

Journey of Care, Discovery, and Innovation

Huiyuan DING

Nanyang Technological University (NTU)
Information Systems 2026

Huazhong University of Science and Technology
Product Design 2025

SyncPair

Cross-University Project | Group Project
2024.07-2024.10



1

Smart robotic arms for bedridden patient care.

- Robotic Arm
- User experience
- Twin-Arm Synchronization
- Smart Nursing

PainPal

Medical Innovation | Solo Project
2024.05-2024.06



2

A product for pain relief and visualization for patients. The exploration of creating personal space products.

- Pain Management
- Multi-Sensory Feedback
- Real-Time Data Analysis
- Personalized Pain Relief

Leave Me Alone

Interactive Installation | Solo Project
2023.04-2023.06



3

- Privacy Protection
- Emotion Concealment
- Personal Space
- Environmental Awareness

AI Thrombolytic Assistant

Paper Output Project | Group Project
2022.12-2023.02



4

An application for AI-assisted stroke diagnosis.

- AI Smart Healthcare
- Digital prototype
- Clinical Decision Support

Source·Dream

Award Project | Group Project
2024.06-2024.08



5

A product for capturing and review dreams.

- Immersive Experience
- Self-Exploration Platform
- Wearable Technology
- Physical Prototype

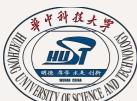


SyncPair

"For More Modern, Mobility, Motion, Monitoring, Motivation."

Cross-University Project | Group Project

2024.07-2024.10



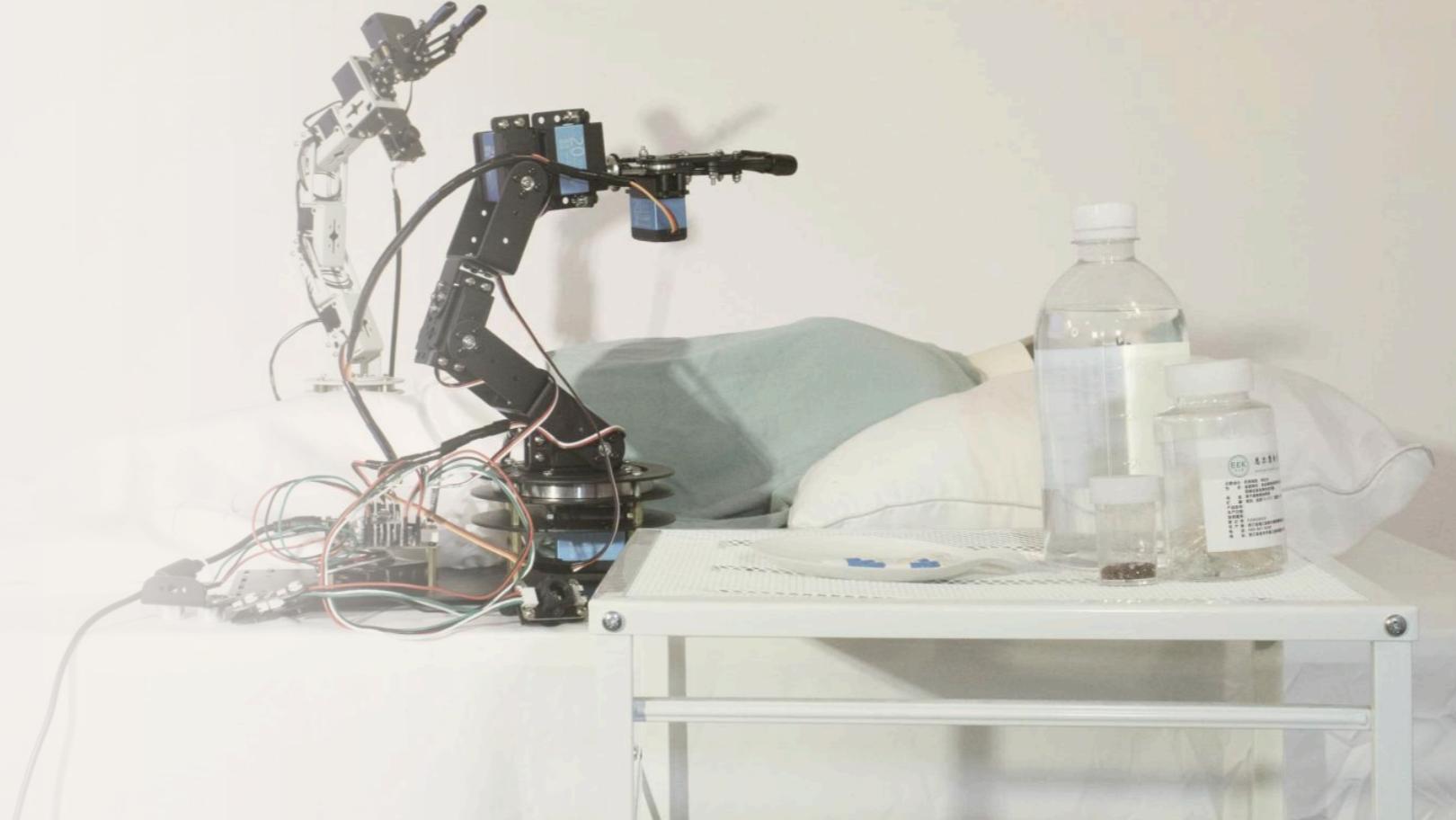
Cross University Partner :

Yanjie Zhang

Art and Science and Technology | Art and Archaeology

My Role :

- Conduct user research through literature review and interview simulation to gather expectations for the robotic arm.
- Perform user interviews to collect first-hand feedback.
- Design and create 3D models and renderings to showcase details and visual effects.
- Simulate user testing, gather feedback, and evaluate the design.



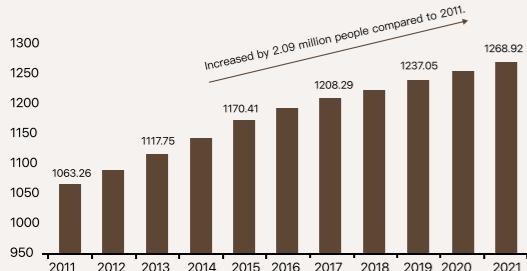
Problem

Global Challenges in Healthcare Systems and Inpatient Care

The global nursing industry faces common challenges such as an aging population, the rise of chronic diseases, a shortage of caregivers, and increasing care costs, which are particularly pronounced in countries like China, the United Kingdom, and the United States.

Population Aging Growth

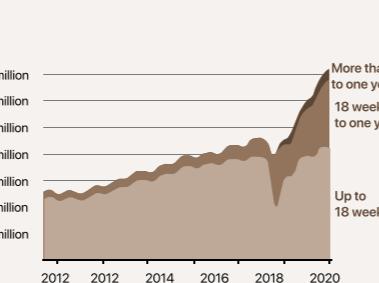
The number of people aged 65 and over in the U.S. 2011-2021(ten thousand)



An aging population increases demand on healthcare resources worldwide.

Long wait times

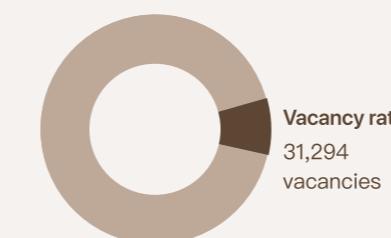
People waiting for hospital treatment in China



Healthcare waiting lists could exceed millions, delaying emergency care globally.

Staff shortages

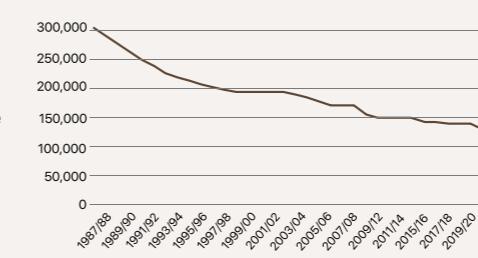
NHS Vacancy Statistics England, April 2015 - March 2024



A shortage of full-time NHS positions leads to inefficient care.

Financial pressure

The number of hospital beds in England has halved over the past 30 years



The NHS has been underfunded for more than a decade.



Administrative costs



Burnout and other issues affecting healthcare professionals



Decreased quality of care

User Research

Survey Questionnaire for Target Audience :

The survey seeks to gather valuable insights into the primary caregiving tasks, patient bed requirements, and the specific needs, care processes, scenarios, and workload intensities across various hospital departments. It will be distributed to three key groups: **patients** (as product users), **caregivers**, and the **relatives of patients**, ensuring a comprehensive understanding of their unique perspectives and needs.

Research on Nursing and Care Needs

The purpose is to focus on the practical needs of nursing and care, emotional support methods, and attitudes toward the application of intelligent robots.

Research on Patient Nursing Needs & Satisfaction

The purpose is to gather patient information, evaluate nursing needs and satisfaction, and assess perceptions of intelligent robots to explore potential for smarter nursing solutions.

Target Audience

Caregivers

Relatives of patient

A total of **70** questionnaire responses were collected.

Patients

A total of **27** questionnaire responses were collected.

- The majority of participants are female family caregivers, aged between **30–59**.
- Most caregiving tasks are short-term and focus on basic needs, such as assisting with eating, drinking, and getting in and out of bed.
- Emotional support**, mainly through listening and chatting, is widely provided during caregiving.
- Many participants support the use of intelligent robots in caregiving, especially for **delivering medications and supplies**; but they express concerns about safety, reliability, and ease of interaction between robots and patients.

- Hospital stays for most patients range from **1–2 weeks**.
- The majority of hospitalized patients are in a **semi-dependent or fully dependent state** and tend to rely on family caregivers.
- Patients are generally satisfied with caregiving services, with the most needed services being regular **monitoring of health changes and assistance with getting in and out of bed or moving**.
- Patients show openness to the use of intelligent robots in caregiving, particularly for **delivering medications and recording health data**, but they have concerns about the reliability and safety of the technology.

Key Points

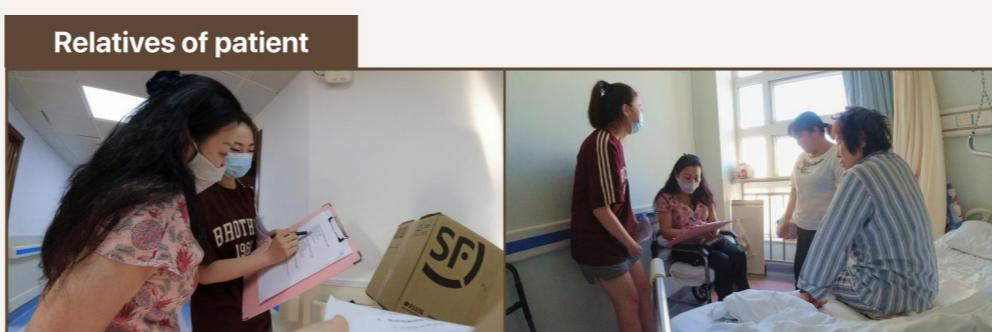
Based on the research conducted, the following insights and conclusions were derived:

1 The majority of patients and caregivers are willing to try and use intelligent robots to assist in caregiving services.

2 Both patients and caregivers pay special attention to basic daily care, such as assisting with eating, drinking, and personal hygiene, which are the most common and frequent caregiving tasks.

3 Most respondents emphasize the importance of emotional support during caregiving, particularly through listening and chatting to help ease the patient's emotions.

Field Research



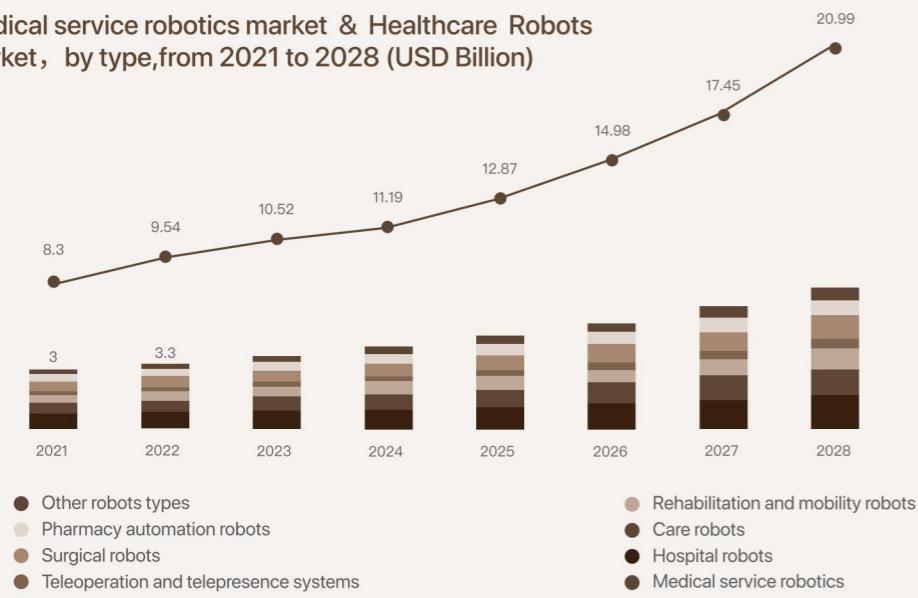
In user interviews, we found that **older patients** generally exhibited a certain level of **reservation** and **distrust** toward new technologies. However, **younger patients** and some **family members** of patients showed a more **positive attitude** toward our innovative ideas.

