VRENT: a new interactive & immersive rental space experience

Wenhan Lin
wl6425@rit.edu

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VRENT
a new interactive & immersive rental space experience

A Thesis Submitted in Partial Fulfilment of the Requirements for the Degree of Master of Fine Arts in Visual Communication Design

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Wenhan Lin

Thesis Documentation for the Master of Fine Arts Degree
Rochester Institute of Technology
College of Imaging Arts & Sciences
Visual Communication Design
THESIS APPROVALS

Chief Advisor: Daniel Deluna
Associate Professor, School of Design
College of Imaging Arts And Sciences

Signature of Chief Advisor, Daniel Deluna   Date

Associate Advisor: Chris Jackson
Professor, School of Design
College of Imaging Arts And Sciences

Signature of Chief Advisor, Chris Jackson   Date

Chief Advisor: Shaun Foster
Associate Professor, School of Design
College of Imaging Arts And Sciences

Signature of Chief Advisor, Shaun Foster   Date

Thesis Candidate: Wenhan Lin
Visual Communication Design, School of Design
College of Imaging Arts And Sciences

Signature of Thesis Candidate, Wenhan Lin   Date
According to the National Center for Educational Statistics, there are more than 18.2 million college students in the United States, including both out-of-state students and international students (Drew, 2013). While trying to find a space to live is a difficult process for anyone, it is especially painful for international students. Housing agencies are also tasked with providing accurate information to potential tenants coming from different cultural backgrounds, which can be challenging on their part. This project sought to not only solve this problem, but also enhance the experience of house-hunting for international students.

The overall purpose of this project was to solve this problem by exploring different ways to enhance the house hunting experience so target audiences can easily find a rental space and have a better understanding of the scope of the space. Aside from this, this project also explored how design and technology can solve the painful problems users face in their real lives.

This thesis project covered various aspects of the design process from research and analysis to user surveys. This thesis also covered various forms of design ideation, such as wireframing and storyboarding. This project aimed to integrate user experience (UX) methods, user interfaces (UI), and virtual reality technology to create an interactive and immersive experience.

**KEYWORDS:** User experience, rental space, remote users, international students, customization, virtual reality, information, immersive, living condition, diverse, interaction, home, technology, brand, logotype, language, Google search, communication, country, motion graphic, experience map, unit systems
How might technology be utilized as a tool to help solve a problem in real life that allow individuals to easily find a rental space with a better understanding of the space?

This project explored building an easily accessible platform to allow students to experience and customize a rental space in an immersive manner without financial outlay.

Virtual reality has seen many incarnations over the past twenty years (Andre, 2014). Recently, it is finally moving from early adopters toward more mainstream consumers, due to its unlimited potential in various applications, including real estate, and its growing acceptance as a useful tool. Virtual reality is gradually entering real estate as brokerages, especially those high-end properties (Sisson, 2016). These high-end real estate companies that want to venture into VR can hire virtual reality studios to help them to provide a fully immersive experience for their customers, which may help them sell properties at a higher price. Virtual reality should be used as a useful tool to benefit people.

Students in need should have opportunities to take advantage of the cutting edge technology to help them better understand a rental space.
Virtual reality has proven to be a valuable tool within numerous industries, aside from the gaming and entertainment industry; it can also be used to drive sales in the real estate market (Sisson, 2016). In the current housing market, high-end property sellers are starting to provide virtual tours to their prospective buyers. These tours allow potential buyers to experience the property virtually without having to physically be there in person. Housing agencies also use these virtual tours as a sales tool to keep prices high. But the question is, do most of these high-end property buyers need the virtual tour?

Virtual reality has been developing for over twenty years now (Andre, 2014) and it is time to put it into action and cement it as a tool in everyday living. Simultaneously, it is also important to keep in mind which audience would most benefit from the application of virtual reality technologies. So, what group of users need a virtual experience to help them experience residential spaces?

According to the National Center for Educational Statics, more than 18.2 million students enroll in college each year in the United States, including out-of-state students, international students and professors (Drew, 2013). These professors and international students often only stay in a certain city while working or attending school. But for students coming from abroad, their only option is to use limited online resources, such as Google, to find housing options.

