# Technologies
## to Address Cultural Issues
## within the Fashion Industry

**POLITECNICO**
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School of Design

Design for the Fashion System MSc.

# Technology to Address Cultural Issues within the Fashion Industry

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# ABSTRACT

The word "culture" is the set of customs, traditions, and values of a society or community, such as an ethnic group or nation. Culture includes the history and inheritance of different nationalities, which makes it means profound significance for this nationality. Due to the co-effects of globalization, colonial history, and other factors, cultural appropriation has become a widely discussed topic that needs to be resolved. With the improvement of people's cognition, cultural appropriation has been paid more and more attention, and some behaviors that people once ignored are now offensive. This phenomenon has its positive significance; on the other hand, it also brings new problems.

The technology was once considered to have less connection with the clothing industry. Still, in recent years it has been developed in a more humane direction. More and more new technologies are used in the clothing field.

In this study, I will objectively analyze the meaning and impact of cultural appropriation and explore the possibility of using technology to address these issues.

**Key words: Cultural appropriation, technology, globalization, cultural appreciation**

# INTRODUCTION

The topic of cultural appropriation in fashion has received much attention in recent years by the public. This thesis aims to explore the phenomenon of cultural appropriation in the field of fashion through the analysis of famous examples to explore the difference between cultural appropriation and cultural appreciation (section 1.1), and based on the excellent performance of the technology in the field of trend forecasting and other fields to explore its role in helping to solve cultural appropriation possibility (section 1.2).

Then it discusses the main characteristics of this phenomenon in today's society, through the analysis of those cases that have attracted the attention of the general public, to explore the reasons that may lead to the emergence of cultural appropriation from the perspective of industrial structure and workflow (section 2. role in this issue (section 2.2). Through the analysis of 3 cases, the advantages of AI technology in work once generally handled by humans are found, and they can be extended to solve cultural appropriation (section 2.3). The last part of this thesis builds on the previous research and simulates a software model that can help companies reduce cultural appropriation. It concluded that future technologies, especially AI technologies, may play an important role in addressing cultural appropriation.

# Chapter 1

## Overview of Cultural Appropriation and Technologies

*"Culture is an umbrella term which encompasses the social behavior and norms found in human societies, as well as the knowledge, beliefs, arts, laws, customs, capabilities, and habits of the individuals in these groups. "*[1]

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[1] Tylor, Edward. (1871). Primitive Culture. Vol 1. New York: J.P. Putnam's Son

# 1.1 Cultural appropriation

## 1.1.1 Description of Cultural Appropriation

Before discussing cultural appropriation, it's necessary to discuss the word "culture" first. "Culture" is the set of customs, traditions, and values of a society or community, such as an ethnic group or nation. Culture is considered to be the core concept of anthropology, including a series of phenomena spread through social learning in human society. Cultural universality exists in all human societies; it includes expressions such as art, music, dance, rituals, religion, and techniques such as tool use, cooking, shelter, and clothing. Just because of the uniqueness and continuity it had, makes culture means a lot for each nation or ethnic group.

The term "cultural appropriation" was only added to the Oxford English Dictionary in 2017, although it can trace the origins of cultural appropriation back to the times of European colonization in the sixteenth century. It's defined as the act of copying or using the customs and traditions of a particular group or culture by somebody from a more dominant (= powerful) group in society. Cultural appropriation differs from acculturation, assimilation, or equal cultural exchange in that this appropriation is a form of colonialism. When cultural elements are copied from a minority culture by members of a dominant culture, and these elements are used outside of their original cultural context — sometimes even against the expressly stated wishes of members of the originating culture – the practice is often received negatively.
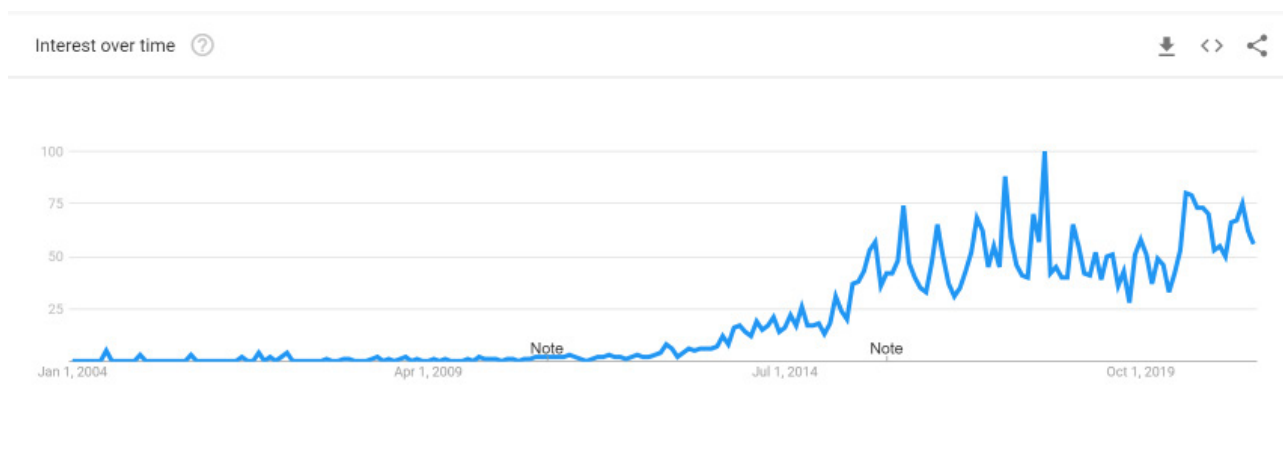


**ABOVE**
The search trend of cultural appropriation by users worldwide from 2004 to June 2021 on the Google Trends, 2021, Google Trends.

According to the trend analysis of Google's big data, the word "cultural appropriation" began to become a topic in the fashion industry in the Western world since 2012. In 2016, the brand Valentino invited famous photographers from National Geographic magazine to shoot advertisements inspired by tribal ethnic groups in Kenya, using white models to comb "black dreadlocks" and wear tribal-style clothing. In the 2017 US version of <Vogue> magazine "Diversity" special, supermodel Karlie Kloss dressed as a Japanese geisha wearing a black wig. Victoria's Secret held a big show at the Grand Palais in Paris. The opening look was a Chinese golden dragon hovering over the model. These were vilified on the Internet and were believed to have appropriated cultural elements. The phenomenon of cultural appropriation has quickly become a super battlefield for the public and the elite to face each other.



**RIGHT**
Karlie Kloss
Vogue
March 2017 issue



**LEFT**
Karlie Kloss
Vogue
March 2017 issue

However, such an aggressive public opinion field did not exist ten years ago. In 1967, the designer Yves Saint Laurent's famous African collection took the West's "predatory and destructive actions against Africa" on the catwalk. "Expansion" was revealed to the world. In 1997, John Galliano's Dior Couture, inspired by the Kenyan nomads, and the ESHU primitivism series launched by Alexander McQueen in 2000 did not arouse strong doubts. It is undeniable that the Internet has flattened the world, and fashion has rapidly spread to the masses in this decade. It has also made it easier for designers to access foreign cultures that were difficult to reach in the past. The widespread use of social media has made academic concepts that were originally understood by only a few people fermented out of the circle and have become a public opinion weapon that the Western public can use.

**ABOVE**
Six designs in homage to Bambara art Spring-summer haute couture collection, 1967.

Through the study of "cultural appropriation", we will find that even in the original place of the culture, the perception of "cultural appropriation" is not unified. In the essential confrontation with academic criticism, there is a general tendency to believe that "cultural deviation" is a relatively neutral term, which is loosely used, spelled, and sticky. However, in the public's view, "the use of powerful cultural pairs for cultural mobility" is synonymous with attempts to bully and occupy, thereby gaining cultural authorization and economically plundering.

But there are also different opinions. American scholar David Max, who studies Japanese fashion, pioneered the concept of "cultural borrowing" from the perspective of power relations. Both "cultural borrowing" and "cultural appropriation" embody a kind of power relationship, which is caused by an unequal power relationship— the phenomenon. Starting from the perspectives of both "borrowed/appropriated" and "borrowed/appropriated", David Marks believes that in power relations, a weak culture imitates the style of a strong culture, which is "borrowing". On the contrary, the strong culture is "Cultural appropriation" may be involved when quoting a foreign culture with weak cultural power. However, what criteria are used and how to determine which is weak and which is strong, which itself bears the strong imprint of postcolonial theory.

Different viewpoints have their value, but these dualistic viewpoints are not helpful for solving problems. This research will study and analyze all the relevant documents of "loose cultural use" in the field of fashion design, discover the reasons for this phenomenon, and provide a source of solution to the problem.

## 1.1.2  Cases of Cultural Appropriation in Fashion

The fashion industry has always been the hardest hit by cultural appropriation. However, people have disputes about whether cultural misappropriation in the fashion field should be blamed for inspiration creation. But there is no doubt that this problem cannot be ignored, and artistic creation cannot be an excuse to offend others. Especially the protection of intellectual property and intangible cultural heritage involved. Brands, especially luxury brands, have a relatively strong voice and awareness. When they misappropriate the culture of a minority group, they will deprive the group of the opportunity to display in the industry or the public, thereby infringing on the group's abstract and concrete aspects. This is particularly prominent in the use of mechanized methods to produce tribal handicraft patterns, which will significantly destroy the world's cultural diversity. Here's are a few typical cases.

## Marc Jacobs 2017 Spring/Summer Collection

Accusations of "cultural appropriation" were hurled at Marc Jacobs after models, dressed in wigs that looked like dreadlocks, walked down the runway wearing his 2017 Spring/Summer Collection. Furthermore, he made some worry responses on Instagram that made things more controversial. Jacobs responded to critics on Instagram, saying, "All who cry 'cultural appropriation' or whatever nonsense about any race of skin color wearing their hair in a particular style or manner – funny how you don't criticize women of color for straightening their hair." If that didn't rile up people enough, he went on to say, "I don't see color or race- I see people,"   s after this controversial runway show and admitted his 'insensitive'  in Instyle's interview. While the cultural exchange is as important to the fashion world as it is to our daily lives, deepening our understanding of the world and spurring innovation and understanding, it's important to acknowledge that we, unfortunately, do not exist in a colorblind world. If Marc wants to help the rest of the world reach his level of enlightenment, he ought to acknowledge the true origin of the hairstyle and refrain from

likening black women straightening their hair to cultural appropriation. After all, many black women feel they have to straighten their hair and comb out their dreadlocks to be taken seriously in a professional setting and/or conform to a white ideal of beauty. And while it is worth noting that several women of color walked Jacobs' runway, the presence of a naturally-dreaded model would have made a much more powerful statement about acceptance and inclusion than a retaliatory comment on Instagram.



**ABOVE**
Marc Jacobs 2017 Spring/Summer collection, 2016, New York Fashion Week.

## Gucci 2018 Autumn/Winter Collection

Gucci has faced numerous backlash over its products, and two of the most talked-about pieces came from its Autumn/Winter 2018 runway. In February of 2018, the brand released a wool balaclava jumper—a black turtleneck sweater that features a mouth cut-out with red panels that look like

exaggerated lips. It sparked backlash for its resemblance to blackface caricatures almost immediately. It's been nearly 200 years since white performers first started painting their faces black to mock enslaved Africans in minstrel shows across the United States. It was racist and offensive then, and it's still racist and offensive today. Blackface isn't just about painting one's skin darker or putting on a costume. It invokes a racist and painful history.

Shortly after, Gucci posted an apology on Twitter and removed the jumper from its site. In the statement, the Italian fashion house mentioned that "we consider diversity to be a fundamental value to be fully upheld, respected, and at the forefront of every decision we make." The brand also announced that the company would be hiring a global director for diversity and inclusion, as well as five new designers around the world for its Rome office.



**ABOVE**
Gucci Sweater, 2018.

Just three months after, the brand is under fire once again after luxury e-retailer Nordstrom listed the Indy Full Turban that was first spotted on Gucci's AW19 runway on its site. The Sikh Coalition, "a community-based organization and think tank that defends Sikh civil rights", in particular, tweeted: "The turban is not just an accessory to monetize. It's a religious article of faith that millions of Sikhs view as sacred. Many find this cultural appropriation inappropriate since those wearing the turban just for fashion will not appreciate its deep religious significance." The item was subsequently pulled from its site, and they also apologized to the Sikh community.