Most older patients expressed concerns that new technologies might harm their bodies or worsen their condition. These concerns significantly influenced their trust and acceptance of new technologies.

Market competitive analysis

Market Analysis

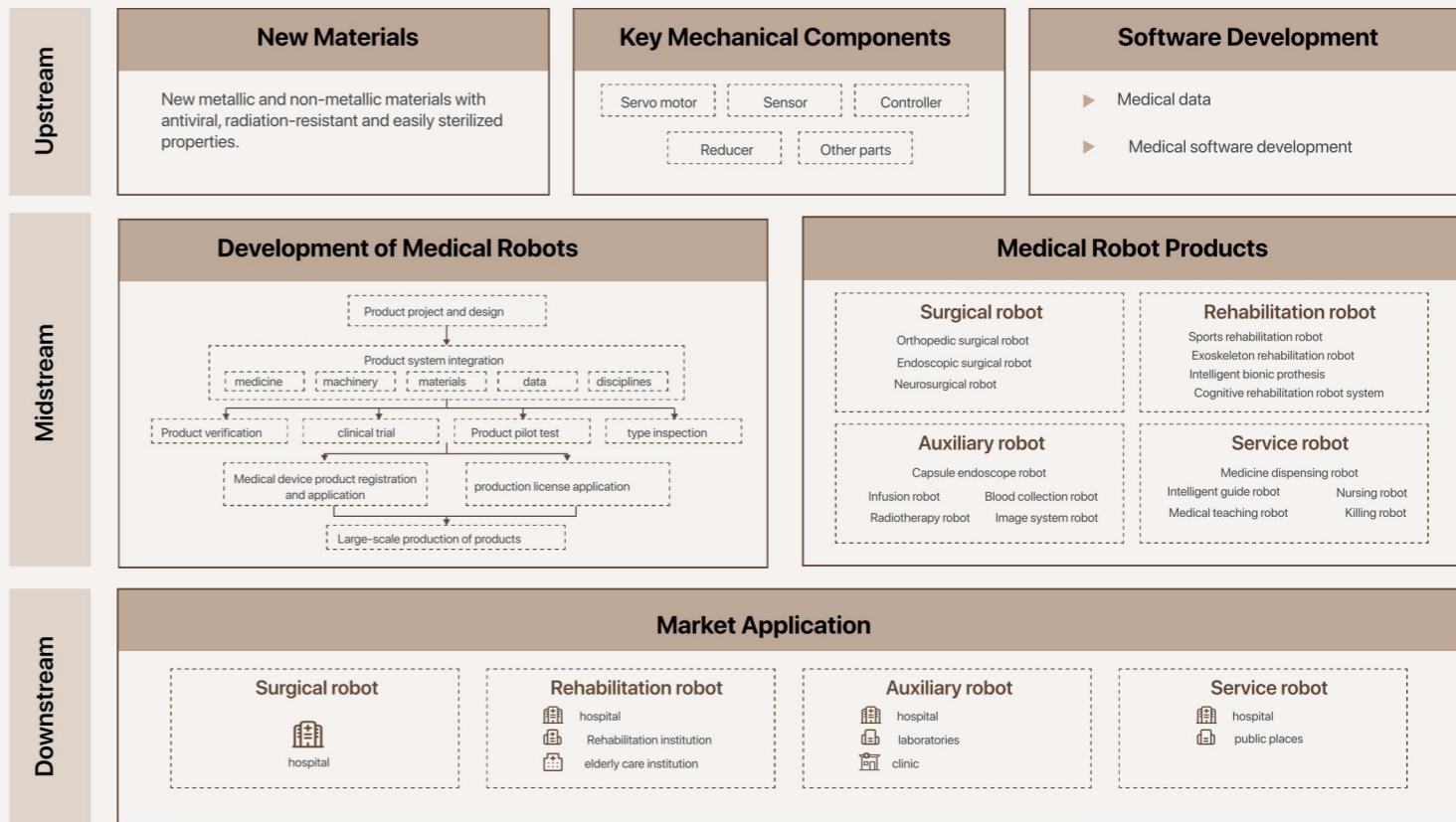
Medical service robotics market & Healthcare Robots Market, by type, from 2021 to 2028 (USD Billion)



key trends

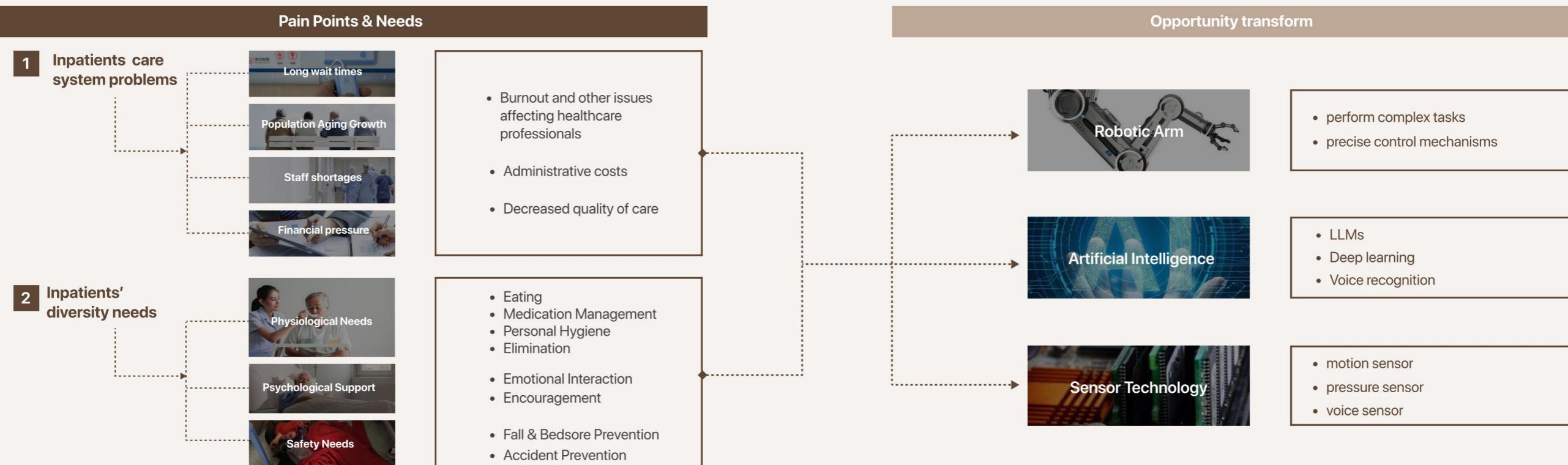
The global market for medical service robots is expected to continue its robust growth, with the care robots segment poised for significant expansion over the next decade.

Supply chain for medical robotics



Why do we need to launch a robotics service in inpatient care?

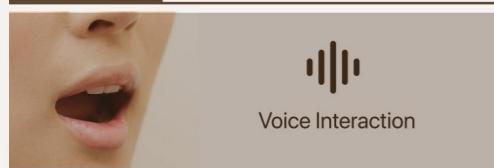
Robotics can transform care system flaws and diverse patient needs



Product feature

Step 1

Patient Requests Assistance



- ▶ Eating, drink
- ▶ Medication management
- ▶ Personal hygiene and elimination
- ▶ Encouragement, counseling, interaction

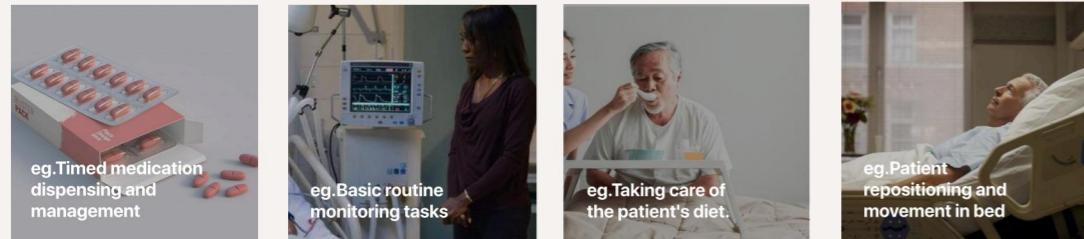
Step 2

Understanding the Request

Implementing multimodal AI understanding of user needs through LLM

Step 3

Autonomous Execution of Care Tasks



Step 4

Communication with the Patient

In addition to complex tasks, patients can also interact with it for conversation and entertainment

Minimal User Interaction

- ▶ Simplicity of the user operation
- ▶ Intuitive voice command system
- ▶ Seamless integration of AI

The Most Convenient

- ▶ Robot's capability to perform tasks autonomously
- ▶ Convenience and efficiency in handling care tasks
- ▶ Real-world scenarios enhancing patient care experience

Understanding patient needs with minimal effort from the patient

The Most Affordable

Low Material Costs

The use of low-cost materials to manufacture the robotic arm keeps the overall production cost relatively low.

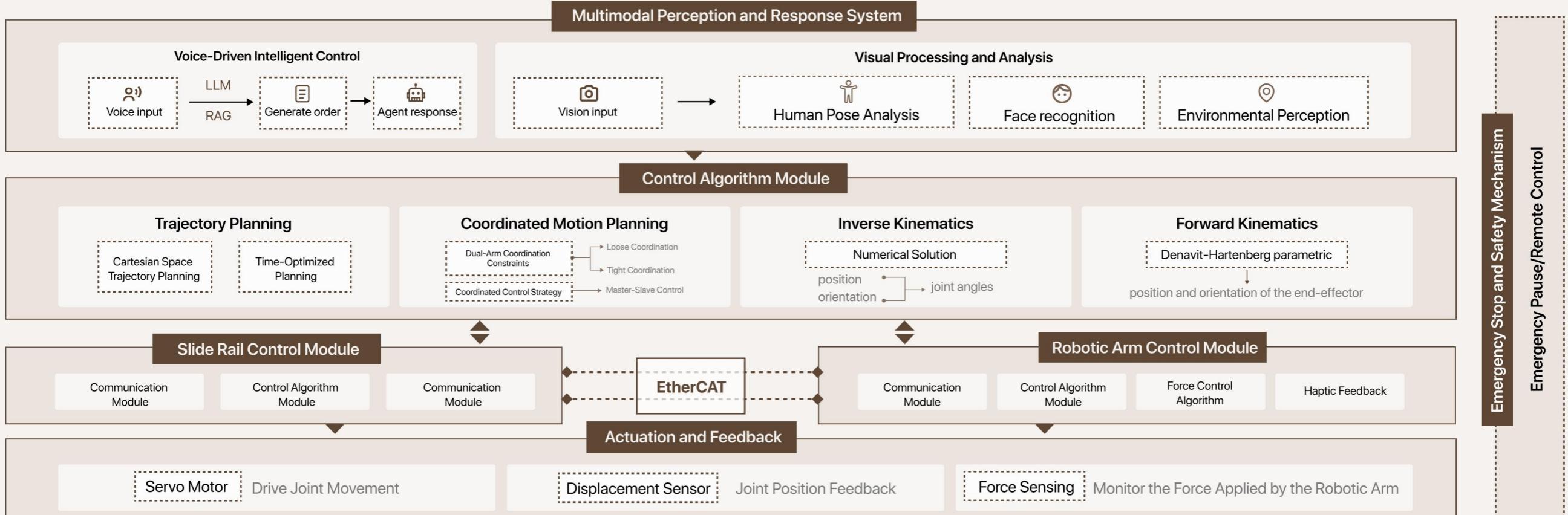
Open-Source Design

The adoption of an open-source design allows for widespread collaboration and iteration without the costs associated with proprietary technologies.

Economies of Scale

Mass production of the robotic arm reduces the cost per unit, making it more affordable for consumers

Technical Path

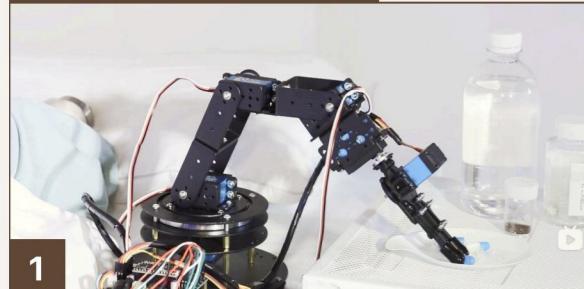


Prototype

Video Link:[Https://Youtu.Be/DRMpVOILVjk](https://youtu.be/DRMpVOILVjk)

We used the prototype to **attempt four specific tasks** related to inpatient care and **recorded videos** of the process.

Feed the drug



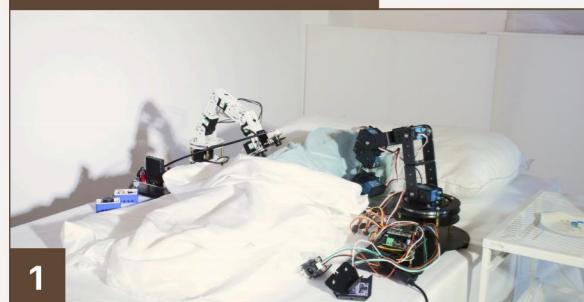
Gripper grasps the target medication and delivers it to the inpatient's mouth.