In addition to finding housing, rental properties require background checks and a signed lease a few months before the lease starts. This means that these students and professors need to select their desired housing well in advance, which may force them to take a risk by remotely signing a lease with an unfamiliar housing agency. Additionally, language barriers and time zone differences make it harder for international students to travel and visit the property in person. An alternative method involves talking to tenants who currently live in the area, but this forces students to blindly trust the tenant. And, often times these international students and professors fall victim to deceiving tenants who try to sublease their property by providing false information.
3 Reasons WebVR Is The Future of Virtual Reality

In this article, the author discussed the latest update iterations of virtual reality devices released by different companies as well as why he considers WebVR to be the next big thing in the near future. He explained how WebVR can enable cross-platform compatibility to allow users to experience virtual tours almost instantaneously.
https://uploadvr.com/3-reasons-webvr-future-virtual-reality/

Customize Your Virtual Home With Holos From Turning VR

This article focused on TurningVR, a customizable alternative to the static home spaces of VR headsets. The author stated that while the hub is still in its early stages of development, TurningVR is quickly adding more and more features to its platform.

4 Reasons Every UX Designer Should Get Into VR

In this article, the author stressed the importance of thinking beyond the screen when it comes to UI/UX design. The author declared that UX designers shouldn’t write off virtual and augmented reality as a passing craze. This author also discussed how these technologies are adding another layer of interaction to mobile apps.
http://blog.proto.io/4-reasons-every-ux-designer-get-virtual-augmented-reality/

The iOS App Marketing Strategy Guide

While there are already millions of mobile apps available, more and more are being shipped each day. This guide is the ultimate tool to teach developers what they need to know about launching and marketing an iPhone App, including how to differentiate their app from the competition.
http://www.apptamin.com/blog/app-marketing-strategy/
**LITERATURE REVIEW**

**Designing For Emotions**

Cipon Vibor  
July 2015

This article argued that the Internet is no longer a rational space driven by facts and reality. It went on to explain how designing experiences with a focus on emotions allows businesses to elevate their designs. It also mentioned several techniques to design for emotion.

http://www.uxpassion.com/blog/designing-for-emotions-ux-design-principles/

**Improving UI Design Through Better Typography**

Bahat  
Sep 2015

This article described how effective design and good typography go hand in hand. It also explained how a good designer should treat text in user interface design, and it included several tips to improve typography.

http://www.awwwards.com/improving-ui-design-through-better-typography.html

**A New Dimension in Home Buying**

Miller Jennifer  
Feb 2016

In this article, the author shared how virtual reality is expected to transform the real estate industry, by making the house-hunting process more efficient. The article also mentioned several existing real estate housing agencies that currently provide virtual tours. All the features available with virtual tours, consumers are increasingly drawn towards 3D walkthrough capabilities.

http://www.nytimes.com/2016/02/14/realestate/virtual-reality-to-sell-homes.html?_r=0

**Selling The Future**

Sisson Patrick  
Feb 2016

This article discussed how virtual reality technologies are gaining more mainstream acceptance, and how it has become a key sales tool for tech firms and realtors.

LITERATURE REVIEW

Motion Design is the Future of UI

The author of this article believed that motion design is the future of UI design because of its ability to communicate a story. He discussed the importance of creating a motion language that positively affects UI design by reinforcing spatial relations, helping users confirm actions and hide perceived latency.
https://blog.prototypr.io/motion-design-is-the-future-of-ui-fc83ce55c02f#.ud9ot8hw8

UX Design is About Usability

This article discussed how designing user experiences is more than just making a product usable, it’s about allowing users to easily accomplish their goals. An effective user experience should be pleasurable, thoughtfully crafted, and immersive. The author also makes it a point to state the differences between UX and UI designers.

UI Design vs UX Design

A common mistake is the misunderstanding between UI design and UX design. The author of this article explained the difference between these UI and UX design, and also emphasizes the importance of differentiating both in order to fully polish a design.
https://opusonline.co/user-interface-design-vs-user-experience-design/

Usability Testing: Don’t guess, Test

This article explained the common misconception that users are just as interested in design practices and technologies as designers are. The author discussed the importance of usability testing and how it benefits designers.
http://www.uxbooth.com/articles/usability-testing-dont-guess-test/
In conclusion, international students and professors would benefit tremendously from using virtual reality to experience residential spaces. They serve as the target audience for this application developed through this project.