Compared with Marc Jacobs, we see a better attitude from Gucci. But the same problems happened twice in one season, making people doubt that, is all seniors of Gucci insensitive and lack knowledge? Especially after they decide to hire 5 different cultural backgrounds designers, it's still happened again. I can't help but wonder whether the brand is really aware of the harm to minority groups, or is it just for stabilizing the market and consumers.



**ABOVE**
Gucci 2019 Autumn/Winter collection, 2018, Milan Fashion Week.

# Carolina Herrera 2020 Resort Collection

Carolina Herrera was also embroiled in a cultural appropriation controversy last year. The brand unveiled its Resort 2020 collection that "takes on the playful and colorful mood of a Latin holiday." However, one look featured embroidery that's reminiscent of the details derived from the culture of the Tenango de Doria community. And two dresses had elements from the traditional Saltillo shawls.

For the first time, the Mexican government has lodged a complaint against the brand for appropriating its culture. In a statement provided to The Cut, the brand acknowledged that the Mexican cultural heritage and artisanal techniques directly inspired the collection. It also noted that Herrera, Venezuelan, is "one of the main emissaries of the Latin spirit worldwide." Creative Director Wes Gordon added, "My admiration for the artisanal work has only grown as I have traveled to Mexico over the years. With this new collection, I have tried to highlight the importance of this magnificent cultural heritage."

This involves another aspect of cultural appropriation. In addition to the emotional harm to the embezzled group, it also causes physical harm to it. First of all, due to its own advantages in the field of cultural communication, luxury brands will weaken the link between the nation and its culture when it happens, which will not be conducive to the inheritance and development of the nation's culture. Secondly, when the brand directly uses some handicraft patterns as design elements, it will infringe on others' intellectual property rights and affect the way they can benefit from the product. This injury is more prominent in the cultural appropriation behavior of fast fashion brands.

Carolina Herrera 2020 Resort Collection, 2021.

# Dior Pre Fall 2017 Collection

Dior took beautiful Romanian pieces of clothing, recreated them in modern materials, and presented them as their own pre-fall collection. When Romanians showed in media and social media their authentic garments, everybody saw that the patterns and decorations on Dior's insanely expensive items were identical to those made in Romania centuries ago. They're charging 30,000 euros for it. The people of Bihor were not given any credit or proceeds. Dior never even credited them for the inspiration of the coat. Romanian people noticed that Dior copied their traditional clothing, and they decided to fight back in a genius way.

At first, they didn't know what to do about the problem. They were just a region in Romania that many people had never even heard of. Since Dior was an internationally recognized brand, the people of Bihor realized that they didn't really have much of a leg to stand on.

They needed to find a way to fight back against the brand and let people know that these designs were theirs and that they were not designed by Dior. After some thinking and plotting, they realized that they could use the Romanian fashion magazine Beau Monde to launch their strike. Not only did they get some space in the magazine, but they also got designers together to create a new fashion line called "Bihor Couture." On the cover of the magazine was a Romanian woman wearing traditional clothes. The caption on the picture read: "Don't let traditions go out of stock. Support the fashion from Bihor and buy authentic creations from Bihorcouture.com". They thought that this was the best way to call Dior out on their deception. This allowed people to buy traditional Bihor clothing for a much lower price than Dior was selling their ripoff designs for.

When the clothing line was introduced and the reason for it, people were outraged with Dior. It's got a lot of attention when the story went viral on Facebook, the comments started pouring in, and they were all in favor of the Bihor clothing line. Many of the people were also outraged by Dior's behavior.

Through the above cases, we got that, first of all, the two common ways of cultural appropriation are misuse and undeclared use of culture. Secondly, these cases share the common feature that the community is harmed by uses that degrade cultural or religious items because they are displayed outside their traditional setting and for purposes that are different from those for which they were originally created (Kuruk 1999, p. 773). No matter what kinds of cultural appropriation, the phenomenon is now sensitively recognized by the public and arouses widespread concern and condemnation. However, not like the public pays a lot of attention to cultural appropriation, the attitude of luxury brands is obviously behind the scenes and superficial. Responsible brands should be ahead of the situation rather than compensate after cultural appropriation. We should consider these issues when deciding to use the culture of a specific nation, such as doing adequate research to avoid misuse and clearly explaining the source of inspiration. And have given back to the community in a financial way. Usually, businesses that are able to exploit these traditions have generally no connection with the communities that have developed the traditions in question. The result of this commercial exploitation does not generally improve the life of the communities who were the custodians of these traditions but ends up in an economic benefit for persons not belonging to the communities (Kuek 2005).

# 1.1.3  Cultural appropriation VS. Cultural appreciation

Culture has the characteristics of openness, variability, and joint participation (Mikhail Mikhailovich Bakhtin, 1975). Any culture develops through interaction and exchange with other cultures. The essential attributes of culture are change, development, and self-innovation. As an important part of cross-cultural communication, cultural appropriation emphasizes the subjectivity and creativity of its own culture externally and internally provides the experience and essence of other cultures, promoting the self-development of local culture and coordinating with other cultures—the law of cultural development. From the perspective of the history of global cultural development, the advancement of modernity will inevitably be accompanied by the subversion of traditionality. That is, modernity embezzles and mixes traditional culture, thereby rewriting the original culture. With the development of science and technology, the process of globalization is irreversible, and how to define cultural appreciation and cultural appropriation has become very important. Being too sensitive to the issue of cultural appropriation is not conducive to cultural communication.

For critics of cultural appropriation, cultural appropriation is a misunderstanding and misappropriation of local culture under the thinking of different cultures, and it is an offense to the misappropriated, especially the symbolic and one-sided cultural appropriation. Variety and other characteristics make people regard it as the output of stereotypes, and from the perspective of hegemonism and Orientalism, it is regarded as a vivid practice of cultural imperialism and Western thinking. However, cultural communication starts with symbols. That is, the first step of cultural communication is always symbolic and one-sided because symbols cannot contain all meanings. Symbolization does have the negative effect of deepening fixed stereotypes, but the purpose of symbolization is to facilitate communication and memory. Only by using symbolic things for cultural communication can more communication in the background of foreign cultures be interested in their own culture. And continue to output on this basis. Therefore, I prefer to call the well-intentioned appropriation as cultural appreciation. We are not asking for the eradication of all the use of other national cultures, but that such use should be based on respect and understanding.

## Osklen 2016 Spring Collection

Osklen, the Brazilian brand, has been praised for its approach to his 2016 spring collection he designed, which was inspired by the Sháninka, an indigenous people who live in the Brazilian and Peruvian rainforest. In return for permission to adapt their tattoos and traditional fabrics, Osklen paid the tribe. With that money, the Asháninka have been able to make various improvements, including building a school.

Critics interpreted this collection as a very modern take on tribal art, both in a design sense but also as a way that the designers could both pay homage to the artistry and origins, recognize their communities, promote their art, and also pay them for the rights to use their color combinations, emblems, and patterns.

Creative collaboration and inspiration deserve credit. Travel, culture, and textiles will always influence designers – groups like the Navajo, which create such distinctive designs – will always be beautiful and hold special significance in the collective cultural psyche. As designers, we must credit these groups whose traditional art forms and languages are often at huge risk of being exterminated. As consumers, we must demand authenticity and, where possible, sourced directly from ethical sources to buy such beautiful pieces.

Osklen 2016 Spring Collection, 2015

# Roberto Cavalli 2005 Fall/Winter Collection

Conversely, in 2015, Metropolitan Museum of Art's "China: Through the Looking Glass" exhibition featured more than 140 pieces of haute couture and avant-garde ready-to-wear. Many of these designs can see the influence of Chinese porcelain, furniture, movies, music, characters, and other elements on clothing design. This case is apparently the reflection of "cultural appreciation". This design has an artistic way of expression. Unlike typical cultural appropriation, the designer pays more attention to the display of traditional national aesthetics and respects the Chinese cultural interest, even to indigenous Chinese. This design series is quite stunning. The dress with classical Chinese style actually comes from an Italian brand, Roberto Cavalli. In 2005, Roberto Cavalli boldly incorporated the blue and white elements of the Chinese style in the autumn and winter series. This is not like the general "Chinese style" kind of far-fetched grafting deliberately. On the contrary, the color pattern is integrated with the dress itself: the tight skirt of white silk is embroidered with sky-blue Chinese patterns.



**ABOVE**
Jar with dragon, early 15th century, Ming dynasty (1368–1644), Xuande mark and period (1426–35) China Porcelain painted with cobalt blue under transparent glaze The Metropolitan Museum of Art, New York, Gift of Robert E. Tod, 1937 / Roberto Cavalli (Italian, born 1940) Evening dress, fall/winter 2005

This is an example of a fashion brand successfully avoiding cultural appropriation when "quoting" oriental cultural elements. It greatly retains the original flavor of national costumes and patterns, carefully considers the matching materials and designs, and promotes the national culture in a decent and elegant manner.



**ABOVE**
Roberto Cavalli, SS 2015, Metropolitan Museum of Art's "China: Through the Looking Glass" exhibition, 2015.

## Ralph Lauren 2011 Fall/Winter Collection

Ralph Lauren's 2011 Fall and Winter (F/W) women's wear show also sets the perfect example of cultural appreciation, which presented a more pure "Chinese style", and its design was inspired by the old Shanghai. The design shows the curves of women through close-fitting tailoring, and is embellished with decorative elements and jade ornaments of ancient Chinese costumes. This group of fashion series with typical Chinese style is also interpreted by a large number of Chinese models. Details such as Chinese stand-up collars, dragon embroidery, and cheongsam waist tailoring have become the highlights of the fashion show. The solemn black and white tones sparkle with the eye-catching "China

Red" and the brilliance of jasper jewelry. This design show shows the unique charm of Chinese clothing and women. Ralph Lauren's fashion culture reference is undoubtedly very successful.



**ABOVE**
Ralph Lauren, FW 2011 collection, 2011.

Starting from culture itself, culture is the ubiquitous "collective unconscious" of a nation. This cultural gene is basic, diffuse, and has its own characteristics, but this "self" is not self-satisfied and self-constructed. This self is a discourse structure, and its display and development can only be accomplished with the help of the "other", that is, the development of culture must narrate and construct itself in the collision and communication with other cultures. Cultural communication is not a process of mechanically transporting culture but a process of establishing multi-directional cross-cultural interaction through encoding-decoding. Cultural appreciation highlights the intersectionality and overlap of cultures by bridging the gap between different cultures, eliminates barriers to cultural transmission, and deepens the cognition and identity of the communicator's national culture in a way that is relatively easy for the recipient to accept.

It is important to understand that there is a difference between appreciation and appropriation. Appreciation is when someone seeks to understand and learn about another culture in an effort to broaden their perspective and connect with others cross-culturally. Appropriation, on the other hand, is simply taking one aspect of a culture that is not your own and using it for your own personal interest. Appropriation could mean purchasing a piece of jewelry or clothing that may have important cultural significance to that culture but simply using it as a fashion statement. It could be taking a photo of a ritual ceremony simply for the sake of getting as many likes on Facebook as possible. Regardless, taking a part of another culture without understanding what it truly means can be harmful not only to those whose culture you are using but also to those with whom you share it.

# 1.2 Technologies for fashion

Through the research in the previous section, we have seen that many countries, organizations, and individuals are actively trying to solve the phenomenon of cultural appropriation from various fields. Most of these attempts focus on legislation to protect intellectual property rights and strengthen cooperation between regions and related enterprises. These studies and measures are quite effective, but there are also some lags, and they are more of material compensation for the cultural appropriation that has occurred. But how can we reduce cultural appropriation at the beginning?

In POLIMI's course-Fashion 4.0-I learned a lot about technology. Through the learning in the classroom, I learned how the PLM system could help modern enterprises to better complete the entire process from development to production to sales. This made me realize the potential of digital technology in assisting human production and life.