Roll the quilt



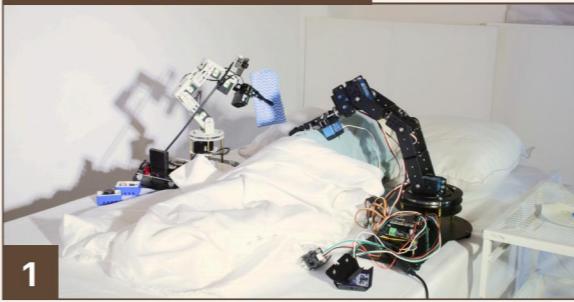
Grippers on both sides simultaneously grasp the bedsheets and lift it downward.

Turn over



The robot arms on both sides work together to assist the inpatient in turning over in bed.

Wash the body



One mechanical arm stabilizes the patient in a side-lying position, while the other mechanical arm wipes the patient's body.

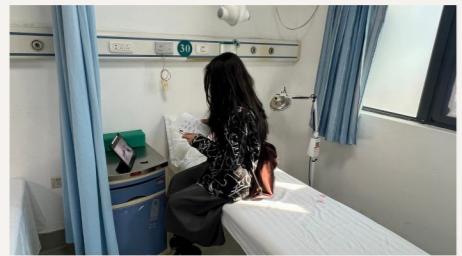
Usability Testing

We conducted usability testing in a simulated hospital environment with five participants. Using a prototype video, we demonstrated the project's key features and gathered feedback on its functionality and user experience.



Changyue Liu

Master of Architecture, Harvard Graduate School of Design
Bachelor of Architecture, Tsinghua University School of Architecture



"Many elderly people don't like having machines in front of them. So, we hide the machines when doctors or nurses aren't around to make the space feel more like home. This helps them feel less weak or dependent."



Ariela

Design Researcher at MIT and Brown University



"The robotic arm has great potential, but the task-switching speed feels a bit slow. Improving this would make it more efficient for hospital use."



Dr. Deng

Rehabilitation Doctor

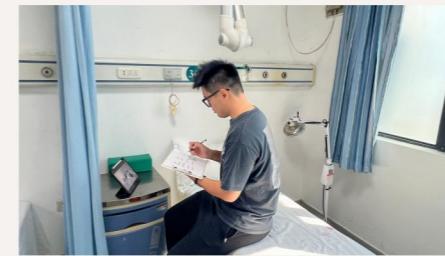


"We aim to balance functionality with comfort. By hiding the machines and improving efficiency, we create a more user-friendly environment for both patients and caregivers."



Qinglin Du

Mechanical Engineer



"The robotic arm is stable, but for hospital use, it needs to be durable and easy to maintain. Features like modular design, rust-proof materials, and collision detection can make it more reliable."



Guohua Zhang

Retired Factory Worker.



"I was worried at first, but the robotic arm feels gentle and helpful. It helps me move comfortably and doesn't feel like a machine. It's easy to use and makes life easier for me and the caregivers."

Future Expectations

Cost-Effective And Scalable Solution

The robotic arm will become more affordable and scalable, making it accessible to a wider range of healthcare settings.

Integration With Healthcare Systems

The arm will integrate seamlessly with healthcare systems, providing real-time data to professionals for better care coordination.

Patient And Caregiver Acceptance

As users become more familiar with the technology, acceptance of robotic assistants will increase.

Adaptive To Different Patient Needs

The robotic arm will adapt to various patient needs, offering tailored support based on individual conditions.

Design Implementation Overview





PAIN-PAL

Focus on Comfort Medicine: Relieve and Visualize Pain during Medical Procedures



Medical Innovation | Solo Project

2024.05-2024.06

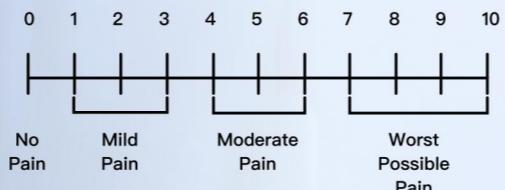
BACKGROUND

Pain management is not only about relieving pain through medication or physical therapy, but also involves a comprehensive assessment to help patients understand and control their pain experience. Pain is a subjective experience, and each person's perception and tolerance of pain vary. Therefore, accurate pain assessment is crucial for developing personalized treatment plans.

EXISTING PAIN GRADING AND DESCRIPTION STANDARDS

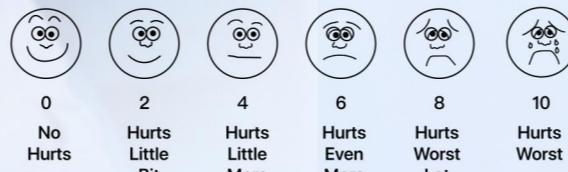
0-10 Numerical Rating Scale, NRS

A numeric pain rating scale is a single-item question that asks the patient to rate his or her pain on a scale of 0 to 10, using the anchors of "no pain" and "worst pain imaginable." Patients are instructed to circle the number that represents the amount of pain that they are experiencing at the time of the evaluation



Wong-Baker FACES® Pain Rating Scale

The Wong-Baker FACES® Pain Relief Log is designed for individuals or caregivers who need to keep track of medications and general health concerns. It helps users remember when medications were last administered and whether they were effective in relieving pain or nausea, which can be especially challenging when caring for someone or being ill. The log is particularly useful when there are multiple caregivers, as it helps maintain continuity of care. By keeping a record of the ongoing care, it provides valuable information for discussing what is working or needs adjustment with doctors.



WHO reports that around **20%** of adults globally experience chronic pain.



The Lancet study shows that about **1/3** of adults worldwide will face chronic pain at some point in their lives.



Between **20% to 50%** of chronic pain patients also suffer from depression or anxiety, worsening their condition.

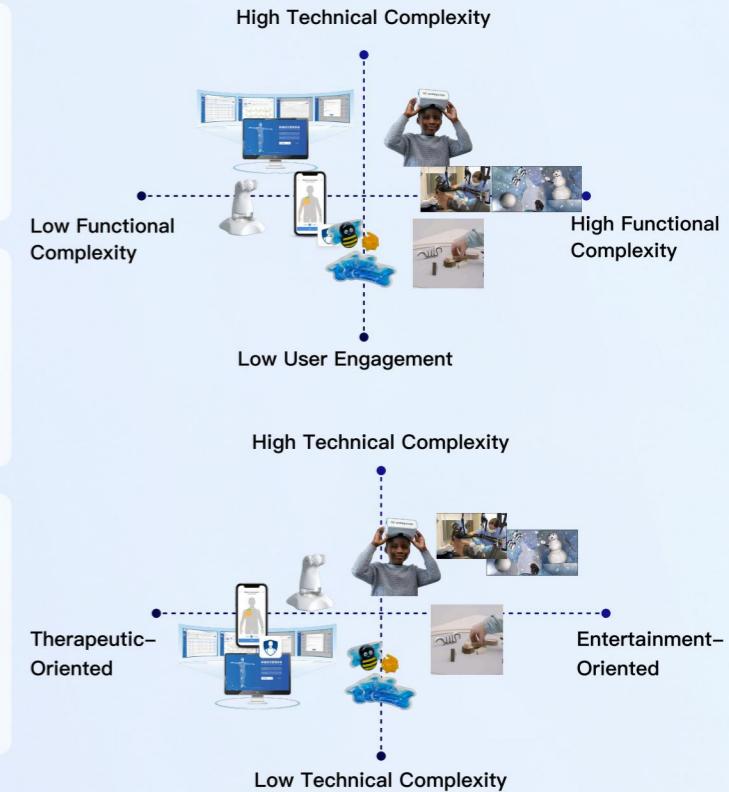


CDC data indicates that **20.4%** of U.S. adults suffer from chronic pain, and **8%** have pain that significantly limits their daily activities.

Over **50%** of chronic pain patients believe that pain severely impacts their daily life and work.

RELATED COMPETITIVE PRODUCT ANALYSIS

Product	Function	Tech	Users	Pros	Cons
Medical Systems	REHN® Integrated Pain Management System (IPMS)	Pain assessment, treatment, monitoring, and prevention.	Medical institutions and patients	Powerful data analysis for personalized treatment plans.	Requires complex system integration.
	Chronic Pain Tracker	Mobile app with data syncing, cloud storage.	Acute and chronic pain sufferers and their families.	Easy tracking, education, community, and visual reports.	Relies on patient's subjective tracking, prone to forgetfulness.
VR Therapy	SnowWorld VR Game	Use VR goggles to immerse in a snowy valley to reduce pain perception.	Burn patients	VR technology diverts attention and reduces pain.	Expensive equipment, inconvenient to carry.
	Smileyscope™ Therapy	Play animations of virtual water adventures to ease injection-related pain.	Patients who are afraid of pain	Child-friendly design to alleviate treatment anxiety.	High hardware costs with limited appeal to older patients.
Product Category	Re-Imagining Pain Communication	Improve ways to communicate and express pain to family and medical staff.	Patients who have difficulty expressing pain	Intuitive pain expression, solving language barriers.	Lacks advanced data analysis capabilities.
	Buzzy	Use physiological painkillers.	Children who are afraid of injections	Child-friendly design for superficial pain relief.	Limited functionality, primarily for child users.
	"Crele" Adult Hand Relief Toy	Stress-relief toys.	People under stress	Portable with interchangeable accessories.	Single function, limited applicability.



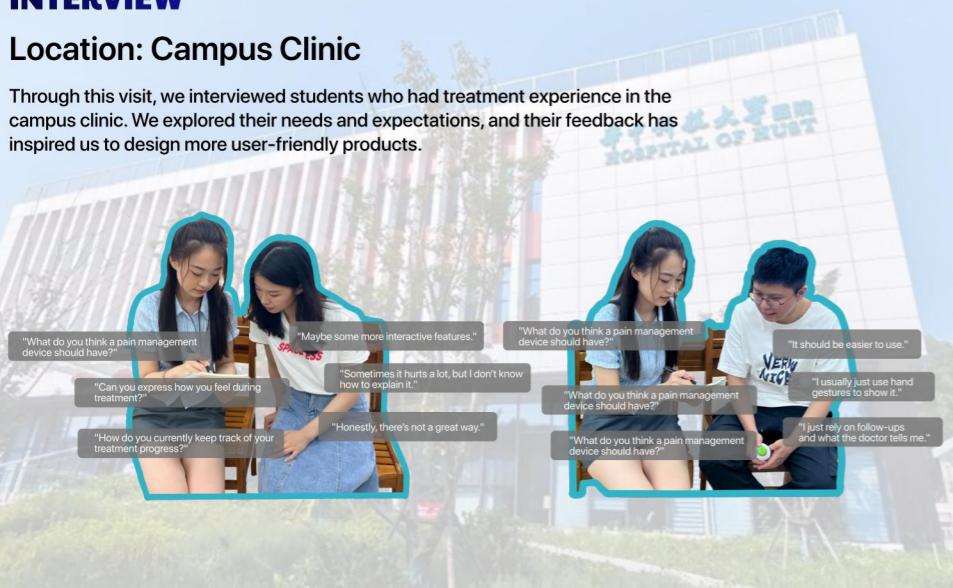
Through the analysis, we can see that the existing products are either high technical complexity, but not user-friendly; Either the function is single and cannot meet the long-term pain management needs.

USER RESEARCH

INTERVIEW

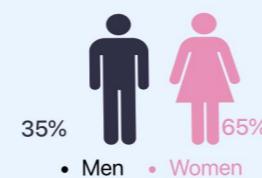
Location: Campus Clinic

Through this visit, we interviewed students who had treatment experience in the campus clinic. We explored their needs and expectations, and their feedback has inspired us to design more user-friendly products.

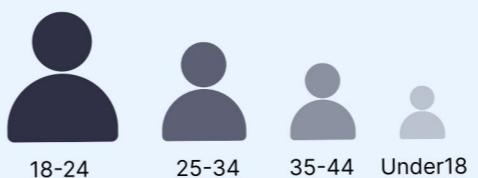


QUESTIONNAIRE

1. Gender



2. Age



3. Have you ever experienced pain during treatment?



4. How would you like the material texture of the pain management equipment? (Multiple choices)

- Comfortable** 56%
- Soft** 38%
- Smooth** 32%
- Lightweight** 32%

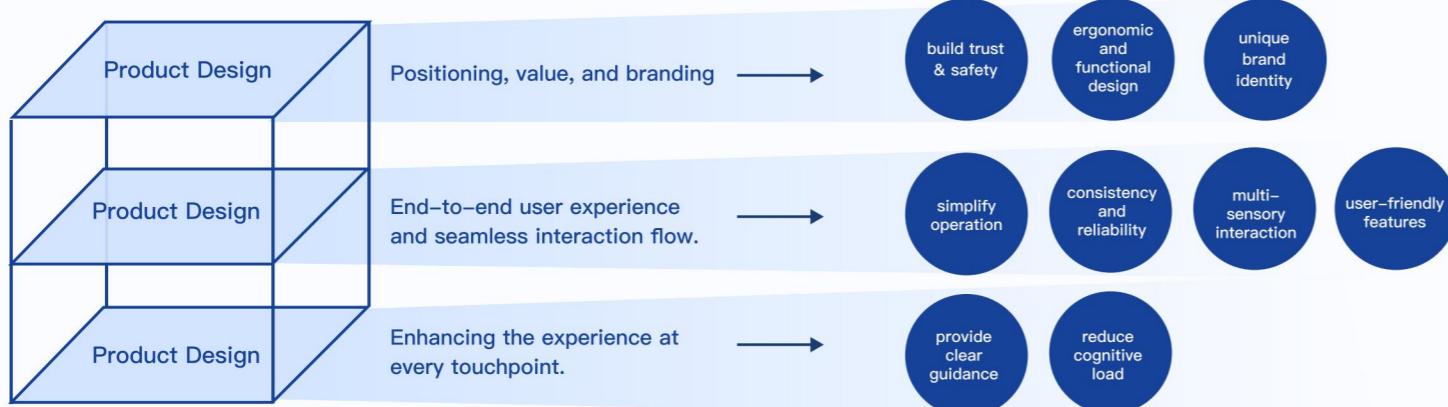
5. What kind of form do you prefer for the pain management device? (Multiple choice)

