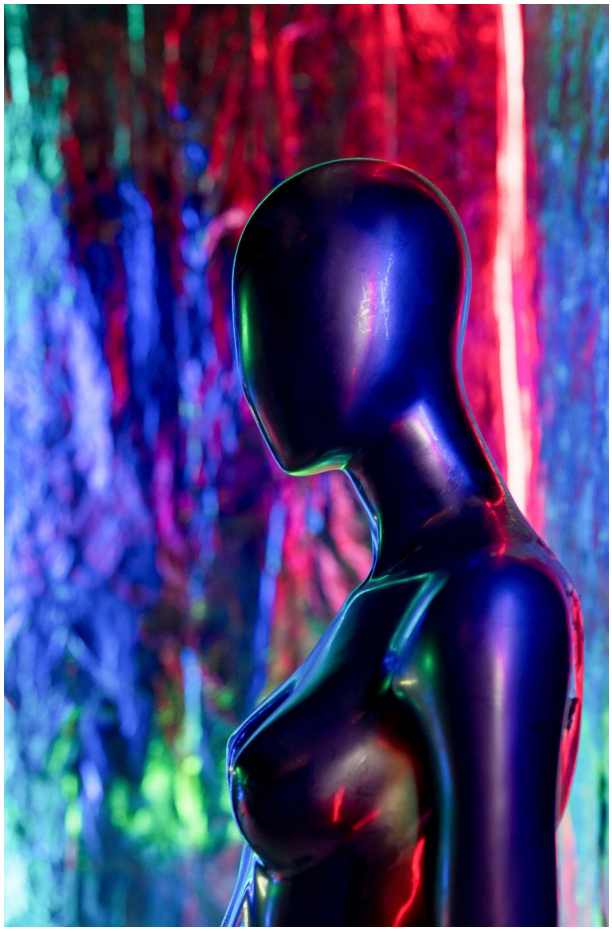

MARK II-VII JACKET

PROPOSAL REPORT

FLASH STUDIOS

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Daniel Kang

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Semester 1, 2022

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INTRODUCTION

Every human has a combination of unique preferences, sense of style and quirks. One way of expressing ourselves is through fashion. Through self-presentation, individuals are able to express themselves and enable the impression that others form of them. There is great potential for fashion innovation that is sustainable, functional, and interactive in a fast-developing world. Outlined later in this document, our concept will aim to deliver a stronger sense of self, through a design that will be adaptable, and unique to suit each user's self-expression needs. The report will cover the purpose of the project, design and approach, findings, and both practical and social implications of our concept design in the fashion space.

BACKGROUND

Clothes make the man, nor love by wear. Clothing often complements certain aspects of a person's personality. As fashion trends become more accessible to common folk, we can stroll through the city streets and realise that more and more people are pursuing fashionable and individualistic dressing styles as a way of showing off their distinctive dressing tastes. It is a person's personality and lifestyle that determines how that person dresses. Everybody's life condition varies already from birth, and continues to vary as life shapes their thinking. These attitudes determine a person's thinking and actions, which gives rise to people's different personalities. Some psychologist theories state this is what makes up the 'self'. Self expression is how we share this 'self' (Ackerman, 2022). Conversely, one's style of dressing reflects one's personality preferences and is a way of expressing oneself. Clothing not only helps to display our style, it is also found to positively influence our behaviour and self-esteem if the correct clothes are worn (Johnson, Lennon & Rudd, 2014).

The choice to create statement clothing is not only about satisfying people's desire for self-expression, but great business potential is also found here. The fashion industry in Australia generates $27.2 billion in revenue annually (Sams, 2021). Whereas fast fashion products make up a large percentage of this, the downside of fast fashion is that cheap clothes are only briefly pleasing to customers, yet the amount of waste produced during production and destruction has a greatly negative impact on the environment. Not only that, fast fashion production relies on mass manufacture, which can cause lots of pollution to be released into the air. And finally, to keep the clothes cheap, work is often exported to third-world countries where employees are not paid a

living wage (Oshri, 2019). This begs the question: would it be possible to meet consumer's needs for self-expression and individuality without generating unwanted social costs of waste, pollution and exploitation? This is what we are trying to achieve with MARK II-VII.

