactly a single project, it is a collection of projects from similarly minded artists interested in the interactions between technology, the body, personal, and public space. These artists have also generously uploaded their creation process as DIY instructions, allowing others to propagate their work, a rare occurrence in today's culture of patent protection. The collection includes a scarf that automatically moves to filter out pollution, a dress that umbrellas out when it detects people too close to it, a dress that masks the wearer in fog to allow them to escape when they feel stressed, etc. I feel the last two projects in particular are relative to mine given that they have achieved the technology I would like to use. The social escape dress uses a GSR sensor to measure conductivity on the wearer's skin and the Personal Space Dress uses an ultrasonic sensor to detect the presence of people nearby. Also included in the collection is the Cinnabrooch, a brooch that emits the scent of cinnamon bun to cover body odour, a dress that imitates the color it senses, a veil that detects and obscures the wearer from unwanted cameras. My personal space cape has many similarities especially with the personal space dress, even beyond the name (which I came up with before I knew of the dress's existence). All of these projects are very well documented with detailed instructions written out. They include

everything- from the code used, materials needed, sewing instructions, down to the circuitry and detailed step by step photos. I believe this could be invaluable during the creation process.

- How the Personal Space cape is unique

In the last entry for my project inspiration, I referenced a collection of art pieces that are very similar to the concept I want to create. Frankly speaking, the idea of personal space in a wearable is a very popular idea. It has been done many times, in many ways, by many people as technology progressed to a point where it was possible for the casual hobbyist to tinker around with these ideas. When you think of a person, naturally, you think of how they interact with their environment. More often than not that environment happens to be a crowded urban space. With my Personal Space cape, I'd like to create a multifunctional artifact that isn't so much occupied with the interaction between self and other as it is for the self alone. It is meant to create a safe barrier for the wearer without being overly disruptive of their surroundings. Realistically if one were to wear something like the spider dress or personal space dress in public, it would get destroyed in minutes. Space is tight, the parts are delicate and people just do not care. Many will do what they have to with minimal regard for someone with weird looking clothing. I'd like to create a piece that is inoffensive in its action, personal and durable. Moving parts should be minimal or solidly attached. Many personal space projects also focus on space alone as a medium. My cape should be inclusive of several of the senses- Space and touch primarily, then sight, smell and hearing. It is a fairly ambitious project however and I'd like to tackle each sense in that order.

- Storyboard

Separate.