Several pain points exist in the real estate industry.

- Online pictures do not offer enough information about the actual units
- Inaccurate and out-of-date information may be provided online
- Current tenants may get annoyed by repeat requests for house showings.
- Difficulty remembering the details of different units
- Potential tenants expect to see as many available units as possible

With all of this in mind, there is a huge demand to provide an easily accessible method that would allow for international students or professors to accurately experience rental properties.

Another major issue that cannot be overlooked has to do with providing accurate information. As different countries use various systems of measurement, currencies, and even bed sizes, it’s important to keep in mind how to best present the right information to the user.

Currently, most rental agencies only provide photos and floor maps to show properties. With only these to rely on before signing a lease, potential tenants are unable to get a clear picture of the space and may even be confused by unclear information.

As their time in a certain city is limited, most international students and workers try to spend as little money on furniture and accessories as possible, especially if they need to sell these items once they’re finished with school or work. But maintaining a budget does not mean they have to live in an less-than-desirable space with cheap furniture. In fact, with the platform developed for this project, users can not only customize spaces but also manage their budget for the space. Doing so helps users develop a clearer vision for the future living space.
The research focus of this project covered an assortment of topics that would provide strong support for any design decisions. Most of the sources were found online and have been published in recent months or the past few years. Research topics included virtual reality, user experience, usability testing, application marketing, etc.

**VR Headsets: Real Estate Game Changer?**

Melissa Dittmann Tracey  
March 2016

This article explored the endless potential of virtual reality applications in the future. One such use case is in real estate. Most notably, the article explained how virtual reality gives users a visceral feeling of being in a certain location.


**VR for good**

Oculus Blog  
May 2016

This article discussed how virtual reality should not be limited to the gaming or entertainment industry as it could serve as a powerful way to drive social change. This non-profit site developed by Microsoft and Facebook aims to help students build VR projects that focus on social initiatives.


**11 Reasons why virtual reality isn’t just for gaming**

You Visit  
April 2016

This article focused on how virtual reality can impact other industries besides the entertainment industry. In this article, the author approached this topic from eleven different viewpoints.

http://blog.youvisit.com/11-virtual-reality-applications
AN EFFECTIVE DESIGN REQUIRES COMMUNICATING ACCURATE INFORMATION IN ORDER TO SOLVE THE PRECISE PROBLEMS THAT USERS HAVE. CURRENTLY, SELECTING A LIVING SPACE IS SEEN TO BE AN ANNOYING PROCESS ONE IN WHICH ACCURATE INFORMATION IS HARD TO COME BY. THIS THESIS PROJECT IS AN EASY-TO-USE DESIGN SOLUTION THAT ENHANCES THE HOUSE HUNTING PROCESS BY PROVIDING ACCURATE INFORMATION IN AN INTERACTIVE AND IMMERSIVE MANNER.

INFORMATION ACCURACY

COMMUNICATING ACCURATE INFORMATION TO USERS IS THE FOUNDATION FOR THIS DESIGN SOLUTION. AT ITS CORE, THIS APPLICATION EMPHASIZES TRANSPARENCY BETWEEN POTENTIAL TENANTS AND HOUSING AGENCIES.

THIS APPLICATION PROVIDES INFORMATION ABOUT VARIOUS ASPECTS OF A LIVING SPACE, SUCH AS THE FLOOR MAP, AMENITIES, UTILITIES COST, AND DEPOSIT PAYMENTS. THIS APPLICATION PUSHES HOUSING AGENCIES TO PROVIDE SPECIFIC INFORMATION TO ANY POTENTIAL TENANTS AS HOUSE HUNTERS DESERVE TO HAVE A SOLID UNDERSTANDING OF A LIVING SPACE AND CLEAR EXPECTATIONS FOR THE HOUSING AGENCY. WITH ACCURATE INFORMATION BEING CLEARLY DISPLAYED, USERS WILL BE ABLE TO COMPARE DIFFERENT UNITS FROM A VARIETY OF HOUSING AGENCIES.