Related Works

MARK II-VII draws its inspiration from the intersection of fashion, psychology, and wearable technology. This is a design space that has been explored before, producing some interesting findings.

Literature

Works exploring fashion design in the context of interpersonal and intrapersonal expression greatly interest us for this project. A study by Kodžoman in 2019 suggests that civilisation has advanced from treating clothing as merely functional pieces of defence against the elements, to intricate items that also provide humans identification, modesty, status and adornment. With this development, fashion became the first "social interface" - a means to reflect the self. Additionally, clothing also affects the wearer's moods and attitudes. This paper revealed that clothing serves as an important form of communication; influencing others and the self (Kodžoman, 2019). With this in mind, we decided to propose a project that will advance beyond practical use; one that expresses purely for the sake of expression.

Clothing choices are not made based on visual appeal. In fact, fashion can be seen as a form of non-verbal communication. This 2020 paper by Goedhart investigated the nature in which fashion communicates, summarising that clothing can be involved in complex non-verbal communication. Specific elements (i.e. patterns, length of clothes, materials) directly reflect on the wearer. Rules and symbols are often dictated by society, and just like real spoken language, meanings can change over time (Goedhart, 2020). Understanding and studying such a 'language' is not straight-forward due to how interpretations can change across cultures and time. Venturing into such a large space can pose challenges, but also opens up design opportunities (more on this discussed in Discovery & Constraints).

As fashion is considered a "social interface", the integration of technology could open up new modes of interaction with such interface. Moere & Hoinkis in 2006 explored the design of a wearable folding display that reflects the wearer as a form of self-expression. The personal data collected through the clothing could be 'aesthetically encrypted', creating visual patterns that can only be interpreted by those that were observant enough (Vande Moere & Hoinkis, 2006). This study puts focus on fashion as directly created by the self. This particular prototype inspired us to look into the use of biometric data to generate patterns and designs, rather than borrowing familiar symbols. We believe this could introduce a much more intimate and personal level of fashion communication.

Existing Products

Wearable tech is in its early stages on the market, often as utilitarian pieces for fitness or health, but this is subject to change. Major clothing brands have already begun adding technology into their clothes to create new lines of items. Balenciaga and Nike are two of these brands that innovated in this area. Firstly, Balenciaga introduced their Track LED Sneaker (figure 1), which are shoes with a strip of LED at the heel. Described as 'over-the-top fashion tech', these shoes were clearly designed to be fashion statements rather than joggers (Gorsler, 2019). For Nike's Adabt BB shoe (figure 2), form and function were seen as one. Like the name suggests, it is an adaptive shoe that self-laces and provides maximum comfort for the wearer by locking their feet in place and preventing sliding (Altland, 2022). These two examples showcase an elegant integration of tech into fashion; something that we want Mark II-VII to achieve.

Figure 1&2 Balenciaga LED sneaker & Nike adabt BB

In another example, the use of abstract patterns for unique identification is applied by Spotify, a music streaming service. Since 2015, listeners have received a summary of their listening habits in the last 365 days. This summary is called Spotify Wrapped, which often becomes viral and generates lots of discussions from users (Pau, 2021). Last year's summary introduced Audio Aura. By connecting certain types of music to common aura colours, each user was given a unique colourful image. Since no two people had the same aura, listeners were even more encouraged to share and talk about their abstract piece (Massony, 2021). With this in mind, MARK II-VII would aim to have a similar technology, but instead of drawing from music, the colours would draw from biometric data, possibly fingerprints. This project would also be able to showcase one's design anytime, anywhere, without being constrained to a screen. The clothes can display the aura light and pattern looks similar to figure 3.