With the continuous innovation and development of technology, more technologies are sinking from high-precision fields to areas closer to people's lives, especially the clothing industry. More conceptual technologies that once stayed in the laboratory are gradually being integrated into people's lives, and the development of new technologies is also moving towards solving the pain points in people's actual lives. This phenomenon is the result of two-way efforts. Designers—whether from novel brands or relatively conservative luxury brands—are looking at new technologies with a more inclusive and developmental attitude. There is no doubt that with the impact of the COVID19 epidemic on the physical industry, the combination of technology and fashion has reached an unprecedented height since 2020.

As customers' real lives become increasingly intertwined with the digital world, many designers and brands must embrace the latest technologies to push the limits of manufacturing, production, marketing, and wearability, from the latest in artificial intelligence to the boom of mobile commerce, 3D printing, and blockchain. In particular, technologies such as big data analysis have shown great effectiveness in assisting human work in trend forecasting.

The Oxford dictionary defines data as "The quantities, characters, or symbols on which operations are performed by a computer, which may be stored and transmitted in the form of electrical signals and recorded on magnetic, optical, or mechanical recording media" So, all the data associated with a fashion product can be called as fashion data. This data can used for trend analysis, customer behavior analysis, forecasting, etc. The fashion industry generates and creates various sources of data. All these data come in various forms like words, images, etc. These data are huge and cannot be fully and quickly analyzed and concluded by a human. This is why many companies, such as Zara, Amazon, etc., have started to use big data analysis to optimize their commercial activity.

Based on the research and development of these technologies in the field of fashion now, I see the feasibility of them in addressing the problem of cultural appropriation. In particular, the using of big data analysis in trend prediction reminds me whether it can help fashion design, which is also an emotional activity completed by human beings.
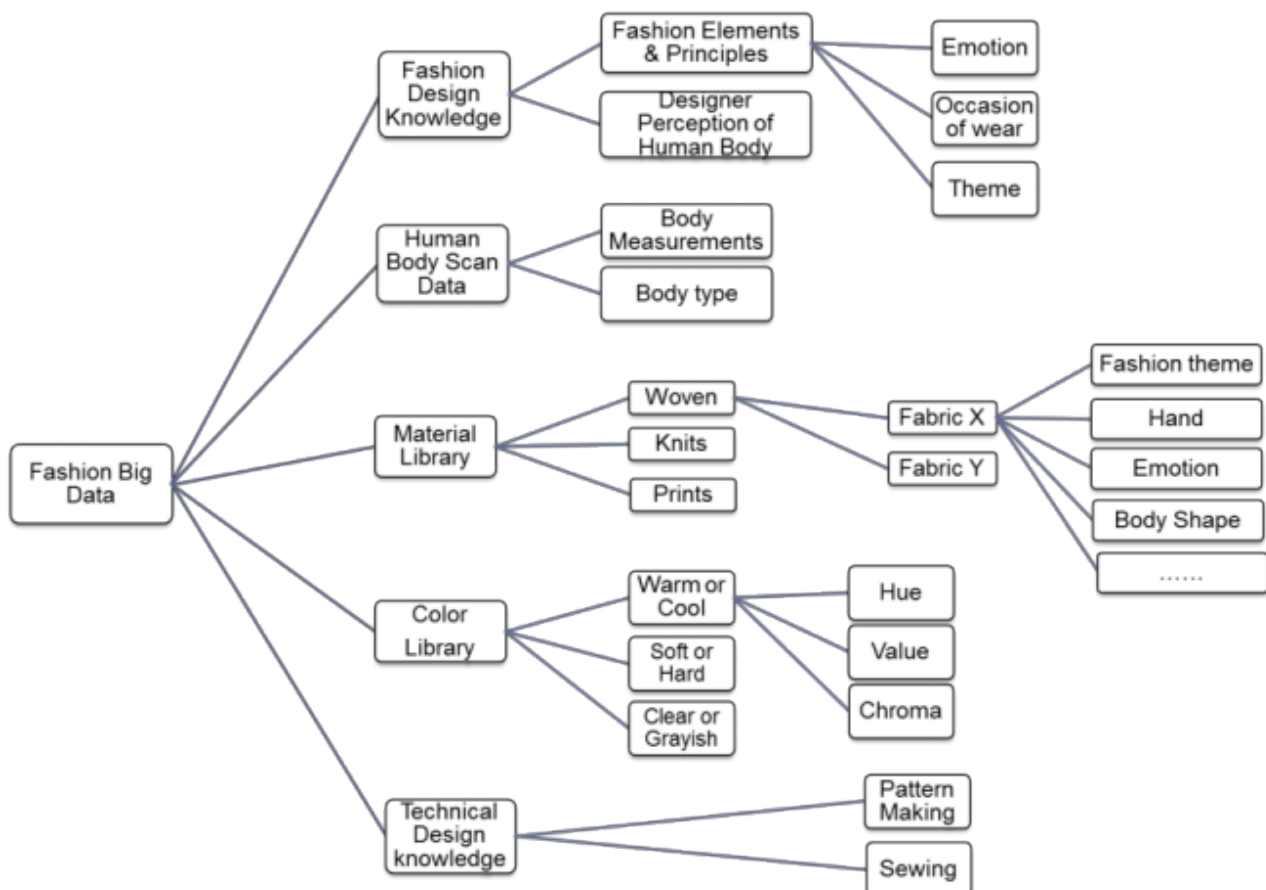


**ABOVE**
Data in Fashion, Big data in fashion industry,S Jain et al 2017 IOP Conf. Ser.: Mater. Sci. Eng. 254 152005. 2017.

# Chapter 2

## Cause analysis of cultural appropriation phenomenon in fashion industry
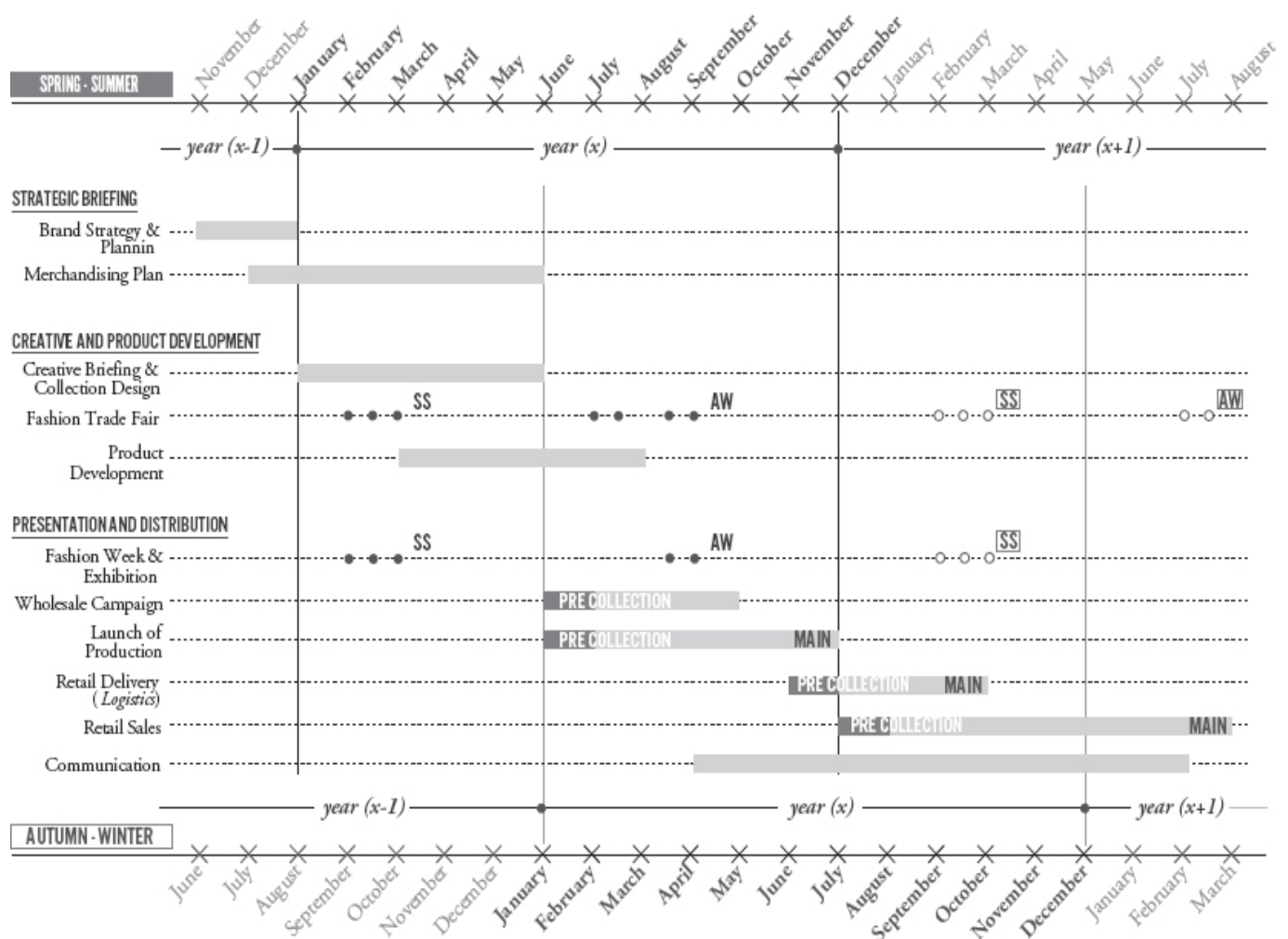
*Cultural appropriation, has a connection with the diversified workflow in the fashion industry. Therefore, this chapter aims to analyze the dialectic causes that contributed to the cultural appropriation phenomenon in the fashion field, which should be considered from its conventional work processes and potential factors of cultural appropriation by consumers.*

## 2.1 The reason of cultural appropriation appear in fashion industry

As the creators of circulating goods in commercial activities, fashion brands undoubtedly bear the most critical responsibility in the fashion industry's closed-loop of consumption and communication. For this reason, fashion brands are also the focus of my research. Proper handling of the use of other cultures is crucial for every fashion brand, and it is about their brand identity. As the cases in the previous chapter show, consumers are becoming increasingly attentive to the ethical aspects of fashion. In the fashion industry, compliance with Corporate Social Responsibility principles is developing rapidly, and almost all major fashion brands have links to their corporate code of ethics or code of conduct(Cerchia and Piccolo 2019). Many contemporary designers follow social standards in their design practice, some through their work with traditional textile artisans, including artisan techniques in their designs (Emmett 2014).

Brand identity appears not only in the collection of a certain season but also in a long-term concrete manifestation rooted in brand value and culture. It is reflected in every product creation and development link, market and distribution development, communication planning, and management. Therefore, my research is not focused on the creation of a single-season collection but instead analyzes the general workflow of the entire industry to find out the possible links that lead to cultural appropriation. This is helpful for each practitioner to think about how to carry out their work more prudently and responsibly from the perspective of the brand.

## 2.1.1 Common workflow in fashion industry



**SPRING · SUMMER**

|  | November | December | January | February | March | April | May | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August |

year (x-1) — year (x) — year (x+1)

**STRATEGIC BRIEFING**
Brand Strategy & Plannin
Merchandising Plan

**CREATIVE AND PRODUCT DEVELOPMENT**
Creative Briefing & Collection Design
Fashion Trade Fair — SS — AW — SS — AW
Product Development

**PRESENTATION AND DISTRIBUTION**
Fashion Week & Exhibition — SS — AW — SS
Wholesale Campaign — PRE COLLECTION
Launch of Production — PRE COLLECTION — MAIN
Retail Delivery (Logistics) — PRE COLLECTION — MAIN
Retail Sales — PRE COLLECTION — MAIN
Communication

year (x-1) — year (x) — year (x+1)

**AUTUMN · WINTER**

| June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | October | November | December | January | February | March |

**ABOVE**
**Collection development. Calendar of the phases and activities involved in implementing a ready-to- wear apparel collection. (Fashionability, p.54)**

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## Step 1: Preliminary Market Research

### -Consumer demand research

The objectives of fashion are always the masses, researchers from Kent State University pointed out (Snyder&Elizabeth, 2015). it needs to be oriented towards consumers' needs, as well as attaching more attention to the excavation of consumers' potential needs.