- Rounded** 60%
- Minimalistic** 40%
- High-quality** 32%
- Innovative** 18%

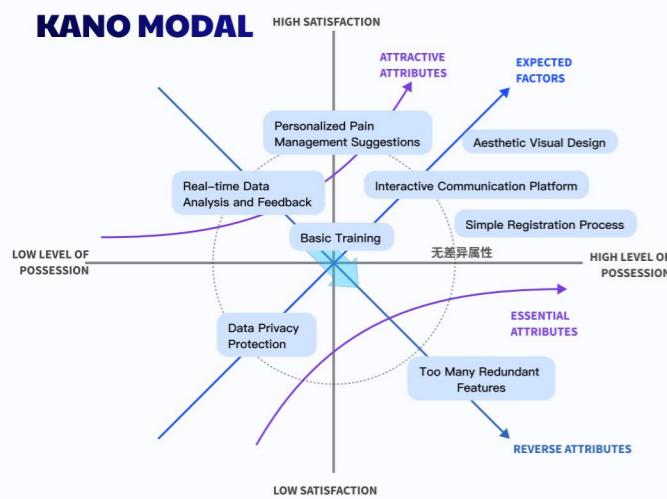
6. What kind of color impression do you prefer for the pain management device? (Multiple choice)

- Gentle** 58%
- Calm** 35%
- Soothing** 30%
- Elegant** 20%

DEFINE



KANO MODEL



CORE FEATURES

- Personalized multi-Sensory pain relief
- Real-time pain tracking and data analysis
- Seamless health platform integration

Our product is a portable, **data-driven** pain management device that combines ergonomic design with personalized settings for **multi-sensory relief**, and the ability to **visualize pain using different colors**. Featuring real-time tracking and seamless **health platform integration**, it empowers users to manage pain effectively.

PERSONA



Basic Information:

- ⌚ Age: 40
- 📍 Location: Hangzhou, Zhejiang
- 👤 Occupation: Dentist

Personal Experience:

Dr. Guo works at a renowned private dental clinic and specializes in orthodontics, extractions, and root canals. He focuses on pain management and uses advanced dental technology to improve outcomes and patient comfort.

Pain Points

- ⌚ Pain-induced anxiety affects treatment outcomes.
- ⌚ Difficult to track recovery progress.

Opportunities

- ⌚ Reduce pain and discomfort during treatment.
- ⌚ Record treatment and pain responses.



Basic Information:

- ⌚ Age: 26
- 📍 Location: Wuhan, Hubei
- 👤 Occupation: Graduate Student

Personal Experience:

Siming, a third-year design graduate student in Wuhan, developed shingles due to stress, leading to severe neuralgia. He seeks an effective pain management solution and is interested in using smart devices for relief.

Siming

Pain Points

- ⌚ Needs an effective pain relief solution.
- ⌚ Has many tasks and responsibilities in design work.

Opportunities

- ⌚ Hopes to monitor health data to track pain and treatment progress.
- ⌚ Needs effective solutions to ease neuralgia discomfort.

PRINTING MODELS

The prototype of the product will be printed in the industrial training center, and the printed product will be tested by users



1. **Moderate Size:** "The device is sized perfectly for convenient use and functionality."
2. **Stable Structure:** "Its stable structure resists deformation and damage under pressure."
3. **Easy to Clean:** "The design ensures easy cleaning with minimal grooves or corners."



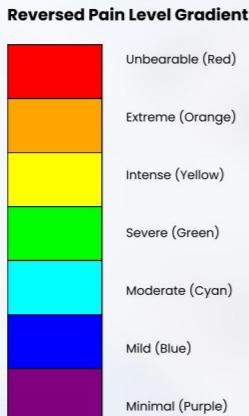
1. **Perfect Size:** "Fits well in hand, neither too large nor too small."
2. **Comfortable Grip:** "Textured design ensures a secure, non-slip grip."
3. **Lightweight and Portable:** "Lightweight and easy to carry anywhere."



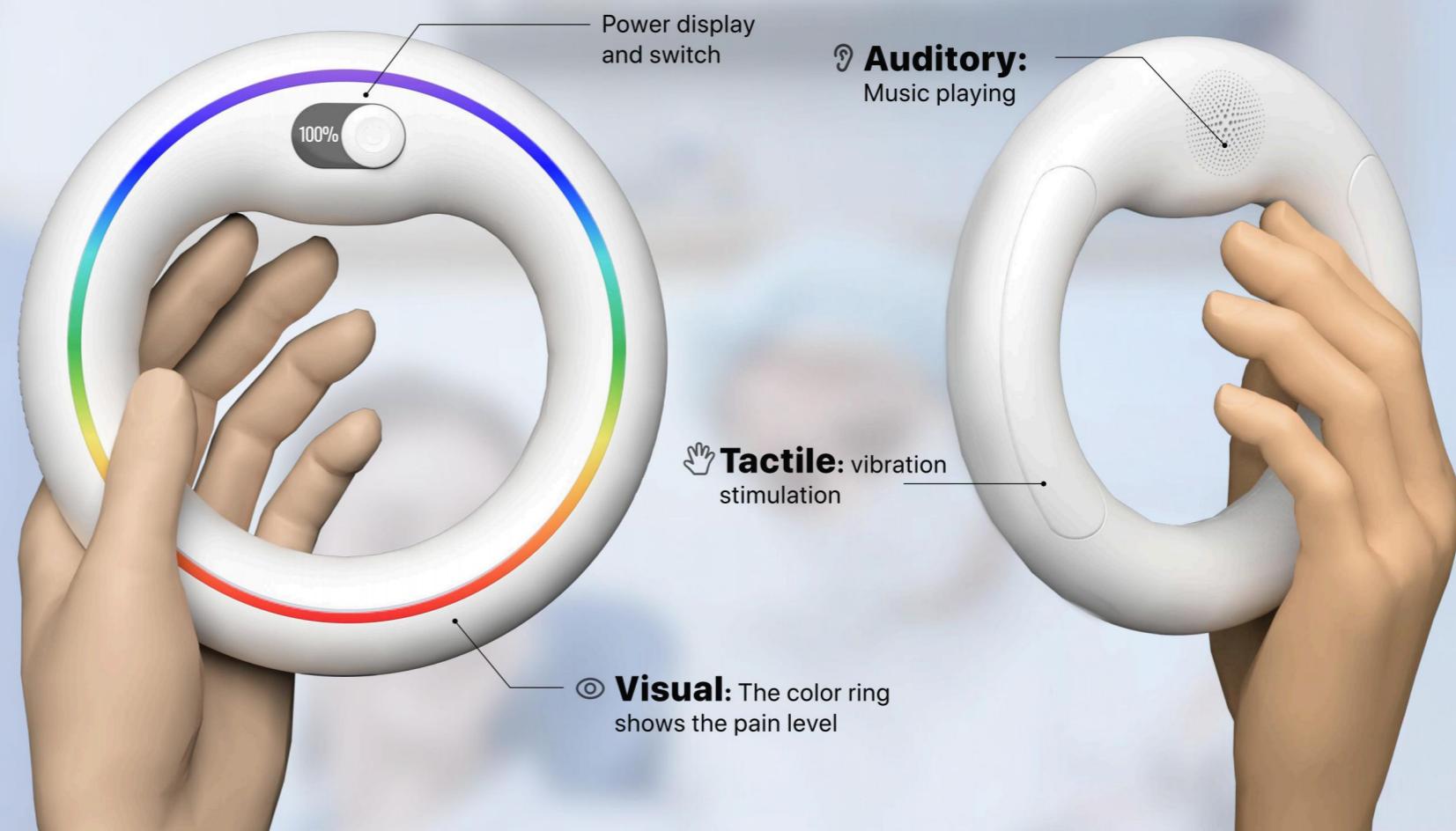
1. **Ergonomic Design:** "Fits the body well with no pressure or discomfort."
2. **Well-Placed Buttons:** "Buttons are conveniently positioned for easy operation."
3. **Perfect Size:** "Suitable for both single and double-handed use."



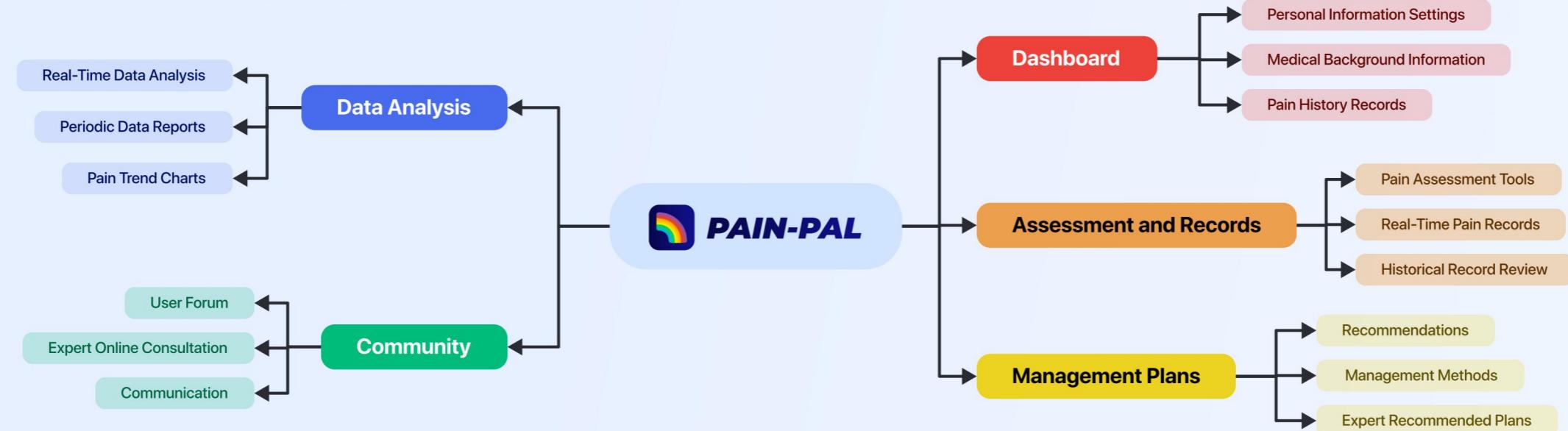
Product Dimensions and Design



Pain Intensity Grading System



INFORMATION ARCHITECTURE



INTERFACE SHOWCASE

Colors

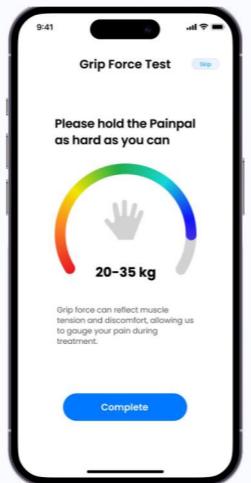


Fonts

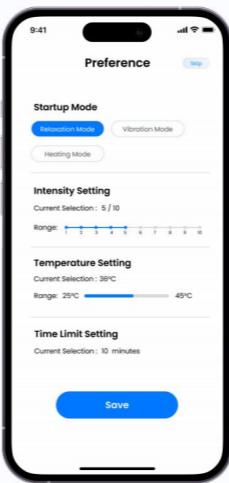
Aa Poppins

Bold Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp

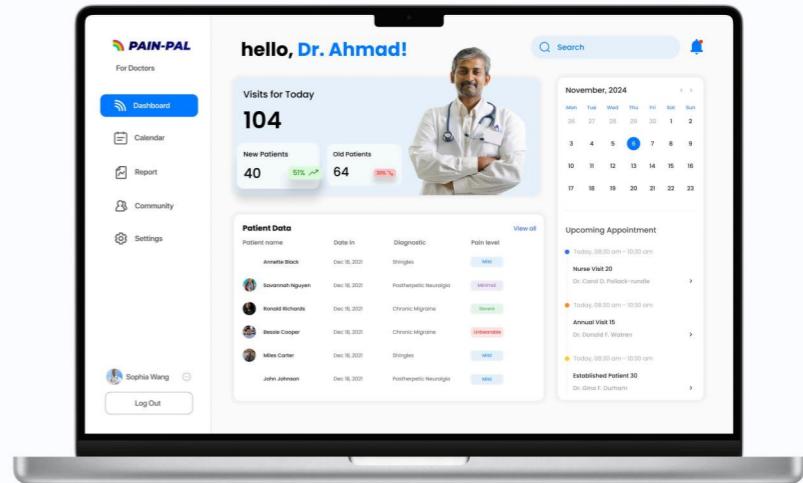
Regular Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp



