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BACHELOR'S THESIS
on the topic:

Development of a visual complex for the Information Cocoon Room

Specialty 022 Design
Educational program Design (by types)

Performed by: a student of the BED-20 group

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ABSTRACT

In the midst of the digital information surge, individuals face unprecedented challenges of information overload. The concept of "information cocoons" emerges as a psychological defense mechanism that, while aiding users in filtering information, also constructs an invisible barrier that limits their cognitive horizon. This study aims to explore how visualization design strategies can reveal and alleviate the effects of information cocoons, thereby promoting diverse information exposure and cognitive balance. It delves into the formation mechanism of information cocoons and their impact on user psychology and behavior, emphasizing the potential value of visualization design in addressing this phenomenon and revealing users' hidden information preferences through visual means.

In the practical application section, this paper presents case analyses to demonstrate how visualization design can help users identify their own information preferences and guide them out of their comfort zones to explore a broader information space. Additionally, the study discusses challenges faced in implementing visualization design, such as data privacy protection, the accuracy and usability of visualization results, and proposes corresponding solutions to these challenges.

Finally, the paper envisions future development directions for the visualization design of information cocoons, including innovative interdisciplinary integration, artificial intelligence-based personalized recommendation systems, and design approaches that enhance user engagement and interactive experiences. This research not only provides a new theoretical perspective for understanding and solving the problem of information cocoons but also offers practical guidance for optimizing the online information ecosystem and promoting the healthy development of the information society.

Keywords: Information Cocoons; Visualization Design; Information Overload; User Cognition; Data Privacy; Personalized Recommendation; Online Information Ecosystem Optimization

CONTENT

INTRODUCTION

In this era of information explosion, people are surrounded by a large amount of information every day, which comes from various channels, including news, social media, advertising, etc. However, at the same time, people are also facing the dilemma of information overload. This phenomenon is known as the "information cocoon", which refers to individuals gradually being trapped in a closed and homogeneous information space due to factors such as algorithm recommendations and personal preferences, thereby limiting their perspectives and thinking. This information cocoon phenomenon not only limits individual cognitive development, but may also affect social harmony.

In response to this issue, this paper proposes a research topic on the visualization design of information cocoon rooms. Visual design of information cocoons is a method of concretizing and visualizing the abstract concept of information cocoons through visual art and design techniques, enabling people to intuitively understand the existence and influence of information cocoons. This research topic has the following objectives and tasks:

Firstly, theoretically explore the reasons and impacts of the emergence of information cocoons, as well as their relationship with visual design. This includes analyzing how people unconsciously fall into the information cocoon in the context of information overload, as well as the negative impact of this phenomenon on personal cognition, psychology, and social interaction.

Secondly, discuss the purpose and significance of visual design for information cocoon rooms. The purpose of this design is to help people become aware of their information environment, guide them out of their comfort zone, expand information reception channels, and improve information literacy. In addition, through visualization methods, people's understanding of the information cocoon has been strengthened, stimulating social interest and reflection on this issue.

In order to achieve the above objectives and tasks, this paper adopts the following research methods: literature research, case analysis, design practice, and user testing. Through these methods, this article aims to delve into the phenomenon of information cocoons and propose effective visual design solutions.

In summary, the topic of "Information Cocoon Visualization Design" has important practical significance and value. It not only helps to deepen the theoretical depth of visual communication design, but also provides useful insights and methods for solving the information dilemma in the digital age. Through research and exploration of this topic, we hope to create a healthier and more diverse information environment amidst a vast amount of information.

Task content:

Cultural and creative works: showcasing the expression of information cocoons on various carriers. Let people pay attention to the existence of information cocoons through design.

Visual poster: Expressing the causes of information cocoons, the hazards of cocoons, and calling on everyone to break the information cocoon through visual images.

Chapter I

TOPIC SELECTION ANALYSIS

1.1 The research purposes

In the current era of information explosion, individuals are facing unprecedented challenges in their cognitive and information processing abilities. The phenomenon of information cocoon not only limits the perspective of users, but also affects the harmony and progress of society. The research objective of this article is to explore the possibility of visual design of information cocoons through visual communication design methods, in order to promote fairness and efficiency in information dissemination, optimize the user experience of information reception, reveal and solve individual cognitive difficulties in the era of information overload, and cultivate a balanced social information ecosystem. In the information age, people's lives and work are increasingly reliant on various information platforms, yet the prevalence of the information cocoon phenomenon makes it difficult for us to break through the vast sea of information and obtain truly valuable content. Therefore, exploring the purpose of visualization design for information cocoons becomes particularly important. The aim of this paper is to deeply analyze the value of information cocoon visualization design in helping people recognize, understand, and break through information cocoons, with the hope of providing useful insights for improving the online information environment.

Firstly, this study aims to help users become aware of their information choices and behavioral patterns through visual means, thereby consciously breaking the information cocoon constructed by algorithms and personal preferences. In an environment of information overload, users often unconsciously fall into a fixed thinking framework, unable to access diverse sources of information, resulting in a decrease in the singularity

and quality of information consumption. Through the visualization design of the information cocoon, users can intuitively see their information selection preferences, understand how algorithms affect their information reception, and consciously step out of their comfort zone to obtain a wider and more diverse range of information, enhancing the comprehensiveness and depth of personal knowledge.

Secondly, one of the purposes of this study is to improve the transparency and interpretability of information dissemination. In today's increasingly popular era of big data and intelligent algorithms, users often have no knowledge of the internal logic of recommendation systems, which leads to a loss of control over the information receiving process. This study aims to reveal these implicit recommendation mechanisms through visualization technology, enabling users to understand the process of information filtering and push, thereby enhancing their perception of information acquisition initiative, improving the transparency and interpretability of information dissemination.

In addition, this study aims to optimize the structure of the online information ecosystem. The phenomenon of information cocoon has exacerbated the polarization of social groups and affected the harmony and stability of society. Through visual design, researchers hope to guide users to explore different perspectives and perspectives, promote social dialogue and understanding, and alleviate social conflicts caused by information isolation.

Furthermore, visualization design for information cocoons helps to reveal the mechanisms and impacts of their formation. By transforming the abstract concept of information cocoons into intuitive visual images, we can more clearly observe individuals' behavior patterns, interest preferences, and channels of information reception in the information space. This helps us understand why people are prone to falling into information cocoons and the potential hazards of this phenomenon to individuals and society.

Additionally, visualization design can help people become aware of their own information cocoons. In a visual presentation, individuals can intuitively see their own information preferences and cognitive limitations, which can inspire self-reflection and enhance the ability to select and judge information. This design helps individuals step out of their comfort zones, broaden their horizons, and avoid rigid thinking.

Moreover, visualization design for information cocoons contributes to the development of more effective information recommendation algorithms. By analyzing visual data, researchers can better understand user needs and optimize recommendation systems to satisfy user interests while avoiding excessive reinforcement of certain information, thus reducing the probability of information cocoon formation.

Lastly, visualization design has significant importance in education and communication. By presenting the phenomenon of information cocoons in a visual form to the public, it can raise awareness of internet literacy and cultivate critical thinking among the public. This plays a positive role in building a healthy and rational online environment.