ALTHOUGH THIS APPLICATION IS NOT A PART OF THE HOUSING APPLICATION PROCESS, IT RESERVES THE RIGHT TO REMOVE ANY HOUSING AGENCY FROM ITS DATABASE IF FALSE INFORMATION IS REPORTED AND CONFIRMED.

IT IS ALSO WORTH NOTING THAT DIFFERENT UNITS OF MEASUREMENTS ARE USED AROUND THE WORLD DUE TO THE PREVALENCE OF BOTH THE METRIC SYSTEM AND THE U.S. CUSTOMARY SYSTEM. BOTH SYSTEMS FOLLOW DIFFERENT UNITS FOR MEASURING A VARIETY OF METRICS, SUCH AS MASS, DISTANCE, WEATHER, ETC. INFORMATION PERTAINING TO THESE METRICS SHOULD BE AVAILABLE TO USERS WHO ARE MORE COMFORTABLE WITH OTHER METRICS.
The world “usability” has become a buzzword commonly used for products that work better for their target users, allowing these users to easily accomplish their goals. While usability is an important aspect of this application as well, this application also focuses on providing a meaningful experience that is effective, efficient, and delightful to the user.

It is critical to define any tasks from user’s perspective. Usability testing has been and will be used throughout the development process in various stages, from initial prototyping and wireframing, to creating the final interactive prototype. The testing group, which is reflective of the application’s target users, has been and will continue to be tested in a variety of ways.

Clarity, defined as the perception or understanding a user has when completing a task, is one of the design drives for this application. This application is designed to be as user friendly as possible to ensure that users have a clear understanding of where they currently are in the application’s task flow, as well as how to move forward or backward.

This application is also packed with powerful features all designed to enhance the user experience. These additional features do not compromise usability as they are intuitive to use. These additional capabilities will be user tested before the final model of the app is launched. Afterwards, they will be continuously evaluated based on user feedback and reviews.
Design decisions were made based on a specific audience that comes from a different cultural background and is remotely seeking an affordable living space without physically being there.

This thesis project was centered on remote users, (international student and professors). The most representative age-range varies from 18 - 35 years old.

This project offered value to these target audiences by helping them find a desired living space in an interactive and immersive way.

**INTERNATIONAL STUDENTS / PROFESSORS**

- Young generations (20 - 28 Years old)
- Attending university outside of their home country
- Seeking for a temporary space to stay
- Has a set budget to work within
**USER CASES**

**PERSONA ONE**

**Mindset**
“I am going to the University of Rochester for an MBA degree this upcoming spring. I want to be fully independent! I need to know how much exactly I have to spend on tuition fees, living expense, and rent. I prefer to live off campus, but I'm not sure where to find information since I don’t know anyone in the area.”

**Need**
“I need an easy way to find all the housing agencies in the Rochester area. It's important that the information I get is accurate, but I also want to be able to quickly compare different properties whenever I want.”

**Confidence to choose housing**

![Confidence to choose housing](image)

**PERSONA TWO**

**Mindset**
“I have decided to take an offer from the Georgia Institute of Technology, but I am not sure if Atlanta is the right place for me. So, I'd prefer to live in a rental apartment first. Even though it is a rental, I want it to feel like home. I can afford to buy new furniture, but I don’t want to spend too much in case I leave Atlanta within the next couple of years.”

**Need**
“I want to be able to customize my place, but I need to get a better understanding of how much I might spend on furniture. In order to do that, I need to fully understand how much space I have and how the layout flows.”

**Confidence to choose housing**

![Confidence to choose housing](image)
Based on the user cases, the above graphic illustrates what and how user may expect to interact with the application. The process allows for the exploration of different user scenarios and user needs and wants.
INTERVIEW QUESTIONS:

- Gender, Age, Nationality, Occupation
- Where do you live now (on campus housing or off campus)?
- Why did you choose an on-campus building or an off-campus building?
- How did you find your current housing?
- Do you know of any existing house-hunting solutions?
- Can you rank, in terms of the priority, the following factors that need to be considered when you searching for a rental property?
  1. Distance
  2. Rent cost
  3. Transportation
  4. Condition
  5. Neighborhood
  6. Amenity
  7. Pets Allowance
- What’s your confidence level to when renting an apartment?
- What unit system is used in your home country?
- Are time zones an issue when trying to contact rental agencies?
- How many properties do you expect to see in order to make final a decision?
- Do you prefer to see the rental property before making a decision?
- Is there anything stopping you from seeing the house in person? If so, what?
- Do you trust online pictures?
Based on the user journey map and on-line/in-person interviews, the above graph shows how user may interact with the application and the emotion(s) they would experience while interacting with the application during the entire house-hunting experience.