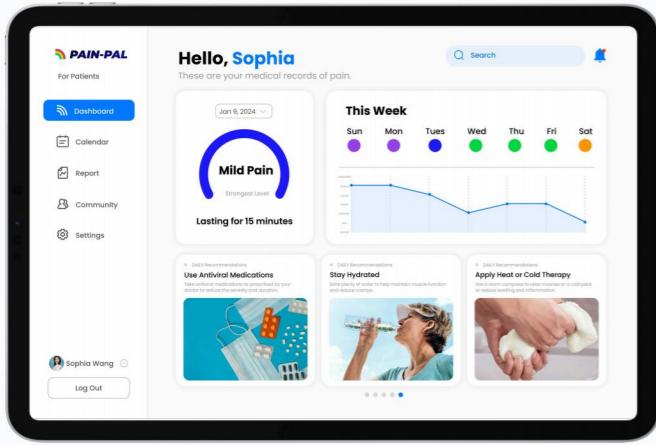
Grip Strength Test



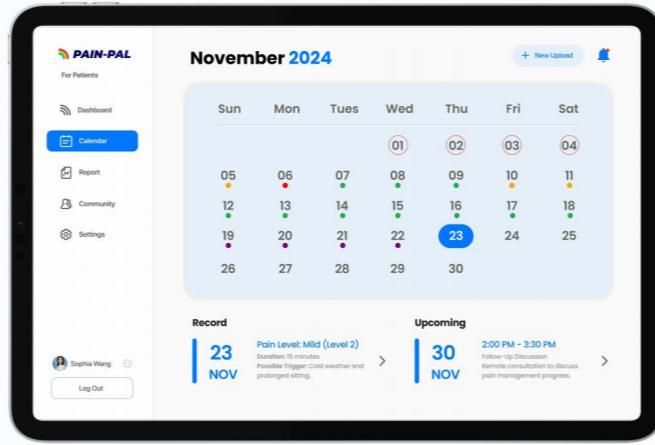
Initialize Preferences



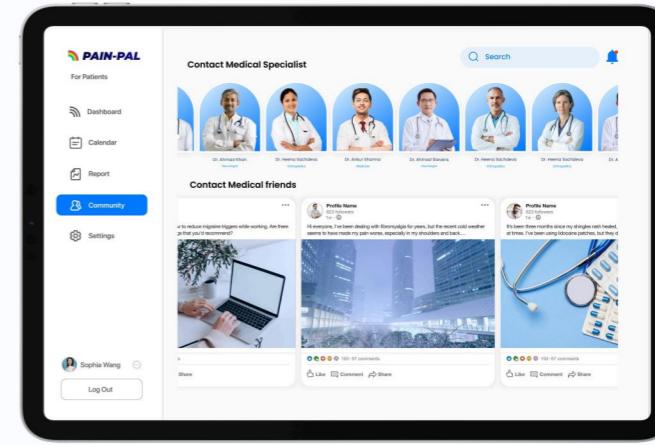
Doctor Interface



Calendar Page



Pain Management Calendar



Community Page

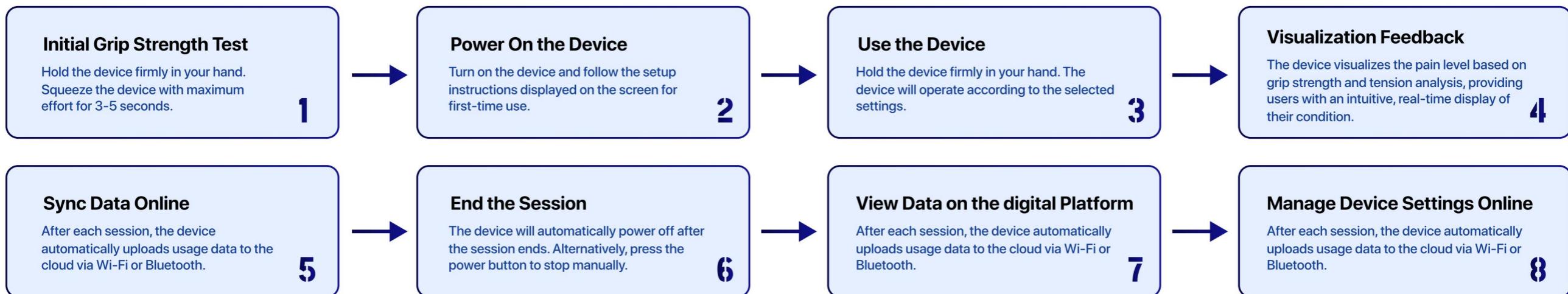
Calendar page displays real-time pain levels, weekly pain trends, and actionable tips for self-care, helping users stay informed and proactive about their health.

Calendar page organizes pain records and upcoming appointments, offering a clear timeline for tracking progress and planning consultations.

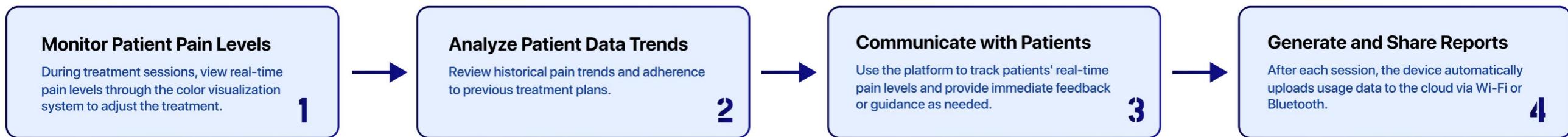
Community page offers a space to share experiences, seek advice, and access professional guidance, fostering a sense of community in pain management.

USER FLOW

For Patients



For Doctors



FEEDBACK

MR. YAO



"This device has completely transformed how I manage my daily pain. The ergonomic design ensures it fits comfortably in my hand, and the adjustable intensity settings let me customize the treatment for my needs. It's intuitive and effective, making it a must-have for anyone dealing with chronic discomfort."

MS. YU



"I appreciate the thoughtfulness behind this product's design. It's lightweight, easy to carry, and incredibly user-friendly. The buttons are well-placed for convenient operation, and the pain relief it provides has significantly improved my quality of life. Cleaning and maintaining it is also hassle-free, which is a big plus!"

FUTURE

In the future, we plan to promote the product through partnerships with healthcare providers and rehabilitation centers, showcasing its effectiveness in pain management. By leveraging online platforms, including social media and e-commerce, we aim to reach a broader audience. Additionally, we will introduce affordable models to ensure accessibility for underserved communities, while continuously improving the product through user feedback and technological advancements. Our ultimate goal is to establish the device as a trusted companion for pain relief and recovery worldwide.

Leave Me Alone

"Your Space, Your Rules."



Interactive Installation | Solo Project

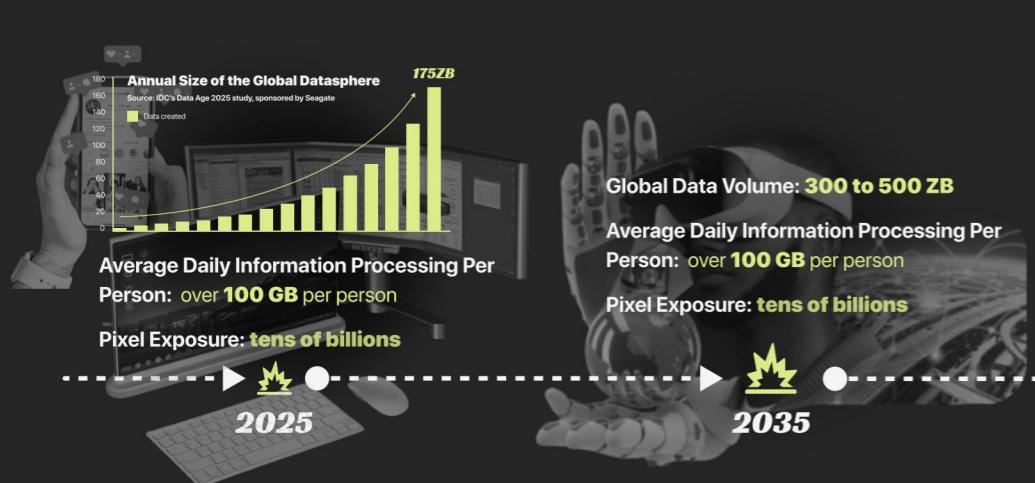
2024.05-2024.06

FUTURE

The future will be defined by a **"visual civilization,"** where **70-80%** of all information processed by individuals will be visual. This shift is driven by the rise of screens, VR, AR, and holographic displays, making visual stimuli the primary source of information. As we increasingly rely on what we see, the line between digital and physical realities will blur, and visual literacy will become essential in navigating the overwhelming flow of information. The dominance of visual data will shape how we perceive, understand, and interact with the world.

TIMELINE

According to the prediction of some authoritative institutions, the amount of global data will explode in the next few decades.



PROBLEMS



PROJECT INSPIRATION

About My Characteristics



In life, I am an individual who understands the importance of **boundaries**. However, the real world is often full of behaviors that attempt to break my boundaries. Sometimes people may have good intentions and try to overstep my personal space, the intrusion may be due to ignorance or unconsciousness.

BACKGROUND



● Intimate Distance Mainly for close friends and family.	● Social distancing This is the most comfortable distance to keep with strangers.
● Personal Distance Focus on people we know and trust.	● Public Distance Mainly aimed at maintaining the most comfortable distance from strangers in public places.

Privacy protection

In today's digital age, personal privacy is facing unprecedented challenges. People may want to cover their face in public to protect their privacy and prevent being identified or followed by others.

Security Considerations

In some cases, people may want to hide their identity to keep themselves safe. This may be because they fear harassment, stalking, terrorist attacks or other forms of threat.

Personal Preferences

Some people may feel uncomfortable or anxious about public places, and they may be inclined to wear a mask or use coverings to feel safer or more comfortable.

Social Stress and Anxiety

Some people may feel that showing their true appearance and emotions in public can cause anxiety or stress, and therefore choose to use masks or coverings to reduce this stress.

Blurred vision

Loss or degradation of vision can have different psychological effects on users. For example, some people may relax because their vision is blurred because they are no longer distracted by too much visual information.

FURTHER RESEARCH

Since ancient times, when humans believed in the animism of all things, **masks** have been imbued with a mystical aura and have served as symbols of various deities.



Typically used to conceal the identities of participants, allowing them to indulge in the festivities **without recognition**.

Venetian Masks



China boasts a rich array of traditional theatrical forms, many of which use masks to **represent different characters or convey specific emotions**.

Chinese Theater Masks



Employed in traditional performances like Noh and Kabuki to **portray specific characters, emotions, or mythical beings**, enhancing the theatrical experience.

Japanese Masks



Integral to ceremonies and rituals, these masks connect wearers with spiritual entities, ancestors, or natural forces, playing crucial roles in community and spiritual life.

African Masks

Many masks have **identity-hiding** functions. Masks are used to conceal personal identity, allowing the wearer to remain anonymous in certain social situations.

Different animals use different strategies to protect themselves from predators. Many animals will seek out surrounding objects as cover to protect themselves. For example, sloths, hedgehogs, fish, and turtles, these behaviors can help them avoid detection and predators.



IDEATION

A bunker for people in an era of future digital life.

Digital Escape from the Real World

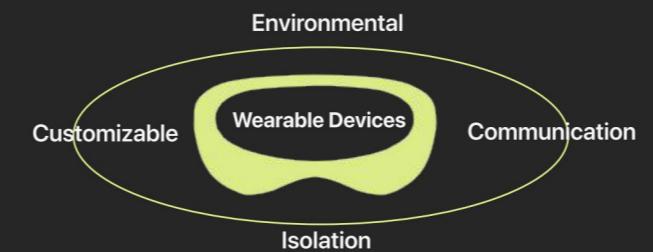
Partially covers the face



Create a private space

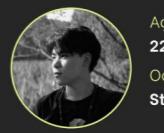
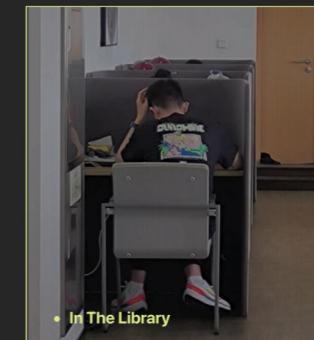
Opportunity to escape

Not to be disturbed for a while



OBSERVATION INTERVIEW

In order to better understand their needs, I conducted tests on two subjects, observed their facial expressions in public spaces and when traveling alone, and talked with them to understand their inner state and draw some conclusions.



Age/Identifying Gender
22/Male
Occupation
Student of product design

- May I ask why you choose this partition seat?
- "It gives me a quiet, private space where I can focus better without distractions. It helps me work or study more efficiently and comfortably."
- How often do you think you'll need a private space like this?
- "I think I'll need a private space like this quite often."



- May I ask why you choose this partition seat?
- "I like working alone at a cafe because the environment is comfortable and the relaxed atmosphere helps me focus. Plus, changing my environment often brings new inspiration and motivation."
- How often do you think you'll need a private space like this?
- "I find myself needing a private space like this pretty regularly."



HOW TO USE

Switch between different states based on different modes.