Series planning must be combined with fashion trends to visualize fashion trends such as collocations, colors, and design elements. For example, the color prediction authority PANTONE will announce the popular color matching for the next year every year. PANTONEVIEW 2021 SS popular colors provide seasonal inspiration, important color directions, color matching suggestions, and the application of materials and products. Illuminating, prism pink, lavender, skydiver, peacock blue, lead crystal are predicted fashion color in 2021.

### -Competition research

Individuals or groups engaged in fashion industry require to investigate market competitors, as well as launched products of rivalry force. Competitive product analysis is an important prerequisite for fashion differentiation, to inject new materials and elements into the R&D process of fashion products. From competitors or market-related products, delineate some perspectives that need to be investigated, and get the real situation, mainly analyzing the market layout, the number of products, the sales situation, and the detailed functions of the products.

## Step 2: Creativity and concept transformation

This part is the most important moment in the generation of a collection because it encompasses the two most significant and markedly interdependent phases from a design perspective: creative development and product development. In this purely creative phase, the creative department designs the collection with a considerable degree of autonomy because it is still free of production constraints.[1] In the past, design research relied on designers' subjective and emotionally oriented evaluation, which may easily result in the inappropriate use of other culture.

The specific work of design department includes finding sources of design inspiration, formulating a new quarterly product development report, the development of fabrics and accessories, and obtaining the first draft of the design according to the product development reverse, including specific style drawings, colors, fabrics, printing patterns, and other elements. Designers need to constantly re-examine and re-development, integration, and innovation, and deepen both concepts and design elements to a certain extent. What the designer needs to do at this stage is to focus on selecting a few design elements or logos that he feels best from the complex information. How to maintain the continuity of brand identity in innovation is important for designers as well.

## Step 3: Production and manufacturing

In this part the creative brief is presented and shared by the design department with the product office (product manager, product and graphic designers, prototypists and technical staff) to begin the subsequent product development phase which involves synergy between the two departments

For the conventional fashion production process, the flowchart can be roughly divided into the following steps:

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[1]  Paola Bertola, Chiara Colombi, Federica Vacca. (2018). Fashionability.  978-88-7461-401-1 ENG
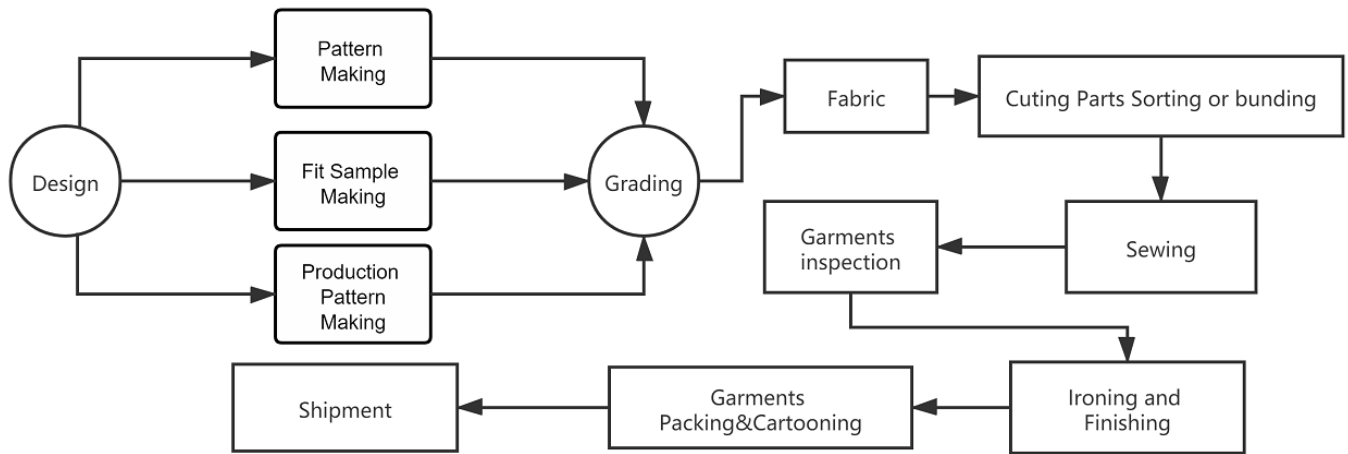
**ABOVE**
Garment production&manufacturing workflow, Model elaborated by the authors.

## Step 4: Clothing display

Clothing display is a branch of merchandise display. It is one type of visual marketing, which refers to the display design of clothing stores and windows, the purpose is to enhance the brand image, attract customers, and increase sales. The principle of display mainly includes the following points:

1. Make timely and purposeful adjustments based on weather, sales trends or promotion of store activities;
2. Start from the overall and overall situation, pay attention to the overall beauty, and strive to achieve: clear image, concentrated style, theme Prominent, with a strong sense of subject and hierarchy;
3. Reasonably use color matching from an aesthetic point of view to achieve harmony and unity.

Giorgio Armani, a well-known Italian fashion designer, has a deep understanding of clothing display: "We want to create an exciting and unexpected experience for customers, while maintaining a clear and consistent identity as a whole. Every part of the store They are all expressing my aesthetic concept. I hope to show my design in a space and an atmosphere, and provide customers with a profound experience."

## 2.1.2 Analyzing which step may generate cultural appropriation issue

"Cultural appropriation" and "cultural appreciation" as the opposite sides of fashion attitude under the coexistence of different cultures, have been evidently revealed when fashion designers launch their new design works. In the fashion industry, various cases have identified certain points when differentiating the situation of "cultural appropriation" and "cultural appreciation" . Undoubtedly, according to the processes of fashion work summarized above, controversial cultural appropriation is most likely to occur in the market research step, as well as the theme establishment.

### -Market investigation

Through the investigation of the fashion consumer market, designers can understand the preferences and fashion needs of consumers. Designers inevitably refer to some existing cultural crystallization, on the basis of insufficient understanding, the wrong use of cultural results will inevitably lead to cultural appropriation in the fashion industry. Firstly, let's view the representative case of "cultural appropriation".

Dolce&Gabbana made the mistake of cultural appropriation in its commercial advertisement, the brand team did not pay attention to avoiding and respecting other cultures.

Taking the Italian fashion brand Dolce&Gabbana's alleged "humiliating China" incident as an example,

the fuse came from the brand's series of short advertisements for the Chinese market. In one of the films, a small-eyed Asian woman sits in a dimly lit restaurant with lanterns and struggles with chopsticks to eat "looks too big" Italian food. The narration is full of sarcasm, thinking that "tableware in the shape of two small sticks" is difficult to control "the great Margherita pizza." There is another sentence that seems to be malicious: "You think you are in Italy, but you are in China." This very prejudiced language vilifies the "chopsticks" and "the appearance of Chinese people." This very obvious and prejudiced advertising language vilifies the "chopsticks" and "the appearance of Chinese people." As the essence of Chinese culture, it is ridiculous to describe chopsticks in simple words of "two sticks". It is a kind of cultural contempt with colored glasses. The core team of the entire design and event planning does not have a Chinese but forcibly deconstructs Chinese culture. It is conceivable that this move brought an end to Dolce&Gabbana's China career, and its brand value is estimated to shrink by 37.6 billion U.S. dollars.



**ABOVE**
November 19, 2018: Dolce & Gabbana promo videos

## -Theme establishment

It is precisely in the context of multicultural elements that cultural appropriation is more likely to occur. In many cases, the splash of design inspiration is often constituted by other cultures. When designers intend to present an uncommon fashion style, choosing the culture of ethnic minorities or social groups, clothing elements have become a common way of expression. But this kind of "design inspiration and thematic references", if not seriously respected, is likely to evolve into a kind of cultural appropriation that will be criticized.

In Valentino Haute Couture F/W 2016-2017 fashion SERIES, It was conceived by the chief designers Maria Grazia Chiuri and Pierpaolo Piccioli with the theme of "Theatrum Mundi". This concept was originally inspired by Shakespeare's literary masterpieces and aimed to memorize the 400th anniversary of the death of Shakespeare, which interpreted the dressing style of Shakespeare's era. Taking the design plan with a certain audience target as the main path, integrating the cultural style of the audience preferred, and strengthen the market integration of fashion items, so as to achieve a more thorough market reverberation.

**ABOVE**
Valentino Haute Couture Fall 2016: Embroidered gown with long sleeves worn with Elizabethan collar

Designer's active participation in fashion decision-making actually plays an important role in avoiding cultural appropriation issues. Some pragmatic measures can be stressed:

First of all, designers need to attach much attention to the originality of design products with bold imagination and creativity to fit the main lifeline of the brand series. In the process of product design, they respect original designs instead of copying other brands. After all, cultural appropriators are essentially mumbling about the subjectivity and creativity of their own culture so that they can avoid the risks of cultural appropriation to a certain extent.

Secondly, the pre-market research of brand design can sensitively capture the fashion trends of the season. You can also use the annual fashion color trend report and the new products of the season launched by major brands for analysis. To better understand and guide consumers' shopping habits as much as possible. The effective detection of consumer orientation can largely avoid the risk of controversy or inappropriate products.

When the designer is quoting foreign cultural elements, he must also be "polite", "moderate", and full of recognition on the basis of fully understanding the dialogue culture and history. Particularly, it is very important for designers to stress the "cultural correctness" of the design results to restore the fashion culture of other countries in a real context. From this point of view, it is normal for fashion themes to incorporate foreign cultural elements into their design inspiration. However, the boundary between cultural appreciation and cultural appropriation lies in whether the designer himself truly understands, appreciates, and respects the cultural crystallization of other countries.

## 2.2 The reason of common consumers have cultural appropriation behaviors

As an essential part of the fashion industry, consumers also have research value. Nowadays, cultural appropriation emerges extensively on social media. From the national characteristics of Halloween costumes and the national characteristics of the Kimono have turned into a must for travel photography, to White women posing as BIPOC, it is especially common among young consumers. Seemingly, cultural appropriation has become a vane of cutting-edge trends and fashion.

Therefore, behind the social phenomenon that consumers have cultural appropriation behavior, the reason is mainly composed of the diversified extension of mainstream culture and the capitalist fashion economy. That is, "culture has become the attribute of commodities, and its deep-seated cultural implication and inheritance value have been continuously weakened. Mainstream culture is increasingly eager to confront consumers in an approachable way. Capitalism continues to promote the commercialization of cultural traditions while stripping away the cultural background of commodities, and culture or fashion is displayed to the public in a way with commercial labels."(Pearson,2021)

**-Culture diversification**

"Cultural diversity refers to the abundance of traditional custom cultures in a country or a region of the world. Cultural diversity is defined as the many different forms through which various groups and societies express their culture"(Dan,2020). According to the explanation of scholar from Delft University of Technology. A continuous improvement of the degree of social informatization has enabled the vigorous exchange and innovation of the concepts of culture and fashion on a global scale. The high exposure rate of fashion information has also promoted the

diversification of consumer aesthetic standards. They are no longer confined to the fashion products of own culture, but are more willing to understand the fashion packaged by foreign cultures. This is a change in the tendency of consumption habits in the context of the times. In a paper titled "Bicultural Identity and the Dark Side of Targeting", marketing experts from the Wharton School of Business analyzed the cultural appropriation in the fashion industry advertising that seeks cultural and ethnic identity, and even cause consumers with multicultural backgrounds to boycott a product or service. The spread of multi-dimensional culture has incurred a full sense of freshness to end customers of the fashion industry.



**ABOVE**
Nadine Leopold, 2017 Victoria's Secret

# -Mainstream culture dominance

Fashion tendency of consumers is fundamentally dominated by mainstream culture.The vast majority of consumers, simply as receivers and followers of fashion, ignore the source of fashion inspiration. Take the fashion underwear brand, Victoria's underwear as an example. At the 2017 Victoria's Secret show, model Nadine Leopold performed in underwear and traditional Indian headgear. While receiving good reviews, the designer team of Victoria's Secret also suffered some social criticisms about cultural misappropriation. The controversy in this case is mainly focused on "Indians' traditional costume culture is worn by white people and inappropriately used in an erotic fashion show", "the profanity and disrespect of traditional culture".