Experience mapping helped to get a better understanding of user struggles and points of confusion.
Interview questions were sent to both current students and incoming students. These two target audiences provide different perspectives when collecting feedback/data. Below are some highlights from interviews that impacted design decisions.

- “I just want to know how much money I need to pay my rent”
- “What size bed mattress should I get?”
- “How far is it from campus to the house?”
- “What are the transportation options I can take to campus?”
- “I use a totally different metric system back at home, I have no clue about inches and feet.”
- “Can I trust all the information my landlord gave me?”
- “What is the best way to reach out to my landlord?”
- “I need to know how much do I have to pay out of the pocket”
- “Can I choose my preferred unit of measurement?”
- “I want to use the map view to help me understand what grocery stores are near the house?”
- “I want to be able to check the status of the application?”
- “I need to see the reviews from previous tenants”

......
PAIN POINTS

Based on the situation analysis and the feedback from interviews, there are many common issues in the house-hunting process. Those pain points made huge contributions toward some design decisions.

FOR TENANTS

• 8.2 million international students enroll in college in the United State each year, and most of them stated that house hunting is a challenge for them

• These students only want to stay for a temporary period. Renting a space is basically the only solution for them.

• These students have access to very limited information and heavily rely on searching the Internet using Google, which is banned in some countries.

• They have to take a risk signing the lease ahead of time without seeing the space in person, because of the application process.

FOR LANDLORDS

• On-line pictures are not always an accurate representation of the actual rental unit.

• Current landlord annoyed by repeat requests for house showings to potential tenants.

• To answer the same questions over and over again.

• Because tenants want to see as many available units as possible, landlords have to schedule a lot of time to show multiple units.
Paper prototyping was one of the most important techniques adopted for rapid testing during the project. This process consisted of creating rough drawings of user interfaces which allowed for quick design and testing in order to get some initial feedback.

Paper prototyping isn’t just about creating quick designs. Since they are rough sketches on paper, it allows users to focus on evaluating the user flow without getting distracted by any design elements. This process made huge contributions to refine the flow chart.
The above graphic illustrates how the users might interact with the application from launching the app, exploring content and eventually achieve their mission. This flow chart also provided guidelines for the next steps.

This flow chart has been built and curated for better user experiences based on previous research and analysis in order to meet user needs and wants.
WIREFRAMES/ITERATIONS

Previous Iteration:

![Home Page Before](image7)

![LogIn Before](image8)

Design Decision:

![Home Page After](image9)

![LogIn After](image10)

Concerns:

1. There weren’t many descriptions in the on-boarding cards to actually educate users which made the cards useless.

2. There were too many steps to go through during the onboarding and login stages/phases

3. There is no need to allow users to skip the log in screen.

Solutions:

Combined both on-boarding cards and log in screen to simplify the on-boarding process. Also, added descriptions with updated graphics to educate users more about the application.
Concerns:
1. The header took up a lot of space for no reason.
2. Users were overwhelmed with information and the pictures.
3. Users expected to only see the information they cared about.

Solutions:
Redesigned new user interface to help users browse available apartments. They could see the most valuable information to them directly underneath the images. They were also able to save the unit to view again.
Concerns:

1. The close button was confusing.
2. Users expected the header to remind them which step/phase-stage they were at/in.
3. Users expected to swipe left and right to see different units.

Solutions:

Added two cards on both of the left and right side to give users a sneak peek, so they could slide the cards. Users could also slide the notch down to browse units on the map, so they can have a better understanding of the unit in terms of the location.
Concerns:

1. There were way too many features and information on one screen.
2. It was really hard to look on both side of small devices.
3. User experience was confusing

Solutions:

Reimagined the whole user experience flow to make it easier to use. Users chose a room to enter before they started customizing. Once they selected a room, they were able to see the floormap with dimensions.