Mode switch

Mode switch	To the user himself	Show to the world
Immersion mode:	Block all messages Play soft music. Release some mood-soothing gas	Opaque mode, pattern blends with the environment
Privacy mode:	Seamless Mobile Content Projection with Glasses. Music and scents of your own choice.	Opaque mode, pattern blends with the environment
Transparent mode:	The face can be partially obscured and the user can see the outside world. Music and scents of your own choice.	Be transparent
Personalized mode:	Block all messages or continue browsing on your phone. Music and scents of your own choice.	Users can customize the pattern on the display
Social mode:	Increase transparency and show other people's basic information. No music and smell.	Be transparent

FUNCTIONAL REQUIREMENT



Create A Sense Of Isolation



Environmental Awareness



Comfort And Portability

WEARING WAY TEST

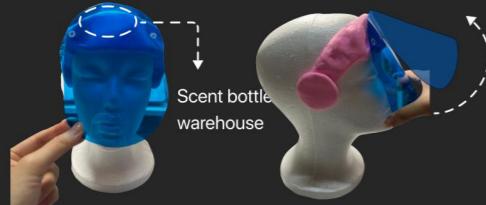
Before materializing my idea, I opted for a more intuitive physical model to determine which form was more suitable. I sculpted the rough idea on a foam head model using PVC sheets and modeling clay to visualize the concept.

A

Local Full Coverage



B

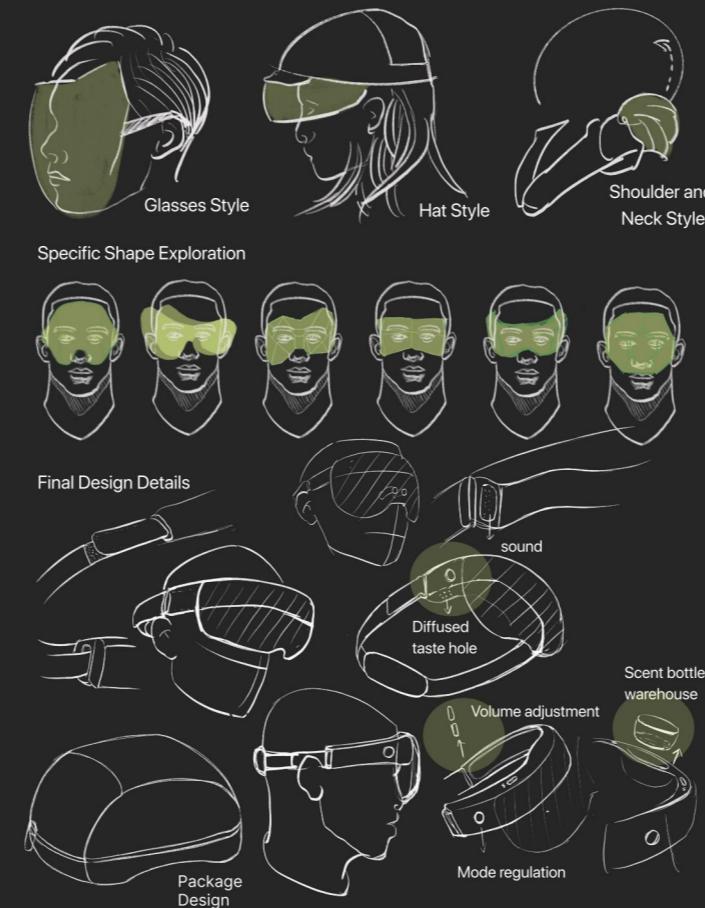


C

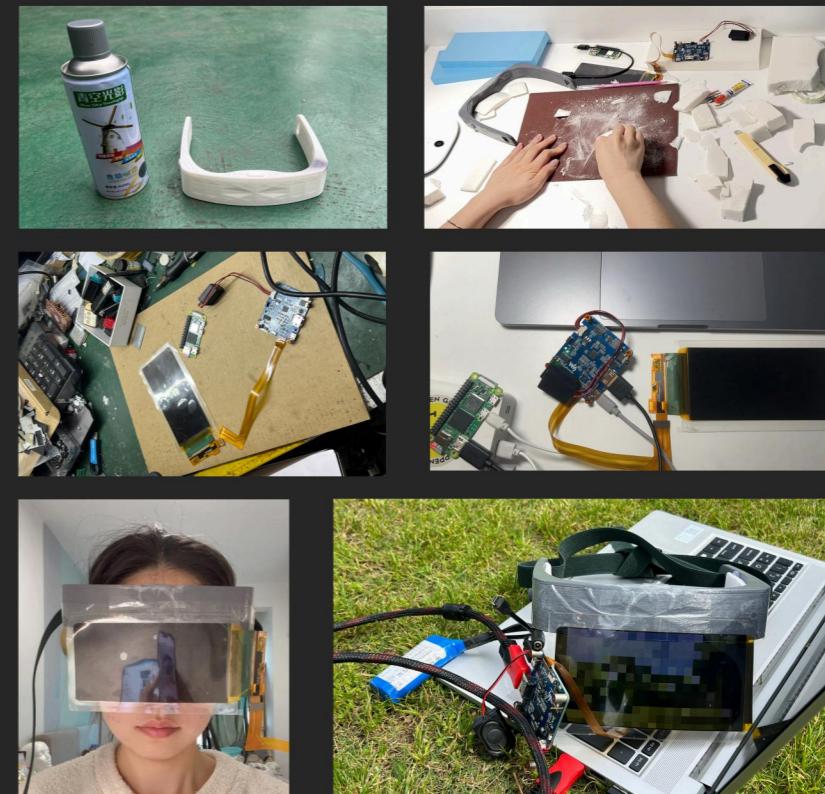


After comparing the three models, some users feel completely isolated from the crowd, but I want to design the device in a more open way, hoping that they would maintain a sense of balance in their social interactions. Therefore, I chose the most promising aspects from the three models for further sketch refinement.

DESIGN SKETCHES

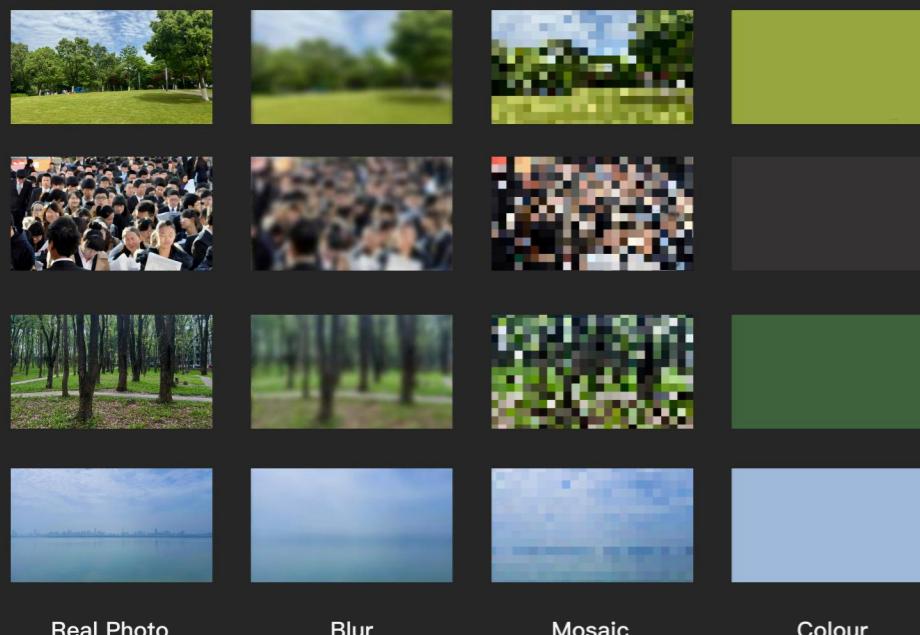


HANDMADE MODELS



USABILITY TEST

Inspired by animals taking cover in a natural environment to protect themselves, I wanted this device to scan the surrounding environment (color, light, etc.) and its display screen to be in harmony with the surrounding colors and patterns. Three precision images were tested separately, and four scenes were selected for testing.



TEST SCENE

Video Link: <https://youtu.be/rxc8cmv7arq>

Choose 4 common scenes to test which precision picture has better invisibility effect.



Crowded Places



Dense Forests



Lakeside Scenes



Meadows And Grasslands

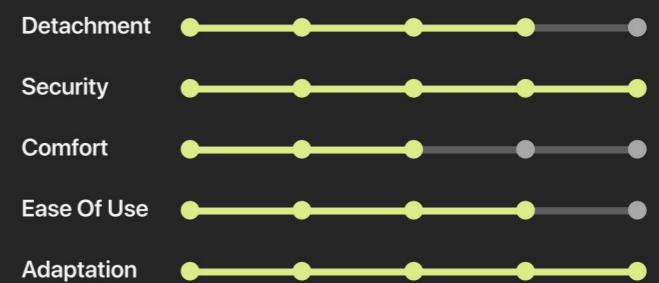
Tested at four locations. I found that **the mosaic picture** is more common for the scene, and the stealth effect is also better.

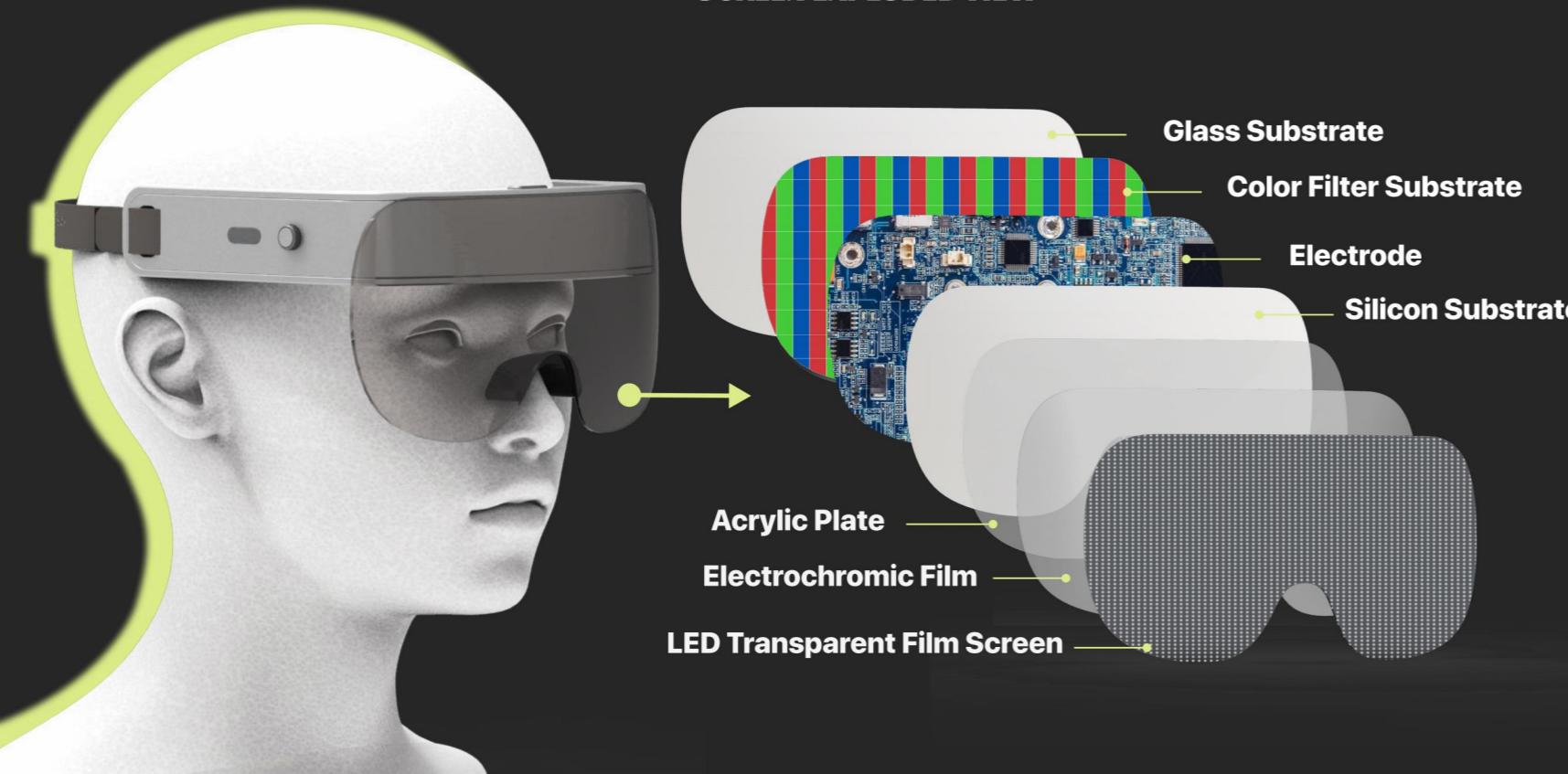
USER SATISFACTION TEST



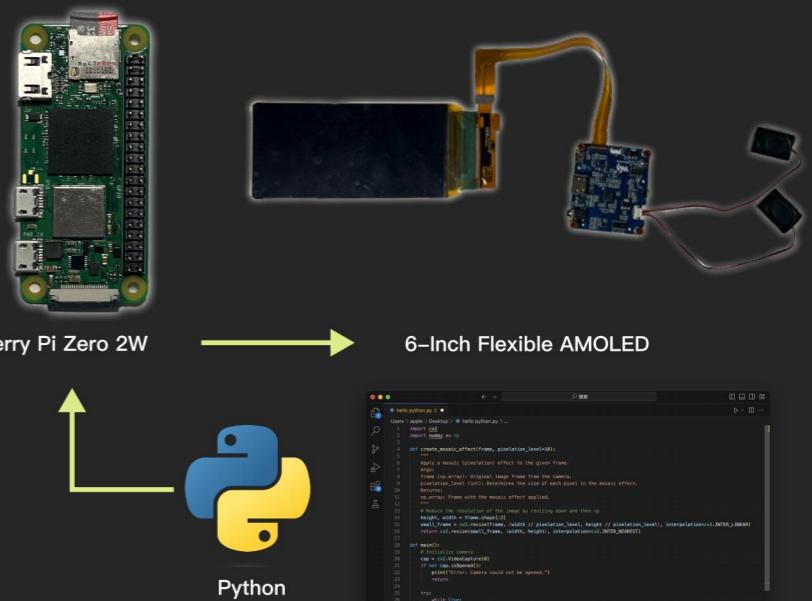
QI LEE

- Age/Identifying Gender
22/Female
- Location
Wuhan, CN
- Occupation
Design researcher
- MBTI
INTJ