In summary, the research purpose of this article is not only to reveal and solve the cognitive difficulties of individuals in the era of information overload, but also to promote the fairness and efficiency of information dissemination, optimize the user experience of information reception, and cultivate a balanced social information ecosystem. This study attempts to break through the limitations of the information cocoon through visual design methods, improve the transparency and interpretability of information dissemination, optimize the structure of online information systems, explore and establish more attractive visual design solutions, and provide new theoretical frameworks and practical guidance for the field of information design. In future research, we will continue to pay attention to the development dynamics of visual design of information cocoons, and contribute to solving the problem of information overload and building a harmonious society.

1.2Research meaning

In the information age, people's lives and work increasingly rely on various information platforms, and the prevalence of the information cocoon phenomenon makes it difficult for us to break through the vast amount of information to obtain truly valuable content. Therefore, exploring the significance of visualization design for information cocoons is particularly important. The research significance of this paper lies in the in-depth analysis of the value of visualization design for information cocoons in helping people understand, recognize, and break through information cocoons, providing useful insights for improving the online information environment. The phenomenon of information cocoons can be traced back to the rapid development and popularization of internet technology. With the arrival of the Web 2.0 era, user interaction and communication in the online world have become increasingly frequent, and various social media platforms, news clients, and short video platforms have sprung up like mushrooms after a rain. These platforms use personalized recommendation algorithms to provide users with content that interests them, in an attempt to satisfy their individual needs. However, this seemingly personalized service inadvertently leads to the emergence of the information cocoon phenomenon.

An information cocoon, as the name implies, refers to a situation in cyberspace where users, influenced by personalized recommendation algorithms, become immersed in the information fields that interest them, gradually forming a closed and homogenized information environment. This phenomenon causes users to fall into a self-reinforcing cycle in terms of cognition, attitudes, and behavior, making it difficult to encounter diverse viewpoints and information, thus limiting personal perspectives and cognitive development.

From the definition, the information cocoon phenomenon has the following characteristics: Firstly, it is caused by the over-optimization of personalized

recommendation algorithms, which leads users to gradually lose their autonomy and selectivity in the process of information acquisition. Secondly, information cocoons are closed, creating an "information isolation" for users within specific domains, making it difficult for them to access information from other areas. Lastly, information cocoons tend to lead users to develop biases and extreme views, as they continuously reinforce similar information in a closed environment, thus ignoring other possibilities.

The emergence of the information cocoon phenomenon has drawn widespread attention because it not only has a negative impact on individual cognition and development but may also exacerbate social divisions and conflicts. In an era of information overload, how to break the information cocoons and allow users to grow in a diverse information environment has become an urgent issue to address. To this end, this article will explore effective solutions to this problem from the perspective of information cocoon visualization design, in the hope of providing useful references for the healthy development of cyberspace.

Firstly, visualization design for information cocoons helps to reveal the mechanisms and impacts of their formation. By transforming the abstract concept of information cocoons into intuitive visual images, we can more clearly observe an individual's behavior patterns, interest preferences, and channels of information reception in the information space. This helps us understand why people are prone to fall into information cocoons and the potential hazards to individuals and society.

Secondly, visualization design can help people recognize the information cocoons they are in. In a visual presentation, individuals can intuitively see their own information preferences and cognitive limitations, which can inspire self-reflection and enhance the ability to select and judge information. This design helps individuals step out of their comfort zones, broaden their horizons, and avoid rigid thinking.

Additionally, visualization design for information cocoons contributes to the development of more effective information recommendation algorithms. By analyzing

visual data, user needs can be better understood, and recommendation systems can be optimized to satisfy user interests while avoiding the over-reinforcement of certain information, thus reducing the probability of information cocoon formation.

Furthermore, visualization design has significant importance in education and communication. By presenting the phenomenon of information cocoons in a visual form to the public, it can raise awareness of internet literacy and cultivate critical thinking among the public. This plays a positive role in constructing a healthy and rational online environment.

At the same time, visualization design for information cocoons helps policymakers and social managers understand the current state of cyberspace and develop targeted policies. By analyzing visual data, policymakers can better grasp the direction of online public opinion and prevent and resolve social risks.

In summary, the significance of exploring visualization design for information cocoons is: first, to reveal the formation mechanisms and impacts of information cocoons; second, to help individuals recognize their own information limitations and promote cognitive expansion; third, to support the development of superior information recommendation algorithms; fourth, to improve public internet literacy and build a healthy network environment; fifth, to assist policymakers in understanding the current state of cyberspace and formulating effective policies. Through in-depth research on visualization design for information cocoons, we hope to provide new insights and methods for solving the problem of information cocoons.

1.3research status

1、 Current research status in China

1. Research on the causes and impacts of information cocoons: Domestic scholars have conducted in-depth research on the causes and impacts of information cocoons from multiple perspectives such as communication studies, psychology, and sociology. Professor Chen Lijun's team from Beijing University of Posts and Telecommunications conducted a systematic analysis of the causes of information cocoons and proposed four main factors for their formation: individual differences, social environment, information sources, and information dissemination mechanisms.

2. Research on Visualization Methods for Information Cocoon Houses: Domestic research mainly focuses on how to use visualization methods to reveal the existence of information cocoons, such as using data mining and user behavior analysis to construct a visualization framework, helping users identify their information preferences, and expanding information reception channels.

3. Research on Information Cocoon Room Solutions: Domestic scholars have proposed a series of strategies to solve the problem of information cocoons, such as improving user information literacy, guiding users to actively obtain diverse information, breaking down information barriers, and promoting fair dissemination of information.

2、 International research status

1. Research on Information Cocoon Room Visualization Technology: International research mainly focuses on the application of visualization technology in information dissemination, social media, and news recommendation systems. Through case analysis and experimental research, the effectiveness of visualization design in improving user information reception experience and reducing information cocoon effects is verified.

2. Research on Cross cultural Communication in Information Cocoon Room: International research has explored the application of visual design in cross-cultural communication, such as using visual technology to display information from different cultures and promote communication and understanding between different cultures.

3. Analysis and research on social networks of information cocoons: International scholars use social network analysis to study the dissemination patterns of information in social networks, and how to use visual design to reveal the phenomenon of information cocoons in social networks.

3、 Shortcomings and challenges in research status

1. The theoretical system is not yet perfect: Currently, research on the visualization design of information cocoons lacks a systematic theoretical framework, making it difficult to widely promote and apply in real scenarios.

2. Technical methods need improvement: Existing visualization design methods still have limitations when dealing with large-scale and complex data. How to use advanced technological means to improve the accuracy and practicality of visualization design is a major challenge in current research.

3. Insufficient user engagement: Although visual design aims to guide users out of the information cocoon, in practical applications, user engagement and interactivity still need to be improved.

4. Moral and privacy issues: In the visual design of information cocoons, how to strike a balance between protecting user privacy and utilizing data, avoiding excessive collection and abuse of user data, is an urgent ethical issue that needs to be addressed.

5. Insufficient interdisciplinary research: The visualization design of information cocoons involves multiple disciplinary fields, such as psychology, sociology, computer science, etc., but current interdisciplinary research is not sufficient.