Simplifying the interaction helped users focus on the current screen.
Previous Iteration:

![Decor page before](image1)
![Product info before](image2)

Design Decision:

![Decor page after](image3)
![Product info after](image4)

**Concerns:**

1. No quick selection for categories.
2. The image of the product was a bit small.

**Solutions:**

Added category selection on the top of the screen. Users could choose one category to narrow down the furniture selection. The size of product images were also increased for easier to view.

Users also could rotate the product to view the different angles of the products.
The design decision was made based on three keywords. It was very important to think about how colors should be used to communicate with users, since colors are one of the very first and straightforward visual elements users see.

YOUNG

First of all, the app was designed to deliver user experiences for students or young professors from 20-35 years old. So the first keyword is “Young”.

BRIGHT

This application was designed to deliver a message that is bold, brilliant, vivid. It enhances the brand image that this application is easy and fun to use.

VIBRANT

The application was intended to integrate the most advanced technology into the user experience. The application should perceived as fresh and vibrant to users.

COLOR PALETTE

- **Blue**
  - R: 46
  - G: 90
  - B: 239

- **Red**
  - R: 253
  - G: 109
  - B: 234

- **Yellow**
  - R: 255
  - G: 201
  - B: 113
Throughout this project, many typefaces were explored to find the best one to match the user experience. One of the most important factors aside from readability was a wide variety of weights. The variety of weights allows better hierarchy and layout, which helps users understand the different use of information and buttons.

Cantarell was used throughout the whole mobile application. Cantarell is a contemporary, humanist, sans serif which is designed for digital screens; in particular, reading on cheap devices.

CANTARELL

Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz

Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz
The logotype was inspired by the following keywords to help the application maintain consistent design concepts.

- Dimension
- Destination
- Arrival
- Travel
- Satisfaction
- Depth
Figure 26: iOS Homepage

Figure 27: App in App store
Throughout this project, many design tools were used to create and implement the user interface design, prototypes and motion graphic videos.

Adobe Illustrator
- Icons design
- Logo design
- Illustration design
- Motion graphic layer design

Adobe XD
- User interface design
- Interactive prototype

After Effects
- Motion graphic design

MAYA
- 3D Model (Used for motion graphic)
- Animation design
ON-BOARDING CARDS

On-boarding cards were added before users tested the app because user onboarding is a great chance to educate users highlighted features.

Also, using a limited number of onboarding cards, users can learn how to use the app with as little learning curve as possible. The components of each card were consisted of a header, a brief description and a graphic. Also, each card began with a rounded edge on the left and ended with a rounded edge on the right to indicate to users where the card started and ended.
When users decided to choose to log in, the on-boarding cards shrunked to half size. Users can still swipe cards to swipe between different cards. Users can either choose to sign in with their favorite social media account or they sign up to get a new account.
The above screens are search result screens. Users can easily get information including the available apartments, rent, pictures and brief descriptions. They can also easily save one of them to favorites by simply tapping the heart icon.

The filter stays on the top of the screen when user to scroll to explore more apartments. They can also change their preferences to get more precise search results by using filters. Users also have the ability to reset all their preferences.
If users saw anything they liked, they could get more detailed information such as the rent cost, amenities, furniture conditions, reviews and floor plan.

Users could save the unit to their favorites by tapping the heart icon. They could also experience the space by tapping the VR button. The “Apply now” feature allowed users to submit their application.

The information for each unit are represented in the card format. Using cards allowed users to easily to swipe left and right to explore other available apartments with similar preferences.
The above screens show how users could customize the space they were interested in. Once they tapped the “Customize” button on the previous screen, they were presented two options 1) View the floor plan or 2) Select a room to customize.

Once a room was selected, the user was directed to the room. Users had the ability to go back to choose a different room, or tap sofa icons to choose furniture. Once they finished, they were able to experience the virtual space by tapping the big VR button.

Users were able to explore furnitures by category such as chairs, sofa, table, etc...
CUSTOMIZATION II

Each furniture has a detailed information page. To keep it simple and useful, only 360 views of the furniture and dimensions were provided to users. Once the furniture was selected, users could move the furniture (highlighted in orange) around to place in the room. Users were also able to view the dimensions while they moved the furniture.