SCREEN EXPLODED VIEW



Raspberry Pi Zero 2W

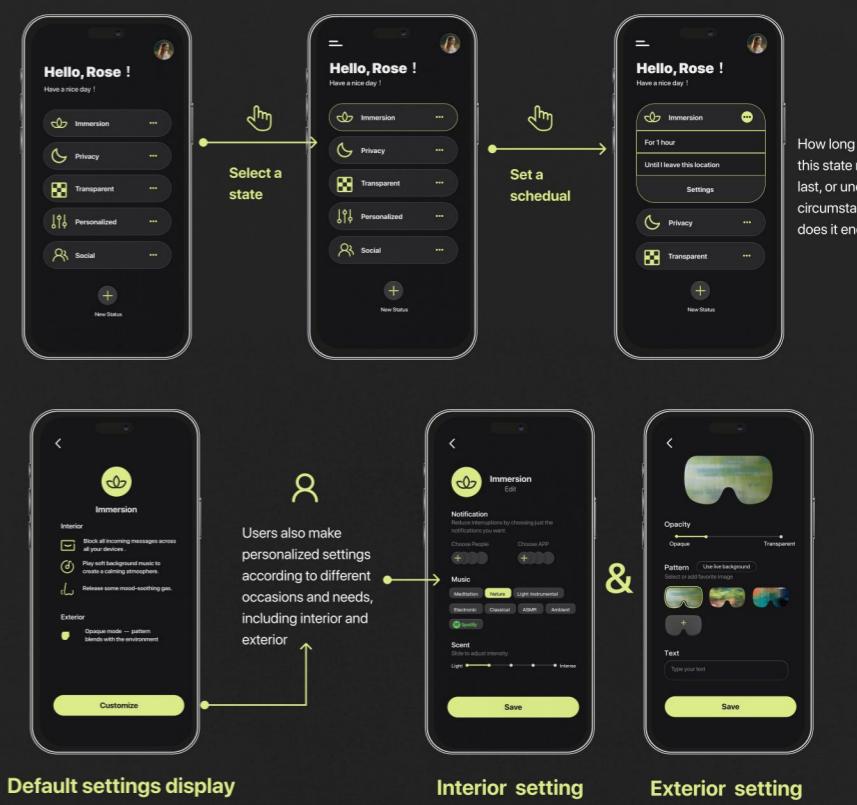
6-Inch Flexible AMOLED

Python

SCENARIO



APP INTERFACE DESIGN



AI Thrombolytic Assistant

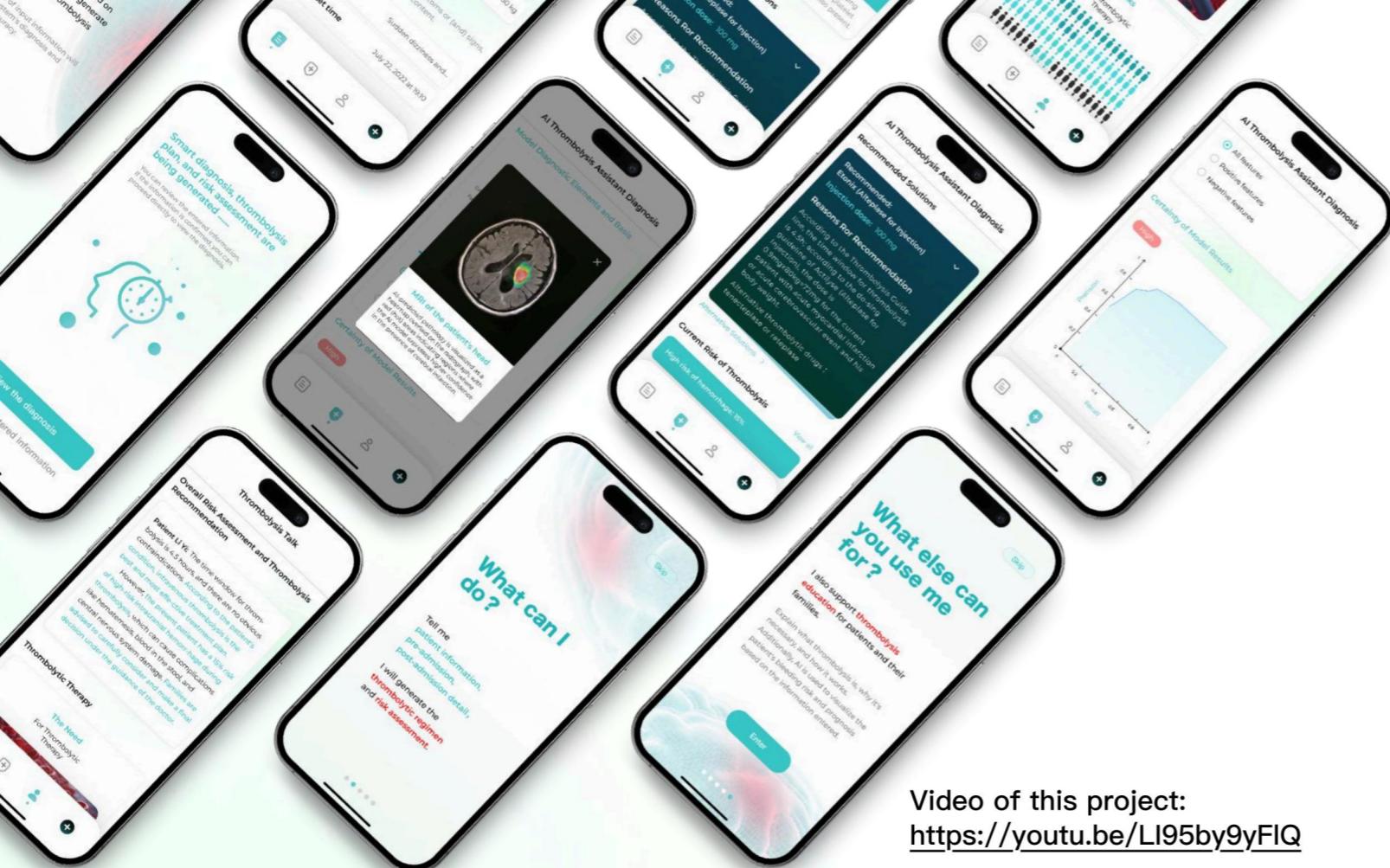
A responsible and trustworthy clinical system

Paper Output Project | Group Project

2022.12-2023.02

My Role :

- Preliminary Research
- Design Specification
- High-Fidelity Prototypes
- Competition Video



Video of this project:
<https://youtu.be/LI95by9yFIQ>

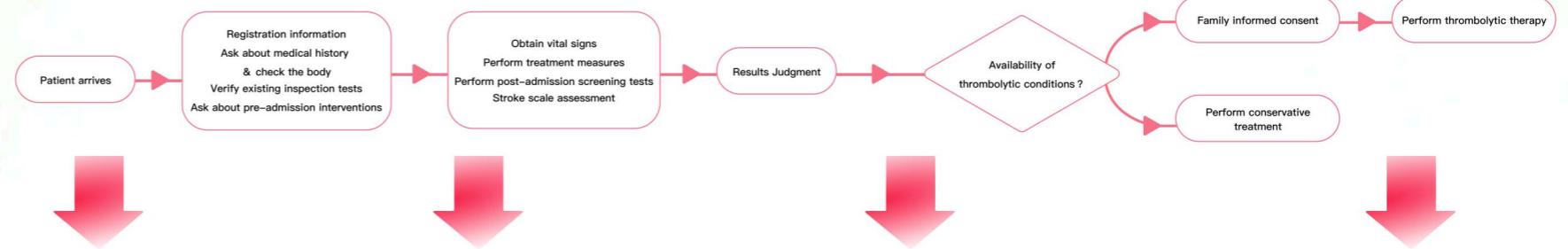
AI-CDSS Design Guidelines and Practice Verification

<https://doi.org/10.1080/10447318.2023.2235882>

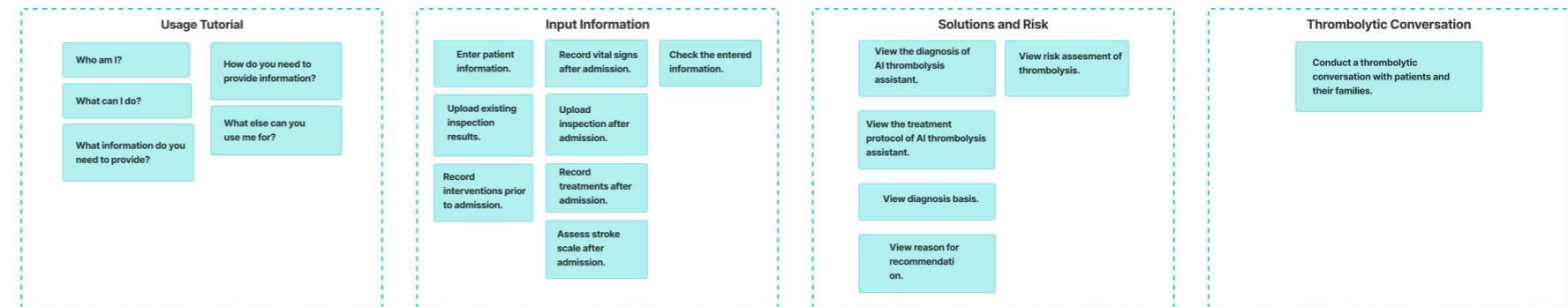


Received 02 Dec 2022, Accepted 07 Jul 2023,
Published online: 21 Jul 2023

Clinical Workflow

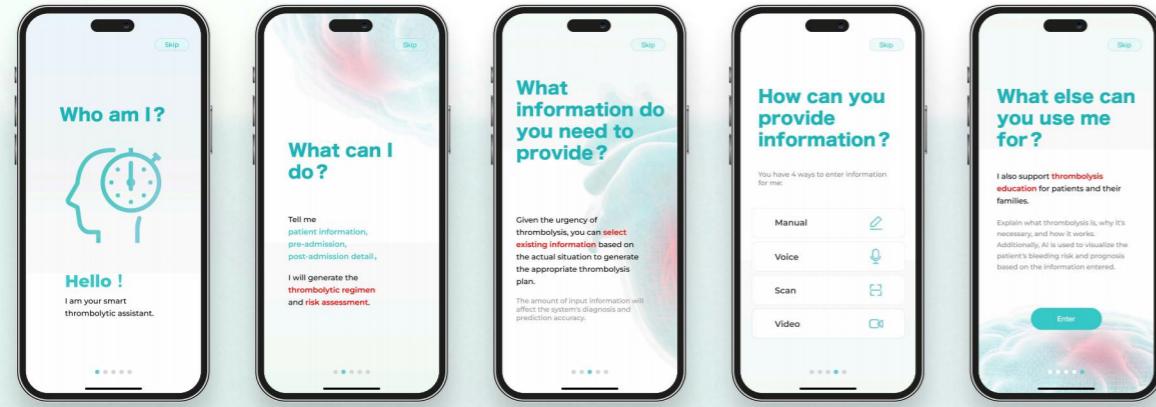


AI Assistant Information Architecture



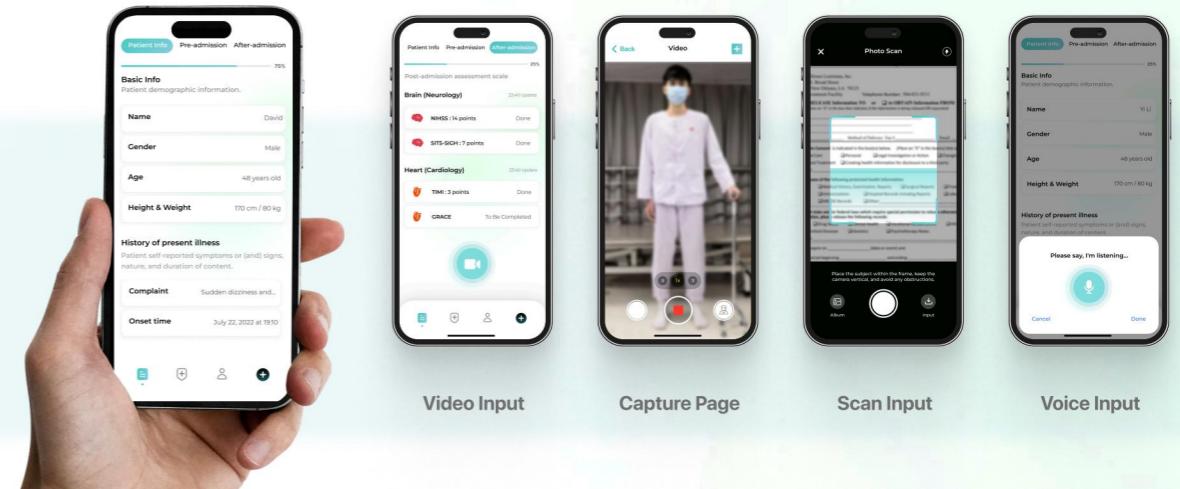
01 Tutorial

When using the app for the first time, the guide will humanize the navigation of use, learn how to operate it, and clearly inform the system functions, advantages and limitations in order to enhance the efficiency and accuracy of the doctor's use.