4、 Future research directions

1. Improve the theoretical system: Future research needs to further explore the theoretical basis of visual design for information cocoons, providing guidance for practice.

2. Technological innovation and method improvement: Research visualization technologies applicable to big data to improve the accuracy and practicality of visualization design.

3. Improve user engagement and interactivity: Explore how to stimulate user interest and encourage active participation in information exploration.

4. Focus on ethical and privacy issues: Develop ethical standards for visual design to protect user privacy.

5. Strengthen interdisciplinary research: promote communication and cooperation in fields such as psychology, sociology, and computer science, and jointly solve the problem of information silos.

In summary, research on visual design of information cocoon houses has achieved certain results both domestically and internationally, but still faces many challenges. Future research needs to expand from theoretical systems, technical methods, user engagement, ethical issues, and interdisciplinary research to provide more effective solutions. Through continuous exploration and innovation, we are confident in achieving more fruitful research results in the future.

In the digital era, the issue of information cocoons has become a problem that cannot be ignored. Information cocoons limit people's horizons, affect the comprehensiveness and diversity of individual information, and can even lead to social polarization and the entrenchment of extreme views. Therefore, it is particularly urgent to propose effective visualization methods to solve the problem of information cocoons. The purpose of this study is to explore and design a series of visualization tools and strategies to break down the barriers of information cocoons and promote the free flow and diversification of information.

Firstly, effective visualization methods should help users recognize and become aware of their own information preferences. By presenting users' browsing history, interaction behaviors, and points of interest in a graphical manner, users can visually see

if their information consumption habits are too concentrated, thus inspiring them to actively seek diverse information.

Secondly, visualization methods can assist users in navigating the vast sea of information effectively. By designing interactive information maps, users can explore between different topics, fields, and viewpoints, discovering new information sources and knowledge domains. This kind of visualization navigation not only adds to the joy of exploring the unknown but also helps break the constraints of a single information source on users' thinking.

Additionally, visualization methods should integrate intelligent algorithms to dynamically monitor and assess users' information reception status. Through real-time data analysis, visualization tools can promptly detect potential information cocoons that users may fall into and provide corresponding warnings and recommendations. This personalized intervention helps guide users towards a more balanced and rich information consumption pattern.

Furthermore, visualization methods should also focus on the flow of information at the community and group levels. By drawing group information exchange network diagrams, it is possible to reveal the information isolation and biases between different groups, providing opportunities for understanding and dialogue among groups. This visualization approach contributes to building a more harmonious social information ecosystem.

Moreover, to enhance the effectiveness of visualization methods, the following aspects should be considered:

1. User Engagement: Design interfaces that are easy to operate and understand, encouraging user participation in the visualization process, and making them the main agents in breaking information cocoons.

2. Education and Training: Combine visualization tools with internet literacy education to improve users' ability to recognize and resist information cocoons.

3. Adaptive Updates: As the information environment changes, visualization methods need to be continuously updated and iterated to adapt to new challenges.

4. Interdisciplinary Collaboration: Combine knowledge from psychology, sociology, computer science, and other fields to create comprehensive visualization solutions.

By proposing these effective visualization methods, we can not only help individual users become aware of and break free from information cocoons but also promote the healthy development of the entire social information ecosystem. Ultimately, these visualization methods will become an important force in driving the progress of information society, laying the foundation for an open, inclusive, and rational information space.

Summary of the chapter I

1.Domestic research focuses on causes, impacts, and solutions to information cocoons, with visualization design mainly revealing their existence and guiding users to break out of them.

2.International research explores the application of visualization technology in information dissemination, social media, and news recommendation systems, with a focus on user experience and reducing information cocoons' effects.

3.Information cocoon visualization design has shown promising results, but several challenges need to be addressed to provide more effective solutions to the problem of information cocoons.

4.Future research should focus on building a solid theoretical foundation, improving technical methods, enhancing user engagement, addressing ethical issues, and fostering interdisciplinary collaboration.

Chapter II
PRACTICE RESEARCH AND DESIGN CONCEPTION

2.1 Practice research

Practice research is the foundation of design conception, providing a profound perspective to understand issues and ensuring that design solutions accurately correspond to the complexity and diversity of the real world. In this design project, we have adopted a comprehensive research method that combines offline in-depth interviews with online big data analysis to explore the phenomenon of "information cocoons" from all angles. This approach not only broadens our horizons but also allows us to tightly integrate empirical research with theoretical frameworks, mutually reinforcing each other to form a comprehensive and multi-dimensional understanding.

In our offline research, we engaged in deep conversations with users from various backgrounds, listening to their voices and understanding their real experiences in the process of information acquisition, processing, and feedback. Additionally, we paid attention to their behavioral patterns, psychological needs, and socio-cultural backgrounds, all of which provide our design with a rich humanistic concern and a realistic basis.

Online research leverages modern technological means, using data analysis tools to track user behavior, revealing the mechanisms and impacts of information cocoons. This quantitative research method provides us with objective data support, making design decisions more scientific and evidence-based.

By combining the advantages of these two research methods, we can gain a deeper insight into the multiple dimensions of information cocoons, thus better grasping content innovation and style positioning in our design. This not only helps us create

designs that are in line with the current reality and forward-looking, but also promotes harmonious interaction between users and the information environment, breaks down barriers to information homogenization, enhances the overall value of the design, and increases social impact. In this way, our design work will more accurately address practical issues and guide users towards a more open and diverse information world.

2.1.1 Offline research

In today's era of information explosion, people are facing unprecedented information overload problems. This phenomenon is particularly serious in China, where people inadvertently fall into the so-called "information cocoon", in which the individual's cognitive space gradually becomes closed and homogeneous. The information cocoon restricts people's horizons, affects the breadth and depth of thinking, and may even lead to social differentiation and difficulty in forming consensus. In this context, information cocoon visualization design has emerged, aiming to help users identify, understand, and break through the information cocoon through the optimized combination of visual elements.

In order to further explore this field, we conducted a series of offline studies:

1.Research Objectives

This study aims to delve into the key issues in the phenomenon of information cocoons and explore the potential of visual design in solving these problems. The following are four aspects of enrichment and expansion for the purpose of this study:

(1) Behavioral characteristics and needs of users within the information cocoon:

Study the behavior patterns of users browsing, filtering, accepting, and rejecting information in the information cocoon, as well as the trends of these behaviors over

time. Through methods such as questionnaire surveys, interviews, and user diaries, collect specific needs of users in the information cocoon, such as their pursuit of information diversity, desire for deep content, and rejection of information overload. Based on user behavior and needs data, construct different types of user profiles to more accurately understand the characteristics of different user groups.

(2) The application and effectiveness of existing visual design in the information cocoon:

Analyze the application cases of information cocoon visualization design in the current market, evaluate its design concept, technical implementation, and user experience. Evaluate the effectiveness of existing visualization designs in improving information understanding, promoting information diversity, and reducing cognitive load through user experiments and data analysis. Identify existing problems and shortcomings in visual design, such as the complexity of information presentation and insufficient interactive experience.