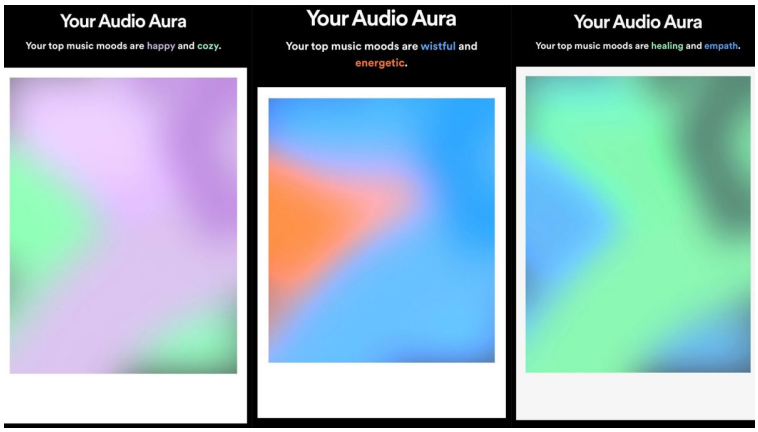

Figure 3 Spotify audio aura

CONCEPT

MARK II-VII will essentially be an item of clothing that has no static design - their colour and pattern can be changed without changing the garment itself. Each colour and pattern will be kept unique with technology similar to NFT(Non-fungible-token) -physical tokens that can't be duplicated or stolen as promised by blockchain.

In this project, we will use a jacket as our prototype to demonstrate the functionality of these tokens. We decided on a jacket as it is an item of clothing that is easy to swap around, and has a relatively large surface area to work with. Figure 1 shows what the appearance of the jacket and tokens might look like.

Figure 4 Early concept sketches of jacket

INTERACTIONS

- Changing of appearance

The colour and pattern of the jacket can be changed by the use of different tokens. The initial and most important token the user will have, is the ‘Fingerprint’. It will be generated through their biometric data (e.g. fingerprint). This interaction gives wearers a sense that the design is directly related to their sense of self.

- Token

  The tokens are tangible pieces that people can trade peer-to-peer, like the current market of NFT artwork. The market ecosystem should feature many designers uploading their patterns to the marketplace, while customers can choose to buy their favourite patterns. Every token is associated with one piece of unique design, therefore, once it is obtained by a person, that pattern/design is officially owned by them.

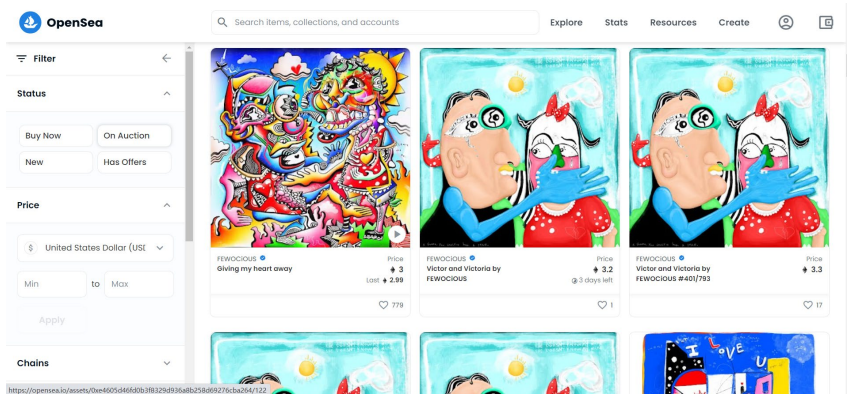

Figure 5 Overseas, a NFT market where the artists sell their work on it.

- Interactions occur between jacket wearers

  Outside of the trading system, the jackets themselves also support user interaction. When two jacket wearers meet, physical contact like shaking hands or hugging will cause movement/mixing of colours on their jackets. This cross-garment interaction has lots of development potential. For example, we can separate the ways patterns mix based on the type of interaction, or we can control how much the patterns are mixed in regards to proximity of the users.

Target Audience

While fashion is a universal form of self-expression regardless of demographic, socially-conscious young adults born in 1995-2010 (referred to as Generation Z) would be the ideal match for the MARK II-VII.

Generation Z is an emerging demographic that currently takes up 41% of the population, meaning technologies for this demographic will certainly see wide-use and large-scale social effects. Market research has also shown that this generation values self-expression more than ever, and prefers products that are both sustainable and ethical.

The generation’s ethos can be described as “...creativity, self-expression and unabashed authenticity” (Bewicke, 2021). As the first generation to live in a world of ubiquitous technology,

generation Z embraces a strong sense of self-identity, especially online. Consistency and customizability comes to mind when observing their preferences of platforms and technology (Bewicke, 2021).