However, for the vast majority of consumers, they don't think there are any problems with such clothing, they only consider the fashion design a carrier of the so-called "exotic style". As the journal titled "Parents' perception of teen's influence on family purchase decisions: a study of cultural assimilation" (Farm&Shergill&Sekhon&Zhao, 2013) dedicated, "This is a kind of cultural assimilation in a commercial society, and culture no longer has The representative of nationality, but has the superficial 'unity'". Although fashion inspiration is diversified to a certain extent, when ethnic elements with "unique characteristics" are untimely become a fashion business gimmick, become a tool for exaggerating interests, and become the object of grandstanding, which is a symbol of mainstream culture's victory over marginal culture. As the consequence, consumer's fashion tendency has a rather extreme orientation.

As Professor Krishnendu Ray declared on Twitter

in 2019, "The debate on cultural appropriation is a sign of the entry of the professional middle class of people of color, and they have the ability to refute it." Minorities communities lost their cultural markers and were incorporated into mainstream dominant culture, the process of assimilation speeds up. "The essence of cultural appropriation is an opposite relationship between cultural appropriation and cultural infiltration. This cultural hostility can originate from the same source as racism-the belief that one race has inherent superiority over all other races and thus has the right to dominate. And culture is a sign that emphasizes racial hierarchy". (Dan, 2020) As long as there is a system that can maintain the dominant cultural power, cultural encroachment will exist in a broad sense.

When the fashionable children around us are braiding, singing rap, and being engaged in sports shoes culture, it is difficult to discern the meaning of the black cultural symbols we wear.



**ABOVE**
Run-DMC in a promotional shot. From left to right: Jason Mizell, Darryl McDaniels, and Joseph Simmons. 1988.

This non-mainstream culture is gradually being widely recognized by us. While this kind of fashion inspiration with ethnic culture as the core content continues to spread, it also promotes the formation of such a concept: the proper understanding and respect of non-mainstream culture also reflect the sufficient attention to "cultural appropriation" itself, as well as humility.

To summarize, "consumers' cultural appropriation behavior originates from the fashion orientation under capitalism, and its foundation is domination and subordination", as Pearson concluded in "Cultural appropriation and aesthetic normativity". (Pearson, 2021). The items and traditions of the marginal culture are regarded as foreign and sharp by the mainstream fashion culture, which will also be transformed into the profits of the fashion industry at the same time. Once in the fashion industry, different cultural identities are deprived. The only culture that can be identified is the capitalist culture. "Obviously, cultural appropriation is a by-product of imperialism, capitalism, oppression, and assimilation" (Pearson, 2021). In the context of widespread "cultural appropriation" in the fashion industry, culture is fundamentally viewed as a "natural resource" that can be extracted from people of the minority group. What they really want to lash out for is "misappropriation"-superficial and exploitative appropriation.

# 2.3 How technologies could help address the issues

According to the results from the previous, we can see the comprehensiveness of design material and foresight of public reaction are important for designers to reduce the probability of appropriate other's culture. However, AI technology could help a lot. For fashion designers, artificial intelligence technology can provide inspiration from three different categories, namely crawl, machine learning, and emotional analysis. AI is able to automatically deal with different user feedback and identify intelligent information.

## 2.3.1 Description of AI

Artificial intelligence technology, AI for short, as a technological science of research and development, it is mainly applied to simulate, extend and expand the application system of human intelligence. It is a relatively mature subject in the development of computer science. The field of artificial intelligence research is quite extensive, such as smart appliances, robots, image recognition systems, expert systems, etc. Artificial intelligence technology is more humanized and intelligent. More importantly, artificial intelligence has very important pragmatic significance for the design controversy of "Cultural appropriation" in the fashion industry.[1]

In detail, the emergence of artificial intelligence overlaps the automated simulation of humans and machines to a certain extent, helping fashion designers better identify and eliminate the negative impact on the brand caused by cultural appropriation. This kind of simulation is mainly embodied in two aspects. One is the sensory simulation, which uses pre-set procedures to identify and simulate specific

1   Big data in fashion industry. S Jain et al 2017 IOP Conf. Ser.: Mater. Sci. Eng. 254 152005

sounds, images and dynamic actions. This kind of simulation can make its effects more procedural. The degree of accuracy is more convenient. The second is that it can simulate from a deep inner thinking mode. According to the setting conditions and the setting of the massive material library, it can provide new ideas for design inspiration and direction according to human thinking habits. The design and marketing of the fashion designer can predict the risks that may exist in the product link in advance.

### Big data analysis and machine learning

*Big data, as the name suggests, is massive data. It can be defined by 4V-Volume, speed, variety and accuracy. Big data analysis draws valuable conclusions by transforming data into information, otherwise it cannot be exposed using less data and traditional methods. Big data is the reason behind the success of many large technology companies. This is no longer a secret. However, as more and more companies adopt it to store, process, and extract value from their massive data, using the collected data in the most effective way is becoming a challenge for them. Therefore, it is necessary to combine machine learning with big data analysis.*

*Machine learning (ML) is the study of computer algorithms that can improve automatically through*
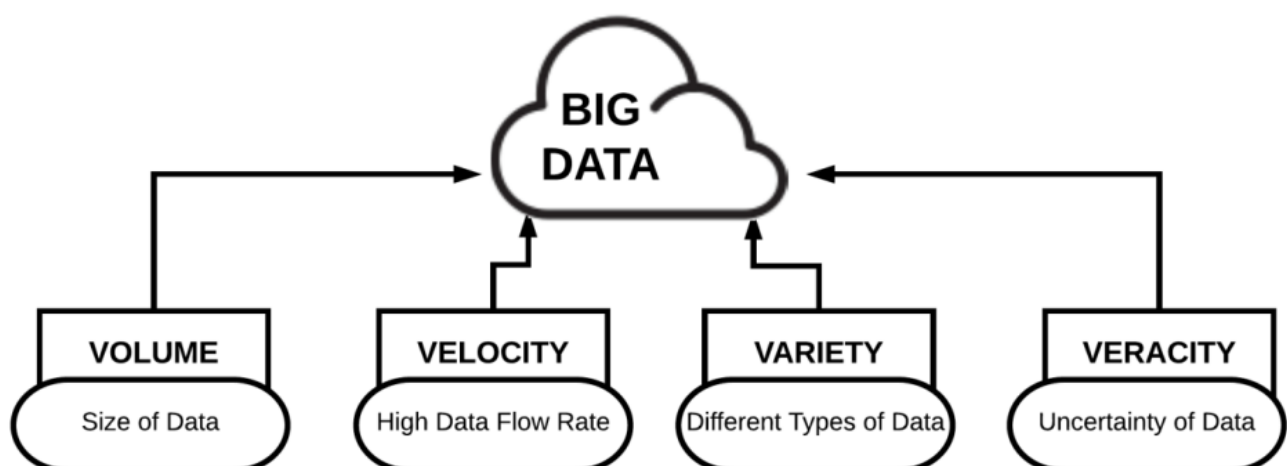


**ABOVE**
The four V's of big data. Model elaborated by the authors.

experience and by the use of data. It is seen as a part of artificial intelligence. Machine learning algorithms build a model based on sample data, known as training data, in order to make predictions or decisions without being explicitly programmed to do so. Machine learning algorithms are used in a wide variety of applications, such as in medicine, email filtering, speech recognition, and computer vision, where it is difficult or unfeasible to develop conventional algorithms to perform the needed tasks.

A subset of machine learning is closely related to computational statistics, which focuses on making predictions using computers; but not all machine learning is statistical learning. The study of mathematical optimization delivers methods, theory and application domains to the field of machine learning. Data mining is a related field of study, focusing on exploratory data analysis through unsupervised learning. Some implementations of machine learning use data and neural networks in a way that mimics the working of a biological brain. In its application across business problems, machine learning is also referred to as predictive analytics.

## MACHINE LEARNING PROCESS

**Clean, Prepare & Manipulate Data**

**Test Data**

**Get Data**

**Improve**

3

2

4

**Train Model**

1

5
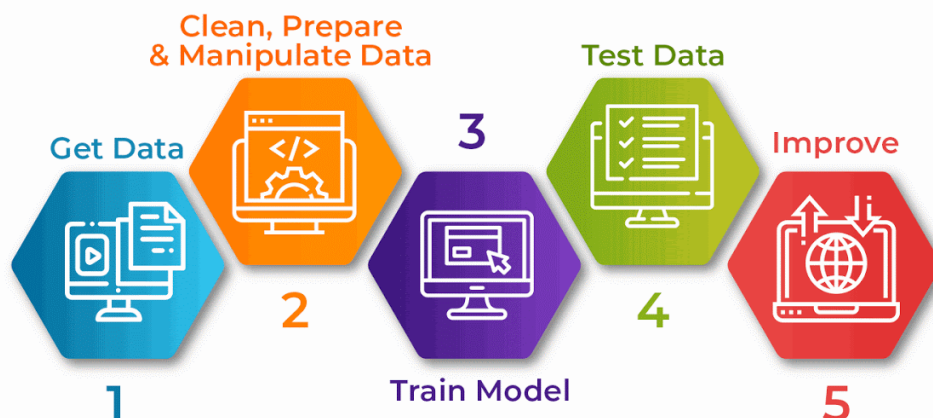
**ABOVE**
Machine learning workflow, 5 Core Steps To Understand Machine Learning Workflow, Adnan Sheikh, 2021

When it comes to advantages, machine learning can help enterprises understand their customers at a deeper level. By collecting customer data and correlating it with behaviors over time, machine learning algorithms can learn associations and help teams tailor product development and marketing initiatives to customer demand.

Some companies use machine learning as a primary driver in their business models. Uber, for example, uses algorithms to match drivers with riders. Google uses machine learning to surface the ride advertisements in searches. Although it is not being widely used in the fashion industry yet, we still can predict it will help a lot in different parts in the future. Through big data analysis and machine learning, we are expected to build a working system that focuses on helping the fashion industry reduce cultural appropriation.

## 2.3.2  Case study

### AI -Project Muze

Project Muze is an artificial intelligence project that Google cooperated with German e-commerce company Zalando in 2016. It tested user-driven AI fashion design and designed clothing for users through visual computing programs of the nervous system. The project is based on Google's open source learning system TensorFlow to understand the details of colors, textures, style preferences and other aesthetic parameters in Google's fashion trend report.

Project Muze mainly includes a neural network- an algorithm that simulates the human brain, and

a series of aesthetic parameters. Created through similar algorithms to create a design dominated by user interests and consistent with the style preferences recognized by the network. That is to use the user's music interests, mood, favorite artistic style, gender and other information, as well as combine and refer to the "Google Fashion Trend Report" information. Project Muze can design unique fashions for users in real time. Achim Rietze from the Google Zoo team said when evaluating Project Muze, "This experience is like the inspiration for your own clothing-your personality and interests become the inspiration for unique designs."
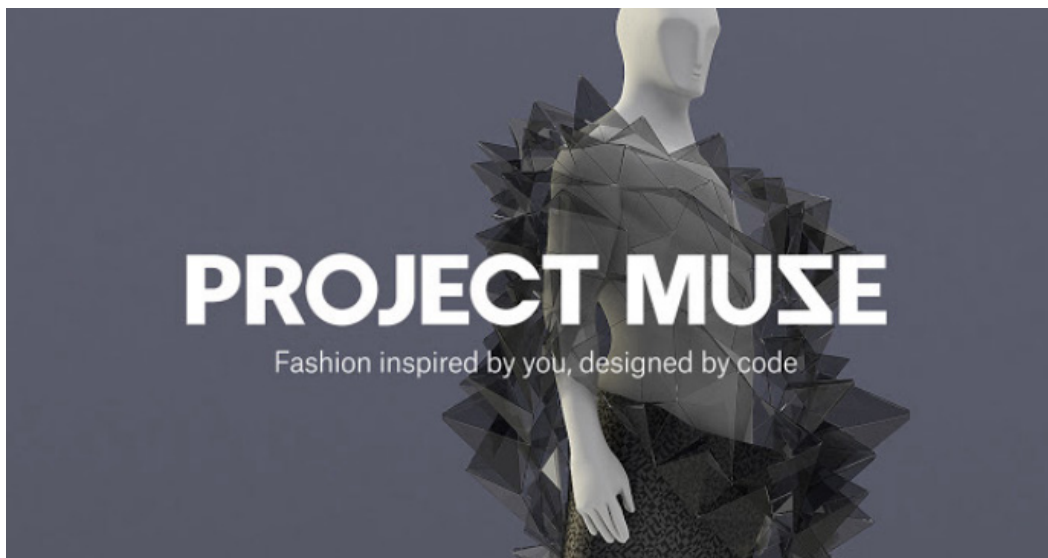