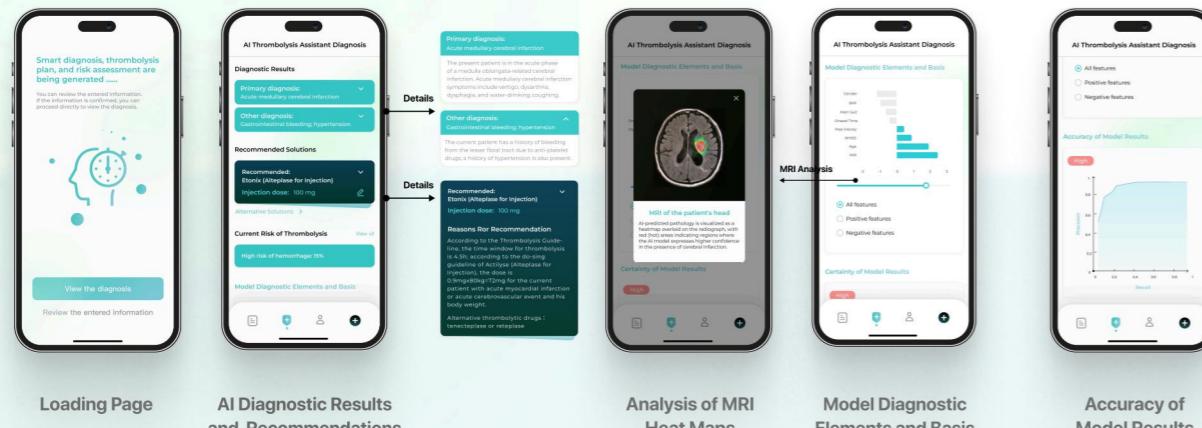
02 Multimodal Inputs

The Information Input Page offers multiple input methods to meet diverse needs, simplifying the process of patient data entry. Additionally, a progress bar has been added to facilitate real-time tracking of data entry completion.



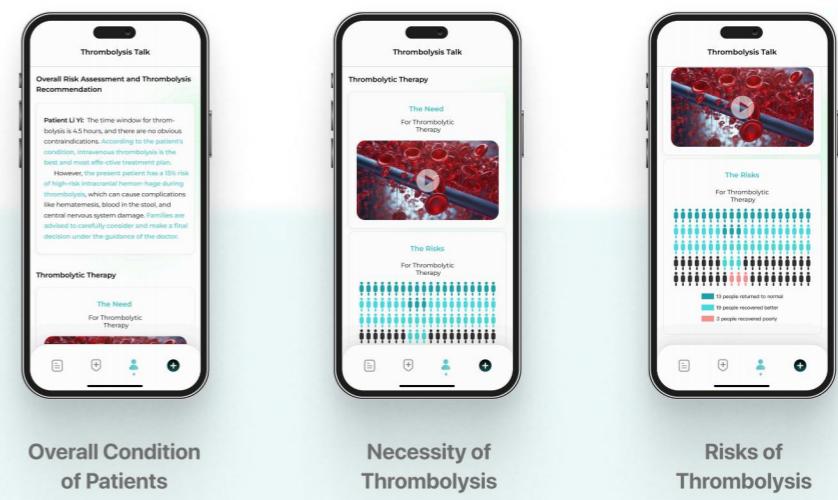
03 Solutions and Risks

When presenting treatment options and associated risks, we not only inform users about the available choices and assess the risks but also provide detailed explanations, including the factors and rationale behind the system's current diagnosis, the model's accuracy, and the confidence level of the results. This approach enhances the system's transparency and makes it easier to understand.



04 Thrombolytic talk

In the final link of the real clinical workflow, doctors need to conduct thrombolytic talks with patients or their families to obtain informed consent. Our AI system uses visualization to intuitively explain the necessity and risks of thrombolysis to patients, which not only facilitates doctors, but also protects the right to know and decision-making of stakeholders affected by artificial intelligence results, such as patients.



Source Dream

We don't create dreams / we are just guardians of dreams



Award Project | Group Project

2024.06-2024.08

My Role :

- User, Market Research
- Strategic Planning
- Clear Business Model
- Interface Design



01 Background Introduction

Wonders of the Future World

In the future, humanity will enter the era of space exploration. During long journeys, we will spend significant time in suspended animation, and countless dreams will arise during these periods of temporary consciousness.

In such moments, will we find ourselves lonely and confused, facing the vast and mysterious depths of the universe? At the same time, we encounter similar questions today:

Blurry and Fleeting Memories

We dream every day, yet our memories of dreams are often vague, and sometimes we aren't even aware that we had a dream.

The Impulse to Share

When we have an interesting dream, we often feel an urge to share it. But who is willing to listen? What are other people's dreams like?

Different Ways to Experience

Beyond verbal communication, could there be deeper ways to experience dreams?

Dream Interpretation

What do our dreams ultimately signify? Could they offer us insights or assistance in other fields?

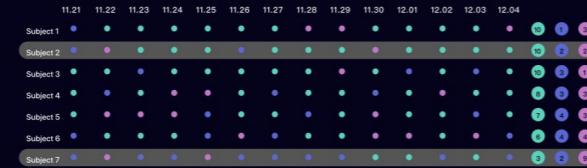
Can we unconsciously record and archive our dreams?

Could we analyze dreams to make friends, or embark on adventures in the world of dreams...

02 User Research

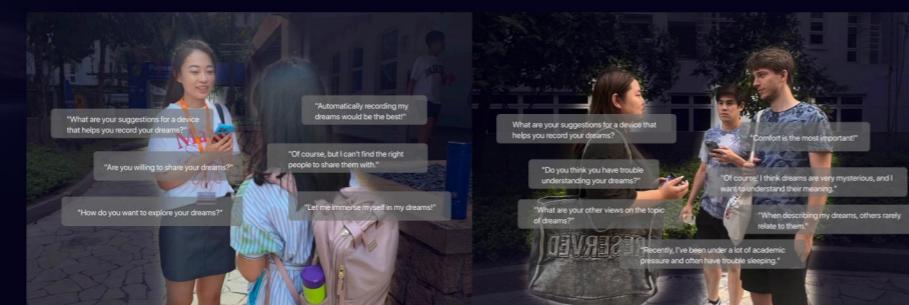
EXPERIMENT AND TESTING

Daily dream recording was conducted on seven test subjects over a period of 14 days. Data was statistically analyzed, and two representative test subjects were selected for experimental interviews.



EXPERIMENTAL INTERVIEWS

One-on-one interviews were conducted with two participants: one with the highest number of dream memory losses and blurry memories, and the other with the highest number of clear dream memories.



PERSONA



03 Market Research

Physical product

Brand	Positioning	Function	Advantages	Weaknesses
BrainCo	Brainwave Intelligent Sleep Instrument	Multi-soundwave sleep aid, Sleep state visualized feedback	Diverse sleep aid types	Lacks dream recording and imaging functionality
NeuroSky	Consciousness Wave Moving Headband	Can display people's dream scenarios as continuous moving images	Can restore original dream images of individuals	Extremely high cost, lacks sleep aid functionality
MindWave	Brainwave Square Earphones	Controls games	Lightweight and comfortable to wear, Magnetic design allows detachable and modular structure design	Design unsuitable for wearing during sleep

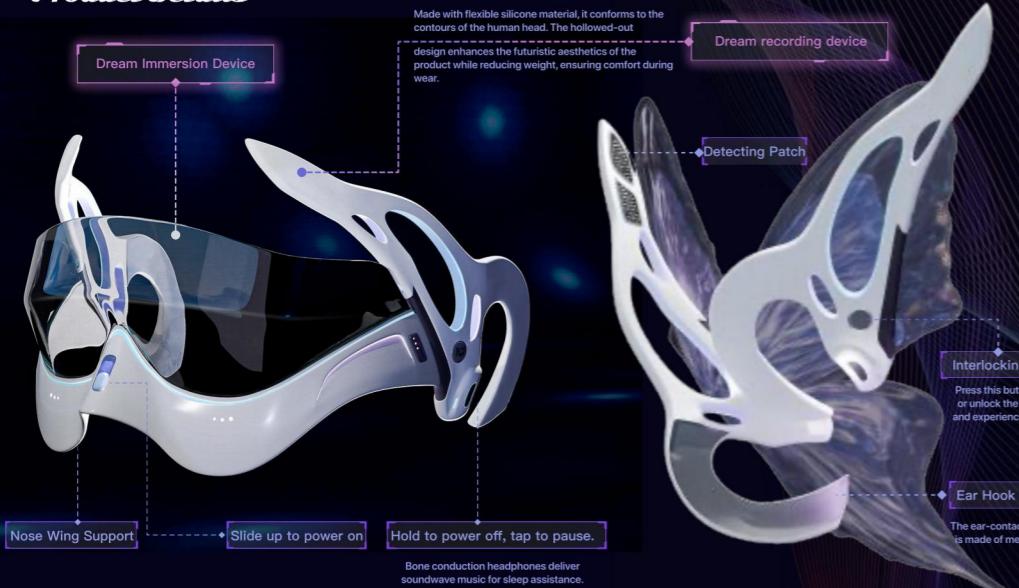
APP

Brand	Positioning	Function	Advantages	Weaknesses
Dreamland	Personal Dream Recording	Statistics on dreams, identifying recurring patterns	Can generate dream information statistics	The page design is relatively plain.
DREAMO	Scientific And Fun Sleep Induction	Scientific sleep aid, providing a dream-sharing platform	Game mechanics attract users, with engaging and fun IP character designs	Lacks scientific analysis of dream content.
SKY			The visuals in the game are full of artistic expression and fine details, immersing players as if they are in a fairytale world.	

SUMMARY

From the current market research, in-depth exploration and attention to the dream world remain insufficient, making it a largely untapped field. We can seize this opportunity to fill the market gap while considering user engagement and retention, as well as the objectivity and playability of dream analysis. This approach aims to increase people's interest and focus on dreams.

04 Product Details



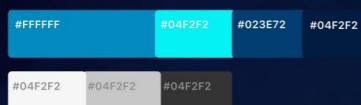
Daydreamer Instrument wearable device

- Three-View Drawing



05 Platform Interface

- COLOR SCHEME



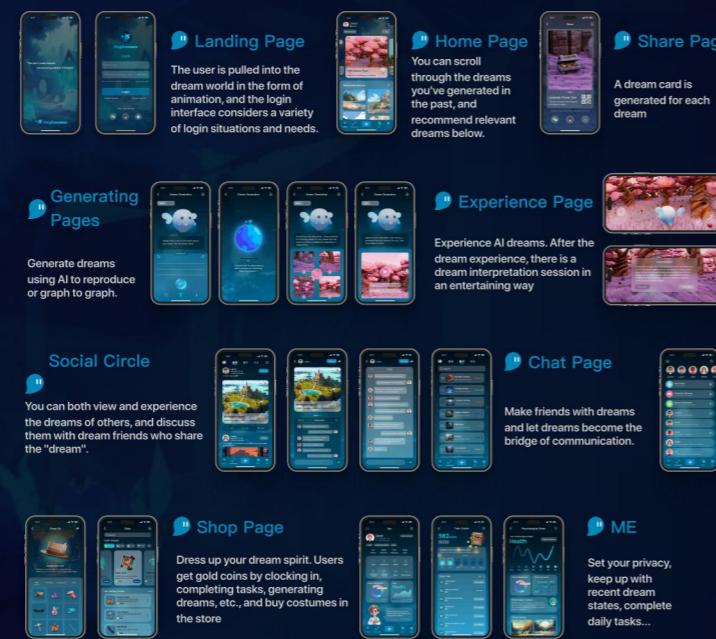
- ICON SCHEME



- TYPOGRAPHY

SF Pro	26pt	Heavy	Main Title
SF Pro	24pt	Semibold	Primary Title
SF Pro	22pt	Medium	Secondary Title
SF Pro	20pt	Medium	Body Text
SF Pro	16pt	Medium	Hint Text
SF Pro	14pt	Medium	Label
SF Pro	12pt	Regular	Small Label

Daydreamer platform



06 Example of a Dream Scene



Various dream scenarios were modeled and rendered as simulations, provided for reference purposes.

07 Project Summary

Future Plan Overview

As dream recording technology matures, the Daydreamer Instrument wearable device gradually replaces the Daydreamer platform, providing users with a better experience.



The discovery of new materials in the future breathes new life into the Daydreamer Instrument wearable device. High flexibility ensures a better fit for each user's facial contours, while lightweight design makes it more suitable for sleepwear.

Value Benefits

Make dreams no longer mysterious, bringing them into the public eye. Turn dreams into a new form of social interaction. Integrate dreams into people's daily lives. Use dreams to heal the soul.

Value Benefits

- Use dream analysis technology to intervene and treat psychological issues.
- Reduce the occurrence of mental health disorders.
- Provide inspiration for visual arts or other fields.
- Collect various dream scenarios to build a dream resource database.