(3) User expectations and needs for visual design in the information cocoon:

Through one-on-one interviews and group discussions, understand user expectations for visual design, such as preferences for information presentation methods and expectations for interaction design. Collect user feedback and understand their experience and feelings when using visual design through a design iteration process involving user participation. Sort the requirements for visual design based on user feedback and the importance of the requirements, providing a basis for design decisions.

(4) Provide innovative ideas and directions for the visualization design of information cocoons:

Explore new visualization methods and technologies, such as data mining, artificial intelligence assisted design, virtual reality (VR), and augmented reality (AR), to break

through the limitations of traditional design. Develop innovative visual design prototypes based on user needs and design principles, and conduct user testing and iteration. Based on the trends of technological development and social change, predict the future development direction of information cocoon visualization design, and provide forward-looking guidance for the industry.

Through in-depth research in the above four aspects, this study not only provides scientific user data support for the visualization design of information cocoons, but also promotes design innovation in this field, creating a more efficient, user-friendly, and humanized information environment for users.

2.Research method

The following methods will be employed for offline research:

(1) Questionnaire Survey: By designing questionnaires, we will collect basic user information, habits of information acquisition, awareness and demands for visualization designs, etc.

(2) In-depth Interviews: Inviting some users for face-to-face interviews to gain a deeper understanding of their behaviors and needs within information cocoons;

(3) Field Observation: Visiting public places to observe the behavioral characteristics of users in information cocoons;

(4) Case Studies: Analyzing the application of existing visualization designs in information cocoons, summarizing experiences and identifying shortcomings.

3.Research results

Through offline research, we have achieved the following results:

(1) Behavioral characteristics and needs of users within information cocoons: We discovered issues such as users' blind pursuit of hot topics and a lack of deep thinking within information cocoons, which results in a high demand for visualization designs;

(2) Advantages and disadvantages of existing visualization designs: Summarizing the application of current visualization designs in information cocoons, we found that some designs lack usability and interactivity;

(3) Users' expectations and demands for visualization designs in information cocoons: Users expect visualization designs to provide richer information, better interactive experiences, and personalized recommendations;

(4) Innovative ideas and directions: Combining the research findings, we propose innovative ideas for visualization designs in information cocoons, such as increasing information dimensions, optimizing the interactive experience, and enhancing personalized recommendations.

4.Research limitations and prospects

This research has the following limitations:

(1) The scope of the survey is limited, which may not fully reflect user needs;

(2) The research methods are traditional, which may introduce certain biases.

Future research can be expanded in the following areas:

(1) Broaden the survey scope, increase the sample size, and enhance the reliability of the survey results;

(2) Attempt to use more diverse research methods, such as behavioral experiments and eye-tracking;

(3) Combine big data analysis to delve into the deeper needs of users within information cocoons; Explore more innovative visualization design methods to alleviate the phenomenon of information cocoons.

5. A representative visual design case

1.People's Daily National Day 70th Anniversary Data Visualization Special Issue: This case, themed around the 70th anniversary of the founding of the People's Republic of China, presented through a series of meticulously designed charts and graphics the magnificent achievements in various fields such as the economy, technology, and culture since the establishment of the new China. The special issue of People's Daily was not only information-rich but also emphasized color coordination and layout design, making the data both persuasive and accessible. The representativeness of this case lies in showcasing the innovative attempts of mainstream Chinese media in visualization design and how patriotic education can be combined with data visualization.

2.Baidu Migrant Map: The Baidu Migrant Map utilizes big data technology to track and display the population movement during the Chinese Spring Festival in real-time. This case, presented through dynamic visualization, allows viewers to intuitively see population migration trends, reflecting the combination of technology and humanities. The design of the Baidu Migrant Map is highly interactive and considers the visual experience of users, representing the technical capabilities and social responsibility of Chinese internet companies in data visualization.

3.COVID-19 Real-time Data Visualization Platform: In response to the COVID-19 pandemic, Chinese data visualization teams quickly launched several real-time data visualization platforms, such as "Epidemic Maps". These platforms provide updated data in real-time, using maps and line graphs to allow the public to clearly understand the development trends of the pandemic. The representativeness of these platforms is in

their crucial role in major public health events and how visualization design enhances information transparency and public awareness of prevention and control.

4.China Urban Digital Economy Index Report: This report analyzes the current status and trends of the digital economy in various Chinese cities through a series of charts and visualization elements. Designers focus on simple and clear visual expression when dealing with complex data, making the report both professional and accessible to the general reader. The representativeness of this case is in showcasing China's research achievements in the digital economy field and how visualization design improves the readability and influence of the report.

5.World Health Organization's COVID-19 Data Visualization: The WHO released a series of data visualization charts during the COVID-19 pandemic, clearly showing the trends in the pandemic's development, the distribution of cases, and the number of deaths. These charts, with their simple and clear design, helped the public understand complex pandemic data.

6.NASA's Solar System Exploration Visualization: NASA uses advanced visualization technology to transform complex space exploration data into easily understandable visual presentations. For instance, its visualizations of solar system exploration not only display the positions and trajectories of planets but also reveal scientific phenomena such as solar winds and gravitational waves.

7.Google's Annual Search Trends Report: Google's annual search trends report uses vivid and colorful visualization design to showcase the search behavior of users and the hot topics of the year. These designs not only present data but also reflect the cultural and social atmosphere of the time.

8.UNICEF's The State of the World's Children Report: UNICEF's The State of the World's Children Report uses a series of charts and graphics to intuitively display the health, education, and well-being of children worldwide, aiming to raise public awareness of these issues.

9.The BBC's "Planet Earth" series utilized advanced data visualization techniques to present the wonders of nature and the complexity of ecosystems in a visual format, enhancing the educational value and visual appeal of the program. Notable examples include the visualization of animal migration routes and the impact of climate change on polar glaciers.

10.The New York Times' "9/11 Memorial Edition" employed exceptional visualization design, using interactive timelines, maps, and personal stories to profoundly convey the various aspects of the September 11, 2001 terrorist attacks. This design was highly acclaimed for its deep emotional expression and effective communication of information.

2.1.2 Online research

Under the topic of "Visualization Design for Information Cocoons," we not only conducted offline research but also synchronized an online survey to gain a more comprehensive understanding of users' behaviors and needs in the digital environment. The advantages of online research include its broad coverage, rapid data collection, and relatively low cost.

1.Data Collection in Online Research:

Using methods such as online questionnaires, online interviews, and social media analysis, we collected the following data:

1.Basic User Information: Through questionnaires, we collected information from over 2,000 users, including age, gender, and educational background. Among them, users aged 18-35 accounted for 78%, indicating that young users are the main active group within information cocoons.

2.Online Behavioral Data: Utilizing data analysis tools, we tracked users' information browsing and interaction behaviors on news websites, social media, and knowledge-sharing platforms. We found that users spend an average of about 3.5 hours on information platforms daily.

3.Preferences for Visualization Design: In the questionnaire survey, 61% of users expressed a preference for graphical and interactive information presentation, while only 18% of users favored traditional text-based formats.

2.Key findings of the online research survey

1. Users' Perception of Information Cocoons: Most users are aware that they may form information cocoons online, but only a few have taken active measures to broaden their information channels.