**ABOVE**
Google Project Muze
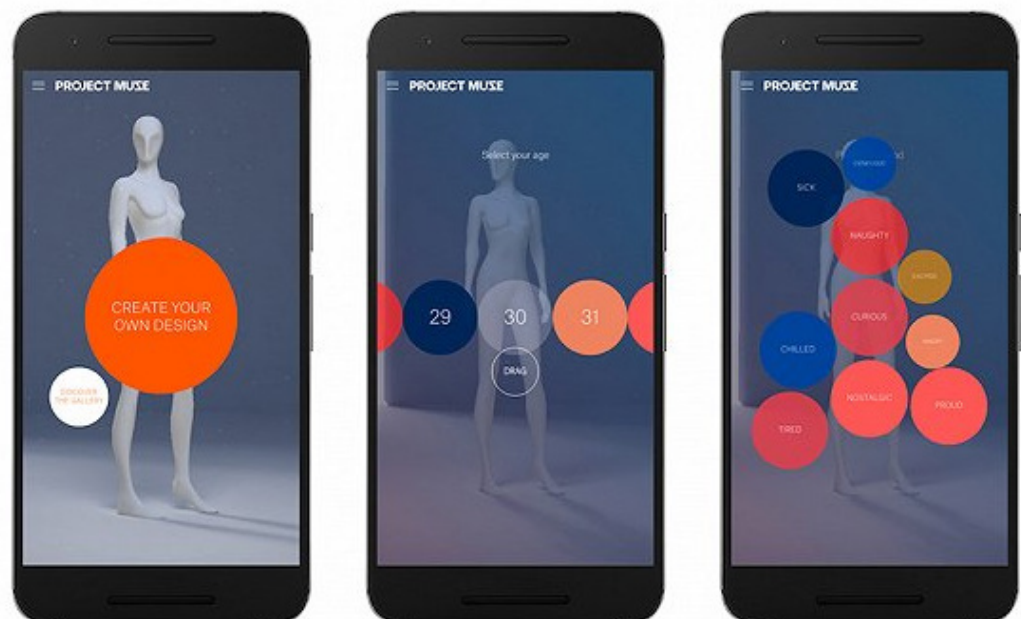


**ABOVE**
Google Project Muze Simulated Screenshot

Through the proficient use of Project Muze software, fashion designers can focus on the distribution of software feedback on a global scale or in the target market and can make more accurate judgments on the consumer experience tendency and industrial performance of the majority of users. AI software can The comprehensive presentation of the design through the processing of data and images on the computer quickly ensures that the clothing brand is at least in the clothing design link, and respects and retains as much as possible the multiculturalism, so as to avoid the brand caused by cultural misappropriation dispute. Although the project still has some shortcomings and is too abstract from the perspective of clothing design, the application of AI technology to the acquisition of personal style, and then creating new projects suitable for this style, and generating images through computers will be in the future. The field of clothing design has been more fully expanded.



**ABOVE**
Google Project Muze

**Emotion analysis&Machine learning: Amazon**

Emotion analysis is widely used to analyze text data more efficiently and then extract emotional components from it. This AI technology has prompted online business websites to generate a large amount of text data through user feedback and tweets and provide retailers with a clear way of customer expectations in a hierarchical analysis, thereby customizing corresponding business and operational design policies. This work has been implemented and tested on Amazon customer reviews. The system can perform preprocessing operations on the data set to extract meaningful information. The application of Emotion analysis in Amazon product design requires the use of APIs to collect data streams and extract information. These are used as attributes of the product to map emotions to ratings. The specific workflow is mainly as follows:

**Step 1: Data collection**

Amazon has developed a web crawler based on Scrapy to get user reviews of a given product from Amazon's sales portal. And the specific application program processing interface for data processing. Scrapy has been used for data extraction. It is stored in a table format with attributes such as comment date, comment URL, user information, and user comments. A system called OPINE is mainly used, which is an unsupervised method for extracting reviews and their respective polarities. Basic flow of Crawler is particularly demonstrated as below:
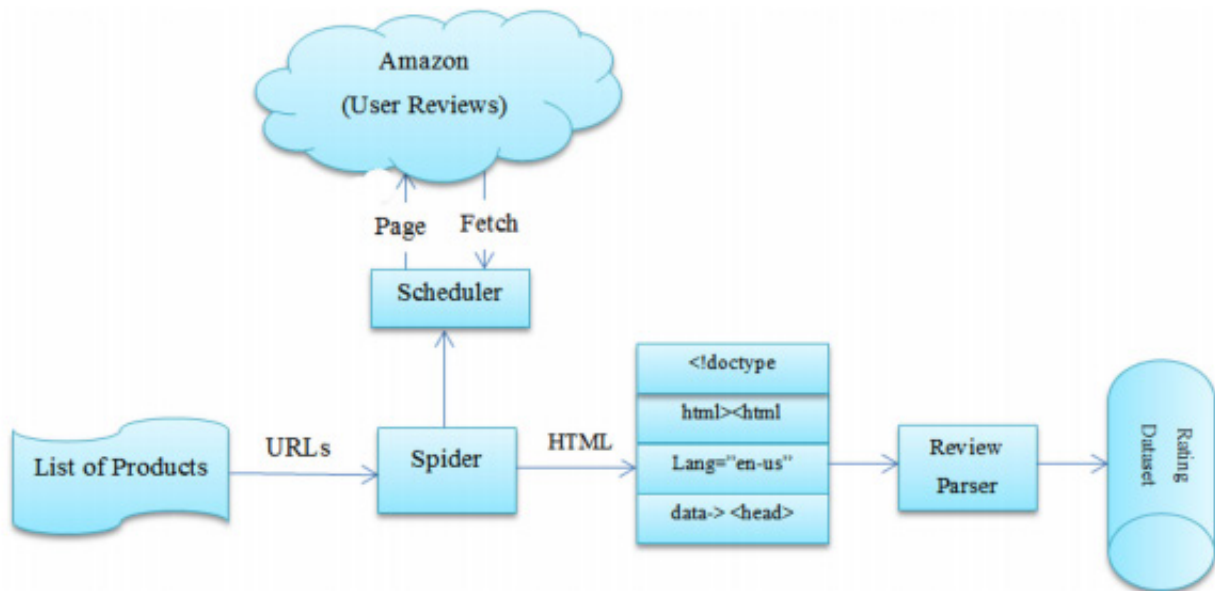
## Step 2: Aspect identification

This identification is specific to recognizing words or phrases that are related to the characteristics of the review. In Amazon's system, human identifiers can efficiently identify aspect terms and emotional levels. Aspects can be identified through aggregation of terms that are synonymous with each other. For example, the product is a headset, and its important aspects are shown in the five aspects shown in the illustration:
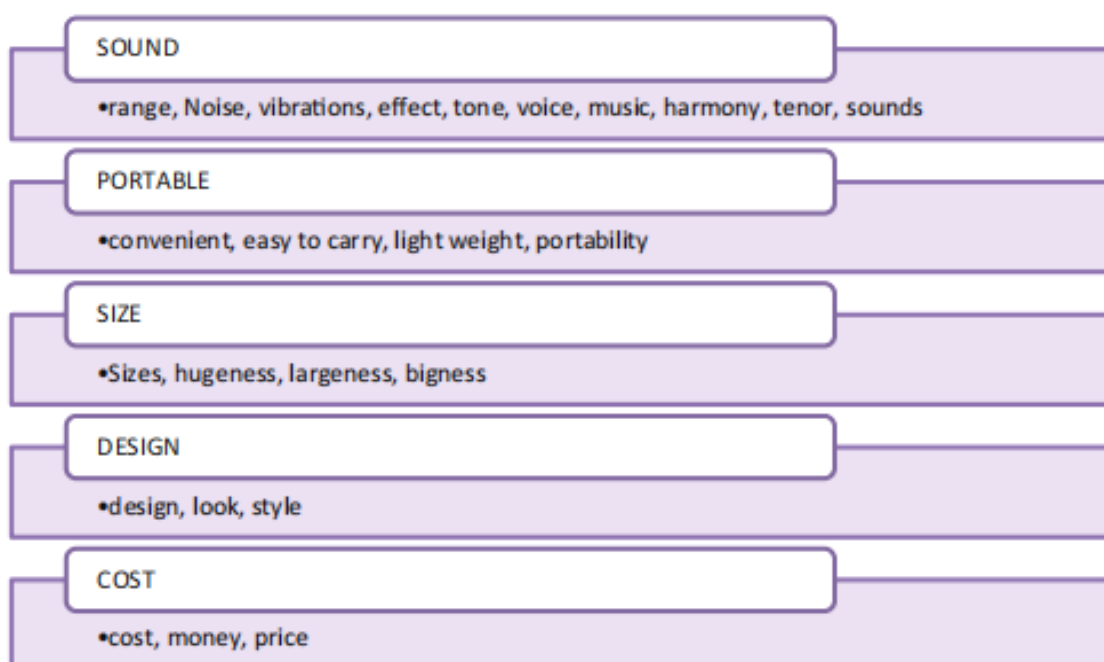


SOUND
•range, Noise, vibrations, effect, tone, voice, music, harmony, tenor, sounds

PORTABLE
•convenient, easy to carry, light weight, portability

SIZE
•Sizes, hugeness, largeness, bigness

DESIGN
•design, look, style

COST
•cost, money, price

## Step 3: Data preprocessing

In this stage, cleaning up the data and removing stop words will improve the effectiveness of the results.

•The combinable vectorization stage provides data recording and spatial model technology required for comment classification.

• Part-of-speech tagging allows each word of the data to be marked as part of speech.

• Stemming and morphological restoration help to reduce the spatiality of words. For example, a series of words with "bright" as the root is regarded as one word "bright".

• Stop words removal is used to remove words from the data that do not affect the final sentiment value of the data.

## Step 4: Comment and category

To deal with complex problems, the supervised learning of hyperplane concept is required. Support vector machines have been used as classifiers. Of the three SVM kernels, the RBF kernel provides the best results. Currently, Amazon's machine learning work through aspect level sentiment analysis has been implemented on the Python platform, and Matlab has been used for analysis purposes. Choose Python to use support vector machines for more sentiment analysis.

# Big data analysis: Stitchfix

Combining data with personalization, a American brands have created successful e-commerce shops by providing personalizes outfit boxes. Stitchfix use data from surveys, style quizes and sales, to identify which items resonate most with each customer, to give them an "personal shopper" experience right at home.

Using online data (obtained from sales, market research, and social media feedback and purchasing analytics) to obtain data on specific categories. These include fabric choice, which is intricately tied into emotions, textural and structural preferences, and seasons. Another key category reliant on big data is design, which in turn is influenced by human emotion, context, cultural influences, themes, and the like.

Stitchfix, focused on apparel for all ages, uses big data analysis, and depends on their algorithms to tell them what customers are more likely to choose, and even how high or low is their level of risk taking.



**ABOVE**
STITCH FIX Customer-specific personalization box, Stitch Fix, 2021.

### 2.3.3 Campare table

I'll first give an overview of those projects by Project Muze, Amazon, and Stitchfix. And will compare four main functions, which are digital assistants, machine learning, data ingestion, and predictive analytics.

| AI PROJECT COMPARISON | | | | | |
|---|---|---|---|---|---|
| | Descrption | Digital Assistants | Machine Learning | Data Ingestion | Predictive Analytics |
| **Project Muze** | The abstract concept of aesthetics is digitized, and clothing designs that conform to the user's aesthetics are generated by crawling and analyzing relevant information. | ✖ | ✔ | ✔ | ✔ |
| **Amazon** | Through the crawling and analysis of the text information in the product review area, emotional components are extracted from it to support retailers in producing products that are more satisfying to consumers. | ✔ | ✔ | ✔ | ✔ |
| **Stitchfix** | Analyze user preferences through user information, and generate complete sets of clothing boxes that meet user needs. | ✔ | ✖ | ✔ | ✔ |

# Chapter 3

Project:

Culture normative use auxiliary system "CO-CREATOR"

Inspired by the above case analysis, my project is to build a system that focuses on the prevention of cultural appropriation. The structure of the system will refer to the PLM, which allows every department in the industry chain to participate in the entire life cycle of the product. This information-sharing character gives it an inherent advantage to help prevent cultural appropriation from occurring ensures that the design concept can be clearly conveyed throughout the process. And a transparent production chain can also ensure that companies can give back economically to communities that have developed the traditions.