With the unabashed authenticity also comes unapologetic activism. Generation Z people are more likely to actively engage in advocating social issues that matter to them (Bryce, 2021). One such issue is corporate responsibility. Gen Z'ers are known to seek out sustainable and ethical consumption compared to other generations (Pennington, 2022).

The MARK II-VII is highly suitable for generation Z because it aligns with many of their core values and desires. This technology would be highly appealing due to its customizability and uniqueness that off-the-rack clothes cannot provide. Additionally, it also has other side appeals such as sustainability and ethical production.

Of course, an entire generation would be a broad design space. Therefore, we hope to perform further research on gen Zer's that are especially fashion-conscious (i.e. puts in extra attention on trendy new clothing) and socially-conscious (i.e. interested in world events and has strong opinions on oneself and others) to seek out how to better tailor our technology towards them.

Discovery and Constraints

Fashion is a domain with many interesting intersections, such as psychology, politics, sociology and technology. Our proposal aims to explore wearable technology in a context of self-expression, rather than utility. This would mean more insight into how psychology and sociology comes into play. As seen in 'Related Works', this is not an unfamiliar domain, but still a relatively new and emerging area.

As of now, our knowledge is that fashion is both interpersonal and intrapersonal (Badaoui et al., 2016). It would be worth decoding the 'language' people purposefully (and even subconsciously) speak through their clothing. Extending beyond current works to identify specific, real-life examples can give us immediate feedback and pointers for our project direction. This language would allow us to understand how fashion elements can change people's perceptions, and in a greater scope, create collective identities or allow individuals to signal to others. Due to MARK II-VII's infinite non-static nature, this project has great potential to not only contribute to the existing language of fashion, but to even reinvent and introduce new concepts. Before all of this, we are brought back to our original research area - how might we use technology to design clothing to express ourselves without causing jeopardy to others and the environment? For questions like these, the best solution would be studying previous papers on this topic, and directly enquiring those relevant in these fields to gain user insight.

For the MARK II-VII concept, there may be some constraints with its implementation. Such wearable tech would first of all need large, flexible surfaces to showcase patterns. This particular technology is 'FOLED' (organic light-emitting diode). It is cutting-edge, and unfortunately not accessible to the general market yet ("Flexible OLEDs: introduction and market status | OLED-Info" , 2021). Therefore, we may need to find alternate solutions for this prototype, such as optic fibre or neopixels. This could be addressed by dedicating a time where the team pools their

resources in order to properly organise what we already have and what we will need to purchase/find.

Another feature to focus on is proximity-sensing that allows users to interact. We believe the use of Near-Field Communication (NFC) may help bring this feature to life. NFC tech can help carry data between two places when they come within a few centimetres of each other (Faulkner, 2017). For MARK II-VII, a relatively small amount of data is needed to be exchanged and most gestures require contact. Therefore, NFC would be the most elegant solution without overcomplicating the technology. Some further refinement and user testing may be needed to ensure the NFC does not constantly go off at other things, and properly takes in colour from the other person.

The token trading process is not necessarily a tech aspect of MARK II-VII, but its constraints should still be considered. For a 'trade' mechanism to work, there needs to be multiple buyers and sellers to create a market. It is highly likely we will only manufacture one jacket, so we may be limited in our ability to construct the trade ecosystem. One way to mitigate that would be to create multiple tokens and use team members to demonstrate trading. In the exhibition, the system will most likely be simulated by simply handing users different tokens to see how the jacket changes.

Feedback and Response

This section details feedback we've received from our initial pitch and our corresponding response.

Feedback: *The interaction between two Jackets is interesting, could it consider a situation where the jackets recognize each other from a distance for people walking past in a similar space; for example walking down the road and saying hello can lead to similar interactions.*

Response: Colour blending after a hug might be one of those interactions. Currently, people do not easily accept hugs, and this rejection will generate some negative feelings for both parties. This technology might make it more fun. The social pressure on the user to say hello and interact with strangers would probably also be lowered. The implementation of these interactions can help people to bond with each other and even create more social opportunities.