2.Impact of Visualization Design: Data shows that platforms using visualization design have longer user dwell times and higher interaction rates, indicating that visualization design can effectively attract user attention and enhance the user experience.

3.Significant Demand for Personalization: In the survey, 85% of users expressed a desire to see visualized information customized according to their interests and habits, revealing a strong market demand for personalized design.

3. Challenges and strategies of online research

Data Authenticity and Quality: Ensuring the authenticity and quality of data in online surveys is a significant challenge. We have implemented measures such as logical validation checks and limiting the number of submissions per IP address to enhance the credibility of the data.

1.Protection of User Privacy: In collecting data, we strictly adhere to relevant laws and regulations to protect user privacy and ensure the compliance of the survey.

2.Data Analysis and Interpretation: Facing a vast amount of data, we employ data mining and machine learning technologies to conduct in-depth analysis of user behavior, aiming to uncover the patterns and trends hidden behind the data.

2.2 design concept

I. Design Objectives

The core purpose of information cocoon visualization design is to assist users in gaining a deep understanding of their own information consumption behavior patterns, uncovering biases and limitations hidden in everyday information flows. We aim to provide users with an effective escape mechanism, broadening the width and depth of their information exposure to help them break free from their inherent thought frameworks and embrace a more diverse perspective. By integrating cutting-edge technologies such as artificial intelligence and big data analysis, we have set the following specific design goals:

Personalized Recommendation: Based on a meticulous analysis of user behavior data, we are committed to creating an intelligent recommendation system that can accurately identify user interests and provide a rich and valuable array of information content. Our goal is not only to satisfy users' existing interests but also to guide them in exploring unknown areas and challenging the boundaries of their thinking, thereby effectively breaking through the constraints of the information cocoon.

Interactive Learning: We leverage innovative visualization technologies to build a highly interactive and rich learning environment. Within this environment, users can engage with information through intuitive graphical interfaces, exploring and manipulating visual data to gain a deep understanding of the source, dissemination path,

and potential impact of the information. In addition, we have integrated interactive tools such as simulated discussions and mind mapping, aiming to enhance users' information filtering, integration, and analysis abilities, thereby improving their information literacy and cultivating their critical thinking skills. Through this interactive learning experience, users will be able to continuously hone their thinking skills and develop a more comprehensive and profound understanding of information while enjoying the process of information acquisition.

II. Design Concept

Data Collection and Analysis: Use big data technology to collect information on user consumption behavior on devices such as smartphones and computers, including browsing history, search keywords, and interactive behavior. Through data mining and machine learning algorithms, analyze user interests, needs, and preferences.

Personalized Recommendation System: Based on the analysis of user data, build a personalized recommendation system. This system can adjust recommended content in real-time to help users break out of the information cocoon. At the same time, by incorporating user feedback, continuously optimize the recommendation algorithms to improve accuracy.

Visualization Design: Design diverse visualization formats tailored to the characteristics of smartphones, computers, and other devices, such as information maps, timelines, and relationship networks. Through visualization technology, present complex information to users in a simple and intuitive way, enhancing the efficiency of information dissemination.

Interactive Learning Module: Integrate an interactive learning module into the visualization design, including knowledge quizzes, topic discussions, and viewpoint collisions. Users can learn through interaction, improve their information literacy, and develop critical thinking skills.

Intelligent Interaction: Use artificial intelligence technology to enable natural language interaction with users. Users can interact with the system through voice, text, and other means to obtain the information they need.

Summary of the chapter II

1.the research on information cocoon visualization design employs both offline and online methods, focusing on user behavior, needs, and existing design effectiveness. The findings reveal user tendencies, limitations of existing designs, and user demand for personalized and interactive designs.

2.Online research complements offline research by providing a broader understanding of user behaviors and preferences. The design concept emphasizes understanding consumption habits, identifying biases, and expanding knowledge through AI, big data, personalized recommendations, interactive learning, and intelligent user interactions. The design aims to deliver adaptable visualizations, analyze user behavior through big data, and enhance learning and critical thinking skills.

Chapter III
DESIGN PROCESS AND RESULTS

3.1 Design of the visual poster

In the "Information Cocoon Visualization Design" project, I skillfully employed visualization poster design techniques to vividly reveal the essence of the information cocoon and how it shapes and influences users' information reception habits. The core of the design lies in transforming complex data into a simple visual language, guiding users to discern their own information preferences and awakening their awareness of the information selection process through the clever combination of charts and animations. This creative process not only honed my professional skills but also provided me with profound insights into the psychological mechanisms of information dissemination.

The design concept of the poster aims to enhance user interaction and information absorption efficiency, offering a powerful visual tool for fields such as education and media. In the visualization of the information cocoon, I used the following distinct design elements to convey the core concept: a prominent title "Information Cocoon" accompanied by concise definitions and cautionary statements below, reminding viewers to be vigilant against biases in information selection. The central closed symbol represents the constraints of the cocoon, while the surrounding colorful arrows illustrate the diversity of information flow. The dark tone of the background hints at the limitations of the cocoon, while the multicolored main objects symbolize breakthrough and openness.

Furthermore, the design incorporates unique symbols of the internet and dynamic layouts, creating a rich sense of visual hierarchy and movement. This not only guides viewers into deeper contemplation but also avoids information overload through the

clever use of negative space. The overall design seeks simplicity and intuitiveness, aiming to enhance the public's understanding of the information cocoon phenomenon and inspire exploration into breaking cognitive boundaries to embrace a broader information world.

"In the design, I also specifically included interactive elements such as triggerable animations of information flow and interactive quizzes, allowing viewers to more deeply experience the formation process of the information cocoon. Through these interactive segments, the audience can not only recognize the formation of personal information preferences but also reflect on the impact of these preferences on personal cognition and social perspectives. Every detail of the poster is designed to stimulate curiosity and guide viewers to actively explore, thereby learning how to more wisely filter and absorb information in an era of information overload, breaking free from the cocoon's constraints and moving towards a more open and diverse intellectual universe."

3.1.1 Design and conception

The visualization design of the "information cocoon" depicts how, in an era dominated by artificial intelligence, big data, and smart devices, people construct self-enclosed cocoons within a sea of information. This design combines elements of artificial intelligence algorithms, big data analysis, and modern technologies such as smart computers and smartphones, presented in the following ways:

Intelligent Analysis Presentation: Utilizing the results of big data analysis to depict the information preferences and cocoon shapes of different groups, and showcasing through visual elements the sources, flow, and impact of this information.

Integration of Technological Elements: Incorporating elements of artificial intelligence and smart devices into illustrations, such as smartphone and computer interfaces, to emphasize the role of technology in our information consumption.

Data Visualization: Representing how information is filtered, consumed, and reinforced through visualizations like data streams, information bubbles, or interactive icons.

Layers and Depth: Expressing the differences in how individuals receive and process information inside and outside the information cocoon, and how these differences affect their cognition and behavior, through different visual layers and depths.

Metaphor and Symbolism: Using metaphors and symbolism, such as comparing the internet to a vast web, with the cocoon as a closed node within it, and smart devices as bridges connecting, to represent the position and state of individuals within the information environment.