In this system, it can generally be composed of three levels: product design, product data management, and information collaboration. Cuz the PLM system is well-developed, I'll only show the added part in product design. At the same time, I will derive an APP for consumers to collect relevant user information for analysis.
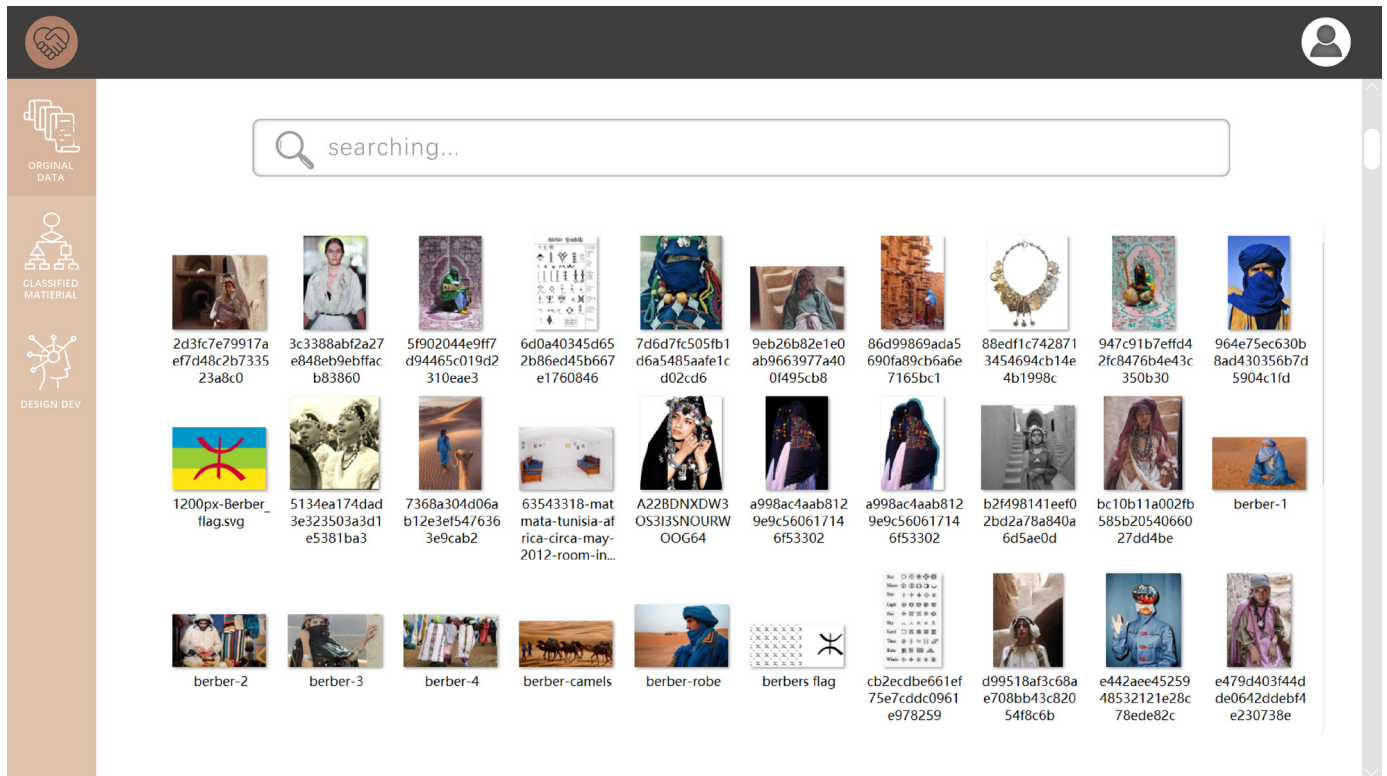


**ABOVE**
Loading interface of this software

First of all, the visual design of the entire software uses different skin tones, which is also the core concept of the whole design—to respect the differences of different cultures and maintain cultural communication. So, for example, two hands trying to touch each other in the loading interface symbolizes that we all need to work together to create a better world. And the logo design delivers the same concept as well.
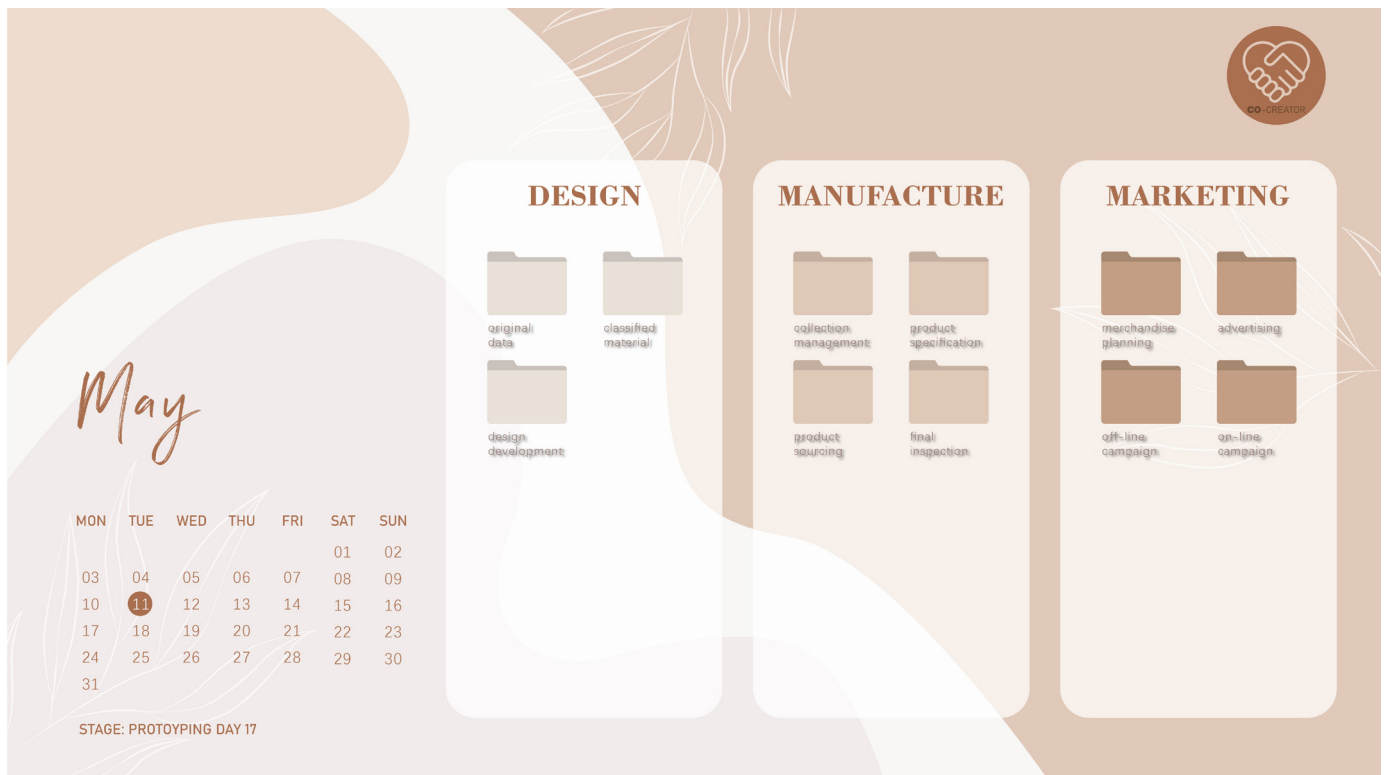


**ABOVE**
Main interface

All the work data on the right side of the interface are distributed by the department. Users from different departments can complete their work in their area, and the results of their pieces are opened with colleagues in other departments. This makes the whole process more transparent and ensures that the follow-up departments, such as the advertising department and the visual merchandising department, have a clearer understanding of the development process of the previous products, then reduce the problem of cultural appropriation due to insufficient understanding.

A calendar will be displayed on the left side of the interface, and below it will show which stage the entire series is in. It is convenient for users in various departments to understand the work process and pace.
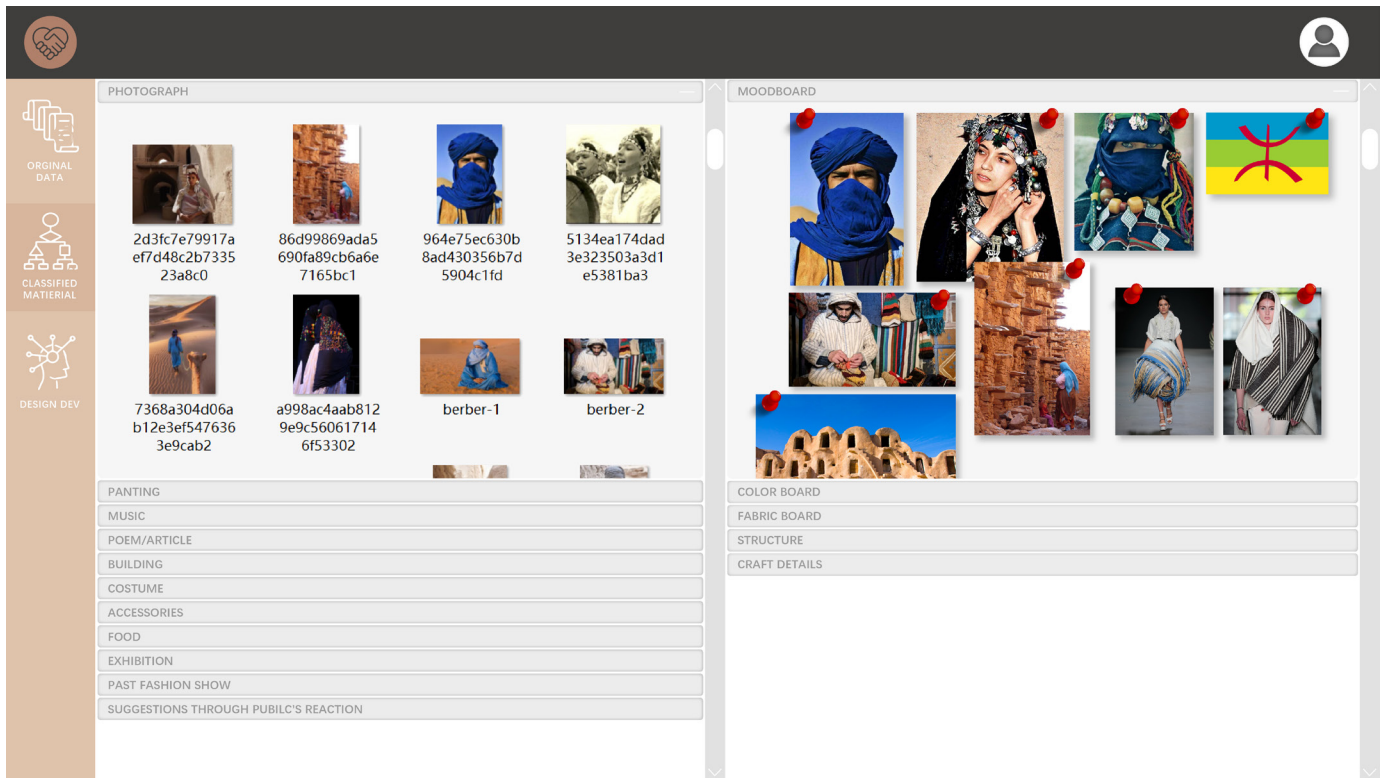


**ABOVE**
Data collecting interface

This part of the function uses web crawler technology. It can crawl the entire web for relevant data for the keywords entered by the user. Through the pre-setting of the program, it can collect all informations including pictures, text, images, social media comments and so on.