Once users placed the furniture in the room, the color changed from orange to black. If users wanted to edit or change the placement in the space, they could just tap the furniture again. Trash and lock icons popped up on the screen to allow users on the screen allow users to either remove or lock the furniture in place.

Users could constantly save furniture selections and placement when customizing the space. Once they finished, users can start experience the space virtually by tapping the VR button.
The above screens are the loading screens to view the space virtually. The screens turned into landscape view from portrait view so it can used to view to create a more realistic experience. Since virtual reality headsets are required to wear to experience the virtual space.

A common misconception about VR headsets were identified during the interview process. Many users admitted that they thought virtually reality headsets were a high-end technology gadget. In the fact, users can purchase very affordable headsets on-line or print them out from Google.

To address this misconception, the app offered a tip provides a link for make own VR headset.
The above screens are profile settings and edit pages. Users have the ability to upload their profile pictures, add contact information and optimize their preferences.

For instance, interviewees mentioned they were annoyed by the different metric systems used in different areas. They wanted the option to choose the unit system they were most comfortable with.
Users were able to save units to their favorites when browsing the apartment listing. In order to select a saved Favorite to research, users would tap the “saved” icon on the dock.

They were able to browse all saved units and also remove them. The Information including the application deadline was shown to remind users to apply.

Users are also able to see detailed information by dive into one specific unit. They could learn more even including the current tenant reviews to help them have better understanding.
Finding the right space to live is a long and painful process. Time zone differences and language barriers make the communication between landlord and potential tenants even harder. This application provides a solution to solve this problem.

If users feel uncomfortable talking to landlords, they could message the landlord with questions. The orange vertical lines on the left edge of the screen indicate unread messages. User could view unread messages by tapping the “unread” button at the top right of the screen.
Design is not just about how it looks, but also how it works. A interactive prototype was an essential tool that provided an overview of design, interactions and ideas.

After the final design was finished, static screens were transformed into clickable and interactive prototypes for user testing.
USER TESTING

AGENDA

For more accurate user testing results, the interactive prototype was created and shared with 8 target audiences from different cultural backgrounds, including current international students, upcoming international students and professors.

The goal of user testing was to evaluate how well users could navigate the application without any help or instructions. All of the users who were tested were given tasks to complete that included setting up to customization. How much time it took to complete each task was also recorded.

TASK

1. **Walkthrough**
   - On-boarding

2. **Choose location**
   - Start Browsing

3. **Apply Filter with a**
   - $2000 Budget

4. **Select one unit**
   - and check the floorplan

5. **Choose furnitures**
   - to customize

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<th>Color Code</th>
</tr>
</thead>
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</tr>
<tr>
<td>Longer Than 45s</td>
<td>Blue</td>
</tr>
</tbody>
</table>
The tasks given to users were pretty straightforward. They were asked to launch the application, browse different units and customize the space they may interested in.

Most of the users found the application easy to figure out without any further instruction. They were able to easily spot feature and buttons they were looking for.

Overall, the feedbacks from user testing was very positive. Most of the users found the application interesting and attractive to use. They believe the application provided easy access to information in order to find the right rental space for them.
PROMOTE PLAN

LOCALIZATION

Since this project is open to users all over the world, this design solution is easily accessible. It is available on both iOS and Android devices. Localization is an important component to help this design solution be accepted in every country. Localization is about customizing the content to another specific market. This design solution is available in more than 30 languages. Localization is being perceived to build credibility in each country. Also, localization is an easy way to please users. By localizing design solutions in different countries, it builds the relationship between developers and users. In addition, there are various research methods focused on focused on trending interests and trustworthiness. For instance, instead of using Google as main search engine, Baidu is used as the mainstream search engine in China. So investing in Baidu advertisements is considered as an option instead of Google.