Educational Significance: Combining modern technologies like artificial intelligence to convey the importance of improving information literacy and critical thinking, encouraging people to actively break free from information cocoons and pursue more comprehensive and objective information reception.

3.1.2 First draft of the design

The initial draft of the information cocoon visualization poster employs a unique visual language, featuring a central enclosed cube on the smartphone screen as the visual anchor, intricately intertwined with a maze of data lines and a variety of icons. This vividly illustrates how big data and artificial intelligence weave our information universe much like a spider spinning its web. The precise outline of the smartphone highlights the central role these digital devices play in constructing our information cocoons. The stark contrast between the restrained blue-gray tones within and the

vibrant colors outside, along with the dynamic data streams, delivers a powerful visual impact and serves as a profound warning to the viewer.

The concise definitions and thought-provoking reflective questions on the poster act as a key to unlock self-examination of our information consumption behaviors. The overall layout, with its clever use of negative space and a sense of hierarchy, not only leads the viewer to ponder the boundaries and limitations of the modern information cocoon but also inspires them to break free from the status quo and explore a more inclusive, open, and diverse information universe. Moreover, the attention to detail in the poster, such as the dynamic feel of the data lines and the recognizability of the icons, not only enriches the visual experience but also enhances the depth and breadth of information transmission, allowing the audience to gain a deeper understanding of the challenges and opportunities of the information age while appreciating the art.

3.1.3 Design and finalization

The core concept of the first poster is to deeply interpret the concept of "information cocoon." In the era of information overload, we are faced with a vast amount of data and information every day, which, like countless intertwining threads, form a huge and complex information network, akin to a cocoon made of silk. However, in this seemingly colorful world of information, we often find ourselves bound by an invisible force, the "information cocoon."

The information cocoon, by nature, is a metaphor that describes how people, influenced by self-selection, interest orientation, and information push mechanisms during the process of information acquisition and processing, gradually form a relatively closed information environment. In this environment, individuals only come into contact with information that aligns with their preferences and viewpoints, while information that contradicts their views or does not interest them is excluded. This is

like a silkworm cocoon that, although filled with intertwining threads inside, forms a solid barrier on the outside, limiting the silkworm's field of vision and range of activity.

In the poster design, we deliberately use the cocoon as the core element, meticulously drawing it with basic brush tools, and enhancing it with textures and basic effects to achieve a realistic and artistic look. This cocoon not only symbolizes the complexity and interweaving of information but also represents the limitations of the information cocoon on our vision. It reminds us that while enjoying the conveniences brought by information technology, we must also be vigilant about whether we have become trapped in this invisible cocoon.

The second poster is dedicated to a deep analysis of the causes of the "information cocoon" phenomenon, and cleverly reveals the current phenomenon of people obtaining information through the internet, primarily via smartphones.

In the information age, the internet, with its unparalleled convenience and richness, has become the preferred route for people to access information. Smartphones, as an extension and terminal of the internet, have penetrated into every corner of people's lives. We use them to browse news, interact on social media, search for information, and even shop and entertain. However, this excessive reliance on the internet and the immediacy of information access provided by smartphones have made the "information cocoon" phenomenon more prominent.

The prevalence of social media has also contributed to the formation of information cocoons. On social media platforms, people are more likely to come into contact with groups and information sources similar to their own views. This homogenized information environment makes it harder for people to encounter diverse viewpoints and opinions, further limiting their information perspective.

The second poster cleverly reveals the central role of the internet in people's information access and delves into the causes of the information cocoon phenomenon. It reminds us that in the internet era, we need to maintain vigilance and critical thinking,

avoid being bound by information cocoons, and strive to broaden our information perspective and cognitive boundaries.

The third poster takes "islands of thought" as the starting point, profoundly revealing the formation of information cocoons, which leads people to gradually become trapped in "islands of thought" constructed by their own interests and viewpoints. On the poster, one can see an isolated island that represents each person's inner world and information space. These islands are surrounded by an ocean of information, with people on the islands immersed in their own information, chained and only receiving information that aligns with their views, turning a blind eye to other voices and perspectives.

The formation of these thought islands, while convenient and satisfying in the short term, has serious long-term consequences. Firstly, it leads to the stiffening of thought. As people only receive information that aligns with their views, it becomes difficult to accept new ideas and perspectives, thus falling into a cognitive deadlock. Secondly, it exacerbates social prejudice and division. When everyone only focuses on their own island, it becomes difficult to understand and respect others' viewpoints and positions, leading to increasingly severe social biases and divisions. Therefore, we must be vigilant against the phenomenon of thought islands caused by information cocoons. We need to actively break this closed information environment and actively seek communication and interaction with others. Only by doing so can we truly achieve openness and progress in our thinking.

The fourth poster, with its striking visual impact, intuitively conveys a strong appeal to resist information cocoons and pursue information liberation. At the center of the poster, a clenched fist is firmly breaking a cocoon that symbolizes the information cocoon, vividly depicting the process of breakthrough and liberation.

In this era of information overload, it is easy to fall into the trap of information cocoons. An information cocoon refers to the state where people, in pursuit of the convenience of information, often unconsciously fall into a state of self-imposed closure

and repetitive reception of similar information, thus limiting the broadening of their horizons and the vitality of their thinking. However, true information liberation means overcoming this barrier and embracing a diverse and comprehensive information world.

The fist in the poster symbolizes the power and determination of each individual.

3.2 Cultural and creative design

In the cultural and creative design of "Information Cocoon Visualization," we have not only integrated this profound concept into everyday life but also used cultural and creative products as a bridge to inspire deep reflection on the modern information ecosystem. The design adheres to a minimalist yet elegant style, subtly embedding elements of the information cocoon, which are both striking and thought-provoking.

In the pattern design, we use abstract lines and geometric shapes to outline the contours of the information cocoon, which resembles an invisible net, suggesting the unseen bindings of the information age. The patterns on these cultural and creative products encourage people to bravely step out of the cocoon, broaden their horizons, embrace the diverse world, and ignite a desire for inner exploration.

Our series of cultural and creative products includes pins, eco-bags, custom cups, and more, forming a comprehensive cultural creativity system. These products not only decorate every corner of life but also subtly remind people: in an era of information overload, it is essential to learn how to filter and discern truth from falsehood, maintain independent thinking, and avoid being confined by the cocoon.

This "Information Cocoon Visualization" cultural and creative apparel is not just a trendy piece but also carries a lifestyle attitude and philosophical contemplation. It conveys a warning: while enjoying the convenience brought by technology, we should be vigilant against the potential hazards of information overload, courageously pursue

truth, break through cognitive boundaries, and step into a broader world. This apparel is a tribute to individual freedom and an encouragement to the spirit of continuous exploration, allowing every wearer to embody wisdom in fashion and showcase their demeanor in contemplation.

3.3 Visual manual

The 'Information Cocoon Visualization Design' handbook employs a compelling blend of text and visuals to provide an insightful representation of the information cocoon phenomenon and its far-reaching effects on personal and societal levels. With a palette of bold colors, the handbook vividly depicts the constraints people face within their information streams. It succinctly delves into the definition and origins of information cocoons, providing not only a clear understanding but also proactive strategies to escape these confines. These include suggestions on diversifying information sources, fostering critical thinking skills, and promoting a culture of open-mindedness and information discernment. The handbook serves as both a diagnosis of our digital ecosystem and a guide to navigating towards a more informed and interconnected information landscape.