Feedback: *More can be done to explore the physical characteristics of fashion, such as what does yellow mean and what do frills mean? Like any field of design, fashion has a language. Each colour has its own characteristics and meaning.*

Response: The original concept of the project is not focused on how we can define fashion, but on giving fashion a new dimension of expression. I think we are more like tailors, creating a new technique that allows designers to bring their new ideas to life. The physical design is not our sole priority - we also aim to build a platform. We agree that when designing colours, patterns and interactions, we need to consider the meaning of different colours in fashion cognition. Each

colour has its own definition, but may be interpreted differently in various situations. For example, yellow in most cases embodies a sense of cheerfulness and warmth. But in the autumn wind, yellow brings a feeling of depression. So we need a way to unify the feeling of a certain colour in a certain way of presenting. This allows users to understand each other's moods and attitudes better.

Feedback: *People not only focus on the patterns but also the texture, shape and size, so the idea, like adaptive surface can be taken into consideration.*

Response: Adaptive surface or changeable texture may still be out of reach for current commercial technologies, however, we may use tailoring and designer to allow the user to change the shape of the jacket (Like Riot Division Ultimate City Jacket - Black | ANDJOY). Another alternative is to use two different internal and external surface materials, and design them into a two-sided garment to achieve the effect of changing materials. But in general, our main focus remains on the integration of electronics in clothes that are able to change in patterns and colours.

Feedback: *Great that the design is not static, and there's a change of state as an expression. Perhaps there can be a looping state that changes depending on the environment, which would now be a fashionable expression that was not there before.*

Response: Our focus is centred on expressing users' style. You can be sure that someone who chooses the MARK II-VII is willing to express themselves and even receive compliments from others. So the function that the appearance of clothes can be changed depending on the environment would be likely to be welcomed by our target users. But in our project we may focus more on the interaction around the tokens and between the users. This function is a good idea for further development.

Plan of Work

Our plan of work will be presented in a week-by-week format. Deadlines and task allocations are agreed on by all team members. Work on the MARK II-VII will be broken down into its three main technologies: light display, token trading and proximity sensing.

Week	**Item/s**	**Allocation**
5	- Proposal	Everyone
6	- Feasibility analysis of concept	Everyone
7	- Explore concept solutions - Locate/plan resources needed	Everyone

Break	- Start construction and coding - Refining results	Construction-Internal teammates Coding-External teammates
8	- Construction and coding	Construction-Internal teammates Coding-External teammates
9 - **PROTOTYPE DEMONSTRATION**	- Prototype demonstration with video and document	Everyone
10-**PROTOTYPE APPRAISAL**	- Critique writing	Everyone
11	- Refinement (extra features)	Everyone
12	- Refinement (extra features)	Everyone
13 - **FINAL DELIVERY**	- Individual website and exhibit prep	Website-Individual Exhibit-Everyone

INTRODUCTION OF TEAM

Wanqi Yang - majoring in interaction design. I know web design and some Arduino programming. Even though I don't have too much foundation on coding, I am willing to learn coding skills for project development. Also, I can also help the team do some graphic design work. I'm excited to work with my teammates. I like design and enjoy the happiness that it brings me seeing the concept come true. Can't wait to work on the project!

Michelle 'Mish' Kwok - final-year student in Bachelor of Information Technology. Majoring in UX design and Information Systems, my expertise focuses on front-end design and some fundamental knowledge on database and networking. I am a hobby artist, and tend to illustrate concept artwork for ideas. As this will be the final project of my degree, I would like to be ambitious. My weakness lies in hardware, as I have not worked with it much. Although my knowledge in physical computing is limited, I am extremely willing to learn new skills. I hope to support my team with presentation skills and visual design knowledge!

Daniel Kang - Majoring in Software Information Systems. Familiar with web design/development and some experience with Arduino. Experience with front-end and back-end technologies, as well some experience with graphic design. Hoping to support the team with

development tasks whilst also learning new skills along the way. Though there lies many challenges ahead, I would love to see the concept come to fruition! (or close to).

Yichuan Chen - Information Technology Undergraduate Students, majoring in User Experience Design. I am better at front-end design, such as the visual presentation and interactive experience of a page. However, I am weak in Coding because I have not studied more in this area. In the whole teamwork, I will do my best to produce ideas and seek for more possibilities. I will also help the team to move the project forward online. I'm looking forward to working on our concept and working together as a team to make it work!

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