GOOGLE AdWords

Using Google is one option for this design solution to be discovered. Also, Google search is measurable, accountable. Using Google, the number of visitors and click percentage can be calculated. It also reaches the right people by providing information this design solution offered. The price tag for Google search ads is based on industry/keywords categories. The most expensive category on Google now is insurance industry, which costs on average $54.00 per click. The average cost per click in Google AdWords is between $1 and $2 on the search network. Based on the amount of international student enrolled in United State each year, it could cost $160,000 if every student clicked the link at least once. Because cost for advertisement is tremendously expensive, this is not considered as the best solution to put advertisements on.
PROMOTE PLAN

iOS APP STORE

Once an app is released, the visibility on the app store very brief. Apple just announced a new paid search option in which the app store would let developers pay for their app to appear alongside related research terms such as weather or puzzle. It also explores how to improve searches for users, making apps easier to find. According to Fiksu research, push an app into US top 25 ranks in the app store can rake up to $200,000 in ad expense. In Canada, it is a bit cheaper at $15,000. Another way to make an app visible in the app store is being featured by Apple’s Editors’ choice. Being featured can be a developer’s jackpot. It could cost developers about $200,000 in marketing to buy as many downloads as they receive from being featured in Apple’s Editors’ choice. This design solution is available in many countries. Because this, too, has such a high cost, this is not an idea solution for this design.

WELCOME PACKAGE

Each year, enrolled students receive a welcome packet with their enrollment letter. In the welcome package, it includes information about the school, the city, transportation, food and other valuable information. School office also wants to help students to find their desired living space. So working with school to promote app to help students deal with Schools want to help students find their desired living space, so working with the school to promote the app is the best solution.
3D MODEL
PROCESS WORK

Figure 62: Building process 1

Figure 63: Building process 2

Figure 64: Building process 3
3D MODEL
PROCESS WORK

Figure 68: Building process 7

Figure 69: Building process 8

Figure 70: Building process 9
MOTION GRAPHIC

Figure 71: First shot of motion

Figure 72: VR reveals

Figure 73: Logo Reveals
Figure 74: Plane symbol

Figure 75: House symbol

Figure 76: First highlight

CUSTOMIZABLE
Figure 77: Second Highlight

Figure 78: Increased Typeface

Figure 79: Second highlight
Figure 80: 3D Space

Figure 81: 3rd highlight

Figure 82: Transitions to next
Figure 83: New Experience

Figure 84: Quick Walkthrough
Figure 85: Browse Units

Figure 86: Apply Filter

Figure 87: Review details
Found anything you like?

Figure 88: Found anything?

like it

Figure 89: Like anything?

SUPER
like it

Figure 90: Super Like
Figure 91: Start customization

Figure 92: Rotating a furniture

Figure 93: Space customization
Figure 94: Put on VR Headset

Figure 95: VR on

Figure 96: Showing space
Figure 97: Dropping phone

Figure 98: Experience ahead

Figure 99: Logo revealed
VIDEO LINK

https://www.youtube.com/watch?v=LrnWFhch_U&t=7s

Figure 100: Screens.
CONTRIBUTION

Design not only about appearance or perfect pixels on the screen. This project integrated one of the most advanced technologies into the design to help international students around the world.

This app was designed to be used by people with different cultural and language backgrounds, and it took a chance to create a universal language that would bridge the gap between different people.

From the very beginning of this project, design was perceived as more than how something is supposed to look, but rather how it should work, solve problems and eventually deliver a delightful user experience.

This project has proven that design can be utilized as a great tool to solve problems users face in daily life with a delightful user experiences.

Technology has always been believed to empower people by offering instant accessibility, and also shapes the society so pervasively. Design has always been believed to be as attractive, creative and delightful. Using design made technology much more humane, accessible, and meaningful.
The whole project started with an existing problem many people are still facing in real life. This project was designed to create an easily accessible platform to help international students to find a living space and experience the space virtually.

This project has involved various research methods to define the existing gap on the market. Interviews, situation analysis and personas helped to identify user’s pain points. Based on the research and analysis, a user journey map was built to create user flow chart. Paper prototypes were used for initial user testing in order to get instant feedback to refine the flow chart and wireframes. In order to build a consistent design language throughout the application, typography, color, and logotype were explored and designed to craft the user interface.

After the final design was finished, static screens were transformed into clickable and interactive prototypes for user testing. A motion graphic video was also made to help users understand why and how to take advantage of the application to help them.

This project built a universal language to bridge the gap between people from different countries.


BIBLIOGRAPHY