3.3.1 First draft of the design

The visualization manual skillfully combines text and images to vividly depict how big data and artificial intelligence collaborate to construct our information universe. It delves deep into the profound impact of these two technologies in setting information trends, aiding decision-making, and integrating into every aspect of daily life. Through delicate and creative visual representations, it reveals the intricate web of data streams and intelligent logic. Within the interwoven charts and text, we catch a glimpse of how these technologies subtly lay the foundation for our acquisition of knowledge, social interactions, and understanding of the world. This not only provides us with a deeper

understanding of the current information ecosystem but also sparks boundless imagination and profound reflection on the future digital world, guiding us to continuously explore and advance on the path of information technology transformation.

3.3.2Design and finalization

The final design draft of "The Visual Design Handbook of Information Cocoons" skillfully combines text and images, employing clear and refined visual language to deeply analyze the phenomenon of information cocoons. The book is divided into four core sections: basic definition, causes, social impact, and coping strategies, emphasizing intuitive understanding and practical effectiveness. In its design, the handbook cleverly integrates lively illustrations, detailed charts, and interactive elements, which not only enhance the reader's comprehension and engagement but also help the public break through information barriers, stimulate intellectual vitality, and achieve cognitive diversity.

While ensuring professionalism, the final draft also prioritizes readability, using concise and smooth language along with intuitive visual presentations to enable readers to quickly grasp key information and inspire contemplation. Additionally, the handbook provides practical self-assessment methods and action guidelines, guiding readers to reflect on their personal information reception habits and cultivate critical thinking. This enables them to more wisely filter and absorb knowledge in an era of information overload. This meticulously crafted work aims to be a powerful tool to prompt the general public to break free from mental set patterns and explore new frontiers of knowledge.

Summary of the chapter III

1.Design Objective:

Visualize the concept of the information cocoon and its impact on users' information reception

Simplify complex data, enhance interactivity, and improve information transmission efficiency

2.Design Concept:

Intelligent analysis presentation, integration of technological elements, data visualization, and layered depth

Metaphor and symbolism, educational significance, and modern technology integration

3.Poster Design:

First draft: central enclosed cube, smartphone outline, contrasting color design, and negative space

Finalized design: detailed cocoon depiction, realism, and artistic look

Second poster: deep analysis of the causes of information cocoons, internet, and social media impact

Third poster: "islands of thought" phenomenon, long-term consequences, and breaking the closed information environment

Fourth poster: strong appeal to resist information cocoons and pursue information liberation

4.Cultural and Creative Design:

Use clothing as a medium, simple and elegant style, embedded information cocoon elements

Encourage individuals to break free from information cocoons, broaden horizons, and embrace diversity

5.Visual Manual:

Combination of text and images, vibrant colors, and illustrations

Emphasizes intuitiveness, practicality, and professionalism

Chapter IV
PROBLEMS IN THE CREATION PROCESS, SOLUTIONS AND ACHIEVEMENT DISPLAY

4.1 Problems

Firstly, poster designs often become too complex in their presentation of information. With the vast amount of information we receive daily, if a poster cannot convey the concept of an information cocoon in a simple and clear manner, it can easily lose our interest. An excessive use of charts and text in the design can be overwhelming and may even lead to a biased understanding of the information cocoon. Therefore, it is important to consider our cognitive load and employ more intuitive visual elements, such as icons and color coding, to help us understand and absorb information more quickly.

Secondly, illustration designs representing the information cocoon may be too abstract. Not everyone in our audience has a profound understanding of abstract concepts. If the illustration design is overly abstract and lacks specific visual guidance, we may find it difficult to grasp the core intention of the design. More concrete elements, such as depictions of people in situations, can help us better connect the abstract concept of the information cocoon to real life.

Designs that convey warning information may be too straightforward and lack creativity. As young people, we prefer designs that are creative and humorous. If warning messages can be cleverly integrated into an interesting story or visual game, we might be more willing to accept these messages and delve deeper into their underlying meanings.

Lastly, there is a lack of cultural diversity in design. We live in a diverse environment where different cultural backgrounds influence our understanding and acceptance of information. If the needs of people from different cultural backgrounds are considered and multicultural elements are incorporated into the design, the visualization of the information cocoon will be more inclusive and attractive.

4.2 Solutions

In the design of posters and illustrations, we must not only deeply understand the phenomenon of the "information cocoon," but also visualize its profound connotations through unique visual language and creative expression. This 刺激 s viewers to think and increases societal awareness of the issue. Here is a further refinement and polishing of the strategies you provided, translated into English for clarity and coherence:

Poster Design Strategies:

Color Application: Carefully select colors with strong visual impact, such as deep black to symbolize the closure and oppression of the information cocoon, and pure white to represent transparent and free information. The stark contrast between these two colors not only shows the limitations of individual cognition within the information cocoon but also hints at the hope of breaking free from constraints and pursuing truth.

Graphical Creativity: Skillfully combine lines, shapes, and patterns to abstract the information cocoon into a complex network in which individuals struggle. Create a dynamic image of a butterfly emerging from its cocoon, symbolizing the courage and determination to break free from bondage and seek truth and diversity in information.

Layout Design: Flexibly adopt symmetrical or asymmetrical layouts, organically integrating text, graphic elements, and color schemes to guide the viewer's gaze and enhance the sense of hierarchy and communication in the information.

Interactive Elements: Incorporate creative interactive elements into the poster, such as tear-off knowledge cards printed with information about the information cocoon and thought-provoking questions. The act of tearing off these cards not only increases viewer participation but also promotes the dissemination of information and in-depth discussion of the topic.

Illustration Design Methods:

Character Creation: Deliberately design a series of characters representing different backgrounds, ages, genders, and professions, showing their various states within the information cocoon. This allows viewers to see themselves in the characters, generating empathy and reflection.

Scene Depiction: Through delicate portrayal of interactions in everyday settings such as family, school, and office, vividly demonstrate how the information cocoon affects individual life trajectories, prompting viewers to think about real life.

Detail Handling: Cleverly integrate details related to the theme into the illustration, such as smart devices in the characters' hands or information streams on screen. These details not only enrich the imagery but also deepen the representation of the information cocoon phenomenon.

Symbolic Expression: Use symbolism and metaphor, such as representing bondage with chains and liberation with keys, or knowledge with light, to enhance the illustration's deep meaning and artistic appeal.

Summary: Through these design strategies and methods, we can present the complex phenomenon of the information cocoon to the public in an intuitive and vivid way, while also stimulating curiosity for knowledge exploration and promoting societal importance of the free flow and diversity of information. Such designs not only broaden our intellectual horizons but also encourage people to break free from entrenched cognition, actively explore unknown fields, and together build an open, inclusive, and rational information society.