Of course, because of its huge amount of crawling, we can set a certain range in advance to filter out useless data such as gossip news. The advantage is that it solves the limitation and duplication of data caused by manually collecting the data in the traditional way, and can ensure the comprehensiveness of the materials. A comprehensive understanding of the inspiration can greatly reduce the unintentional cultural appropriation.
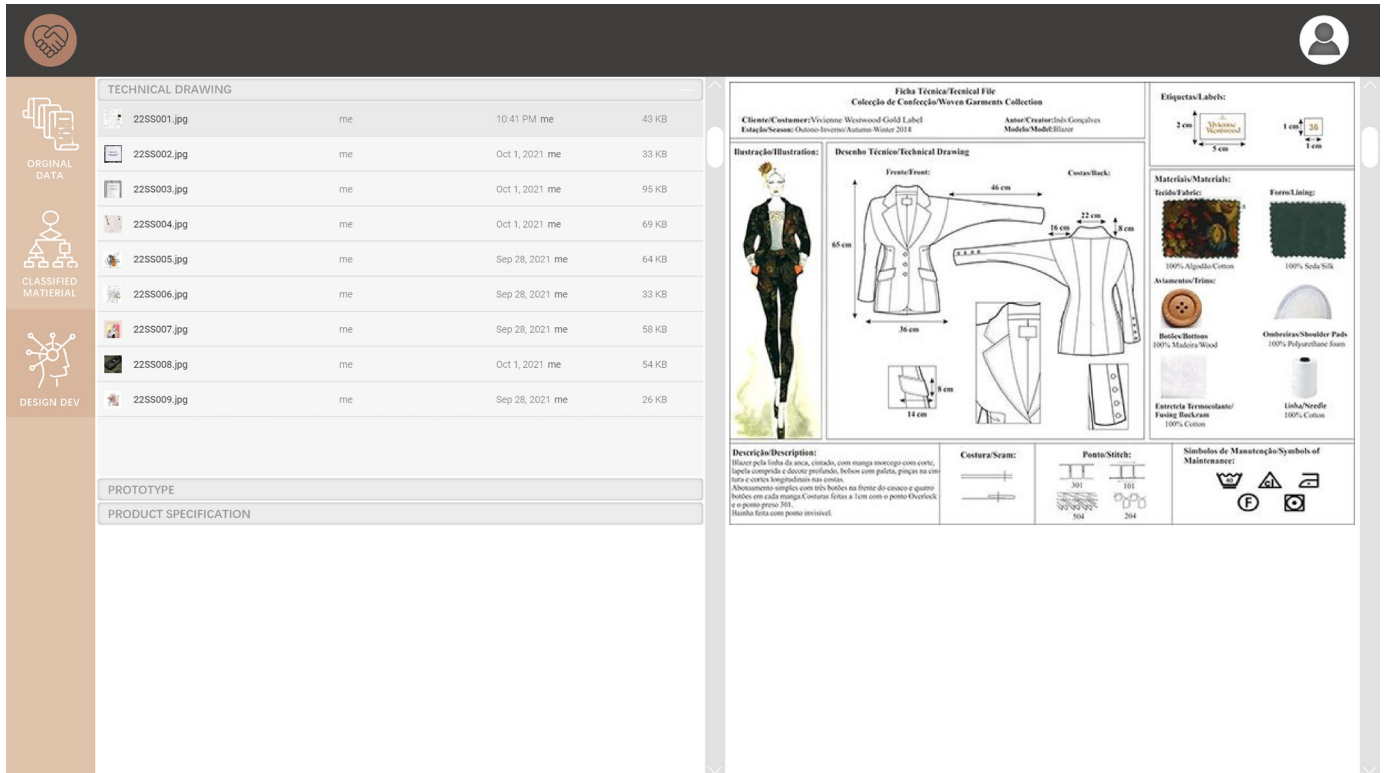
**ABOVE**
Data classifying interface

The original data collected in this part will be automatically classified according to different cultural phenomena through machine learning technology so that users can browse the collected data more clearly. And in the "suggestion through public reaction" part, the system going to automatically generate a list, which will give the designer which behaviors of the culture may be considered cultural appropriation and which will be considered cultural appreciation. The generation of this list uses the emotion analysis function mentioned above, the system uses machine learning technology to give suggestions on the text analysis of social media and news media. This list will be circulated with various departments to remind the entire team not to make mistakes that have already occurred when using the culture through the analysis of past events.

The working area on the right has 5 boards added in accordance with the designer's general work process. Designers can add the content they need in the corresponding boards in time when browsing the design materials. All used image data will

retain its original text description, which will show when the user clicks it, preventing designers from forgetting the original use or scene of the data after reprocessing the image, resulting in the misuse of elements.



**ABOVE**
Design development interface

In this part, products go from design drawings to physical samples shown on the runway or showroom. Designers need to provide illustrations, technical draw, craft details, and other materials, especially some details related to traditional handicrafts that need to be marked out so that they can cooperate with craftsmen in the source area in the subsequent garment production. As a result, the entire creative process of the collection is fully recorded in the PLM system. Although the participation of AI technology in the following steps is not high, the list generated by emotion analysis in the early stage will continue to help other departments avoid cultural appropriation in the subsequent media communication and visual merchandising process.
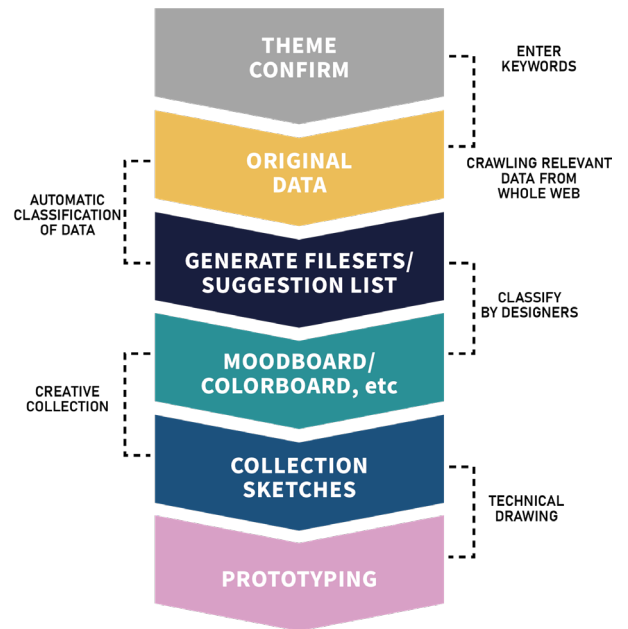
The APP extended to the consumer side can enrich the database of the brand, collect information directly and quickly, receive feedback from consumers on the collection, and optimize the accuracy of sentiment analysis.
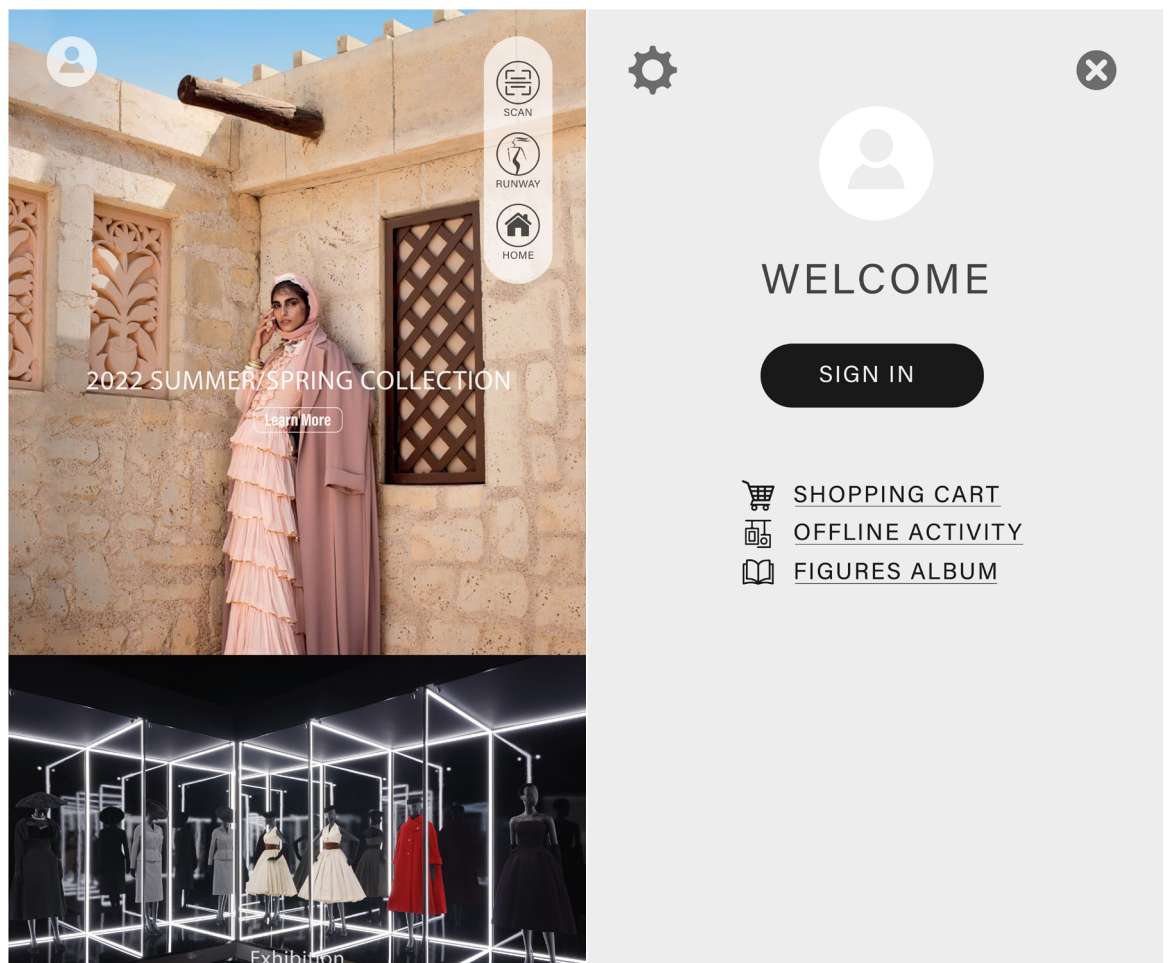


**RIGHT**
Application interface

# CONCLUSION

Cultural appropriation is a complex and abstract concept. As mentioned in my thesis, it is an inevitable product of cultural collisions in different regions under globalization, involving many issues such as historical, linguistic, sociocultural, anthropological, and postcolonial and de-colonizing discourses. Nowadays public pays more and more attention to and becomes aware of the multiple implications of the use and misuse of cultural and religious symbols. In addition to legislation to protect the primitive community economy, raising the public's sensitivity to cultural appropriation, and social supervision, technology is a tool that can effectively help address this problem. Technology helps designers achieve a balance between avoiding cultural appropriation and inspiring creativity. Returning to the fashion industry itself, we see that many unconscious cultural appropriations are generated based on incomplete information. AI technology, which has inherent advantages in processing massive data, is a direction with great research potential, which can help designers correctly use design elements. The collection, induction, and classification of huge raw data significantly save the designer's time. Also, it avoids the wrong use caused by omissions that may arise from the manual collection of materials. The conclusions obtained through emotion analysis can help designers during the design process.

My project in the thesis is based on the existing mature technology. Based on the current development direction of AI technology, in the future, machine learning can not only provide image classification work but even analyze sample photos or design sketches to determine whether the product involves cultural appropriation. On the other hand, through research, we can see that there is a certain lag in the identification of many cultural appropriations, and many shows in fashion that have been widely praised are now considered to involve cultural appropriation. In the future, AI technology will have the opportunity to discover and calculate

behaviors that have not been widely recognized as cultural appropriation through the existing cultural appropriation criteria. It is hoped that the research on the application of AI technology to reduce cultural appropriation in the article can inspire more new ideas to address this phenomenon.

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