In summary, the significance of exploring the visualization design of information cocoons lies in several aspects: first, it reveals the formation mechanisms and impacts of information cocoons; second, it helps individuals recognize their own information limitations, promoting cognitive expansion; third, it provides support for the development of superior information recommendation algorithms; fourth, it enhances public internet literacy, contributing to a healthy online environment; fifth, it assists policymakers in understanding the current state of cyberspace, enabling the formulation of effective policies. Through in-depth research on the visualization design of information cocoons, we anticipate providing new insights and methods to address the challenges posed by information cocoons.

Summary of the chapter IV

1. These visualization design outcomes not only effectively communicate the concept of information cocoons but also cater to diverse audiences and various learning styles.

2. By incorporating creativity, cultural diversity, and interactive elements, we can better engage and educate the public on the importance of breaking free from information constraints and fostering diverse thinking.

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Once again, I thank all those who have given me help and support. It is you who have made my research journey meaningful and valuable. Let us work together to bring more innovation and breakthroughs to the field of information cocoon visualization design.

APPENDIX

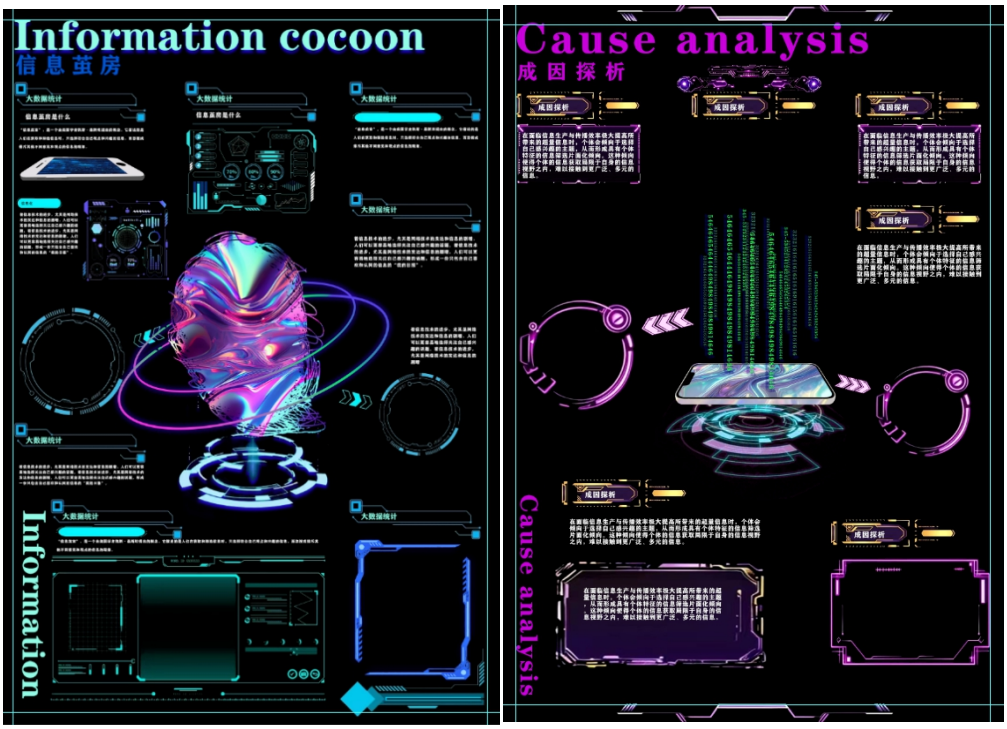

Figure 2-2 Rough sketch

Figure 2-2 Cultural and creative design

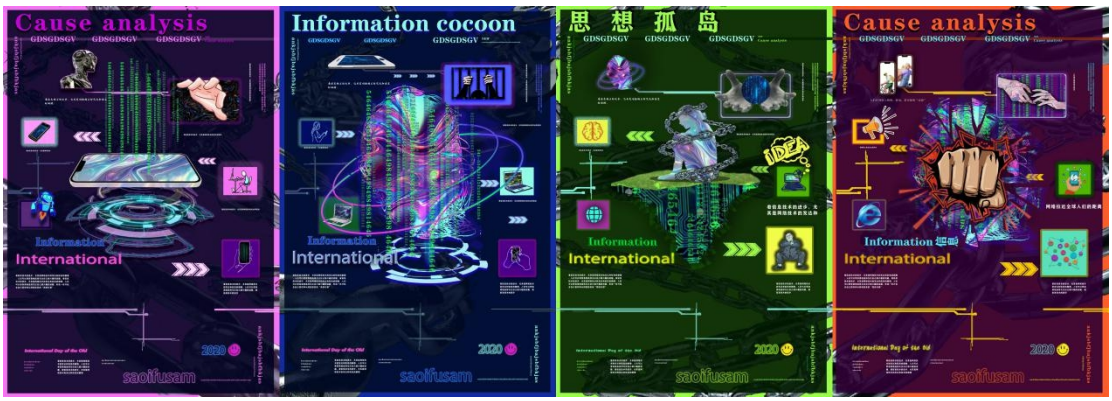

Figure 3-1

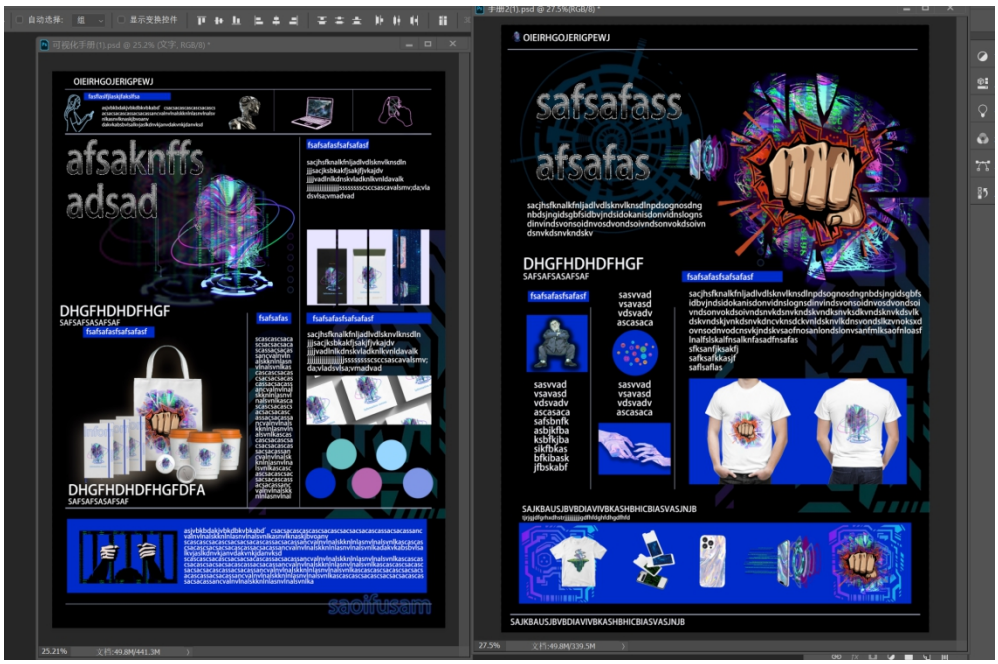

Figure 3-1 First draft of the design