1_Air travel projects

Adaptive furniture

TERMINAL EXPERIENCE THROUGH BODY-CENTRIC MODULAR FURNITURE

Lucy Yip, Poyao Shih, Zhaodi Wang

"We think that under the context of responsive design, a good systemic design focuses on the overall logic and experience journey while body-centric design deals with the intricacies of human-object interaction regarding ergonomics and empathy. The two should echo with each other to fully support a responsive system that connects the user and the environment, such as seating and resting places in an airport.

This is a system of adaptive modular airport furniture allowing the users to explore different interaction possibilities in the airport terminal. Through various combinations and arrangements in pull-outs, heigh change and translucent shielding, individual units may form different functional furnitures with particular usages, inviting the travelers to socialize, work / study, relax, etc."

Air Capsule

AIR CAPSULE. SEAMLESS TRAVEL

Guangyu Du, Shiyi Peng

"Packing for travel can be a hassle. The first time you go to another city in the world, you may find it difficult to predict what is proper to wear for the local weather. When getting ready for a trip in a short time, you may end up taking things that are not necessary but missing something you need. While at the airport the luggage may cause a long line at the security check, or even get lost when arriving at the destination.

The idea of Air Capsule inspects the possibility of lifting these burdens for you by helping you get prepared for a trip. The concept consists of a system that serves as a virtual travel assistant, and a physical package that will be prepared at the place you stay before your arrival. When planning for a trip, the system knows in advance your travel purpose, schedule, and local weather to customize a package that includes beauty & health care, basic outfits, digital products accessories, and souvenir products with local features. If you're traveling to the same city frequently, your package will be stored at a local space while you are home and be shipped to your hotel the next time you are there. Now that the necessities are taken care of, you only need to carry a small bag with you wherever you go."

Environment impact

PROJECT RUNAWAY. THE ENVIRONMENTAL COST OF AIR TRAVEL

Amaya Bravo-France, Colin Chadderton, Erin McLean, Emanuele Sito, and Robert Wang

"As the effects of climate change become more imminent, sustainable consumer choices can have a significant impact on meeting global emission reduction goals. Though air travel is more popular than ever, the vast majority of people in the world have never been on a plane. As that dynamic slowly changes, the environment stands to suffer

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if planes continue to pollute at current levels. By 2035, the International Air Transport Association (IATA) predicts a rise to 7.2 billion air passengers each year. Currently, air travel emissions count for over 2% of CO_2 emissions in the atmosphere, but that number will continue to increase as the number of flights goes up to meet global demand. While advances in technology that will reduce pollution are possible, consumer demand is an important aspect of this transition to a cleaner air travel future. While more and more individuals are demanding stricter environmental protections and innovations in sustainability technologies, very few people are aware of the intensely-polluting affects of travelling by plane. While air travel will inevitably continue to be an important part of life in the 21st century, raising awareness about the effects of flying can help reduce the number of flights people choose to take, encourage travelers to pursue cleaner travel options, and put pressure on the aviation and regulation industries to improve the environmental impacts of air travel."

Luggage

AR LUGGAGE TRACKING KNOW THE LOCATION OF YOUR BAGS AT ALL TIMES

Nicolas Ayoub, Romy El Sayah, Jackson Howell

Lost luggage is a constant source of anxiety for us travelers. Separated from our valuables, we have no choice but to place total trust in unknown agents operating in an opaque system. In fact, the system is fairly effective, but still we worry.

What if there was a soft solution, a way to mitigate anxiety by providing a greater sense of transparency and control over the process? Visualization is power.

Research
The threat of lost baggage can be a painful source of anxiety when travelling. However, despite increases in passenger growth rates, the rate of mishandled luggage has been decreasing dramatically over the past 12 years, and is expected to decrease even further thanks to stricter policy instituted in 2018. The next step in improving the user-experience is psychological, mitigating anxiety though giving users a feeling of control and transparency.

Ideation
The first iteration focused on augmenting existing RFID tracking systems. Some airlines already use RFID technology with an app that notifies a user's phone at key stages of the baggage journey. We propose two visual augmentations: first, a gamification of the baggage journey and, second, an AR experience that helps identify a user's belongings at baggage claim by projecting an avatar of their choice on their tagged bags.

Pop-up

BERGAMO TAKE-AWAY. BG AIRPORT POP-UP STORE

Sara Conti, Giulia Rondi, Silvia Sardella

The BUSINESS IDEA emerged from the analysis of the negative relationship between communities who live close to secondary airports and the airport. Small cities populations do not enjoy the presence of tourists who use secondary airports to travel, since they do not profit directly and concretely from its presence. The airport contributes only partially to better the local economy and the wealth fare citizenship. This intolerance is fed by the increase of pollution, noises and traffic.

The OBJECTIVE of our project work is promoting small cities tourism where secondary airports are located, focusing on the typical features which make these cities unique: folklore, food, landscapes, music and fashion. One of the possible solutions could be introducing a POP-UP STORE in each secondary airport where local goods are sold and the surrounding environment is advertised. This temporary shop will be located in the luggage claim area and in the gate area, in order to attract both the incoming and outgoing passengers.

Bergamo is a city in the center of Lombardy region and it is close to Milan and the Dolomites, thus it enjoys of a strategic position in north of Italy. Milan Bergamo airport is a secondary airport located in Bergamo and it is the third most important Italian airport considering the total amount of passengers. The city of Bergamo and its surrounding area has a huge loss of money, because passengers just land in Bergamo due to low cost carriers (such as Ryanair) without visiting the territory and moving towards more known destinations such as Milan or the Lakes nearby. Travelers do not know that Bergamo offers all what they could desire: mountains, outdoor sports/activities, lakes, good food and art.

Responsive terminal

USE PATTERN DATA: RESPONSIVE BUILDING PROGRAMMING. AIR TRAVEL REASEARCH STREAM

Matthew Pugh

Because of its piecemeal development process, western airport infrastructure in particular has unique problems with travelers navigating complex and unfamiliar environments that often lack space to accommodate their full traveler loads.
As air travel journalist Patrick Sisson describes, "The long lifespan of many U.S. airports, and the wide acceptance of flight as a regular mode of travel, has turned formerly glamorous airports into overloaded, everyday infrastructure that wasn't meant to handle the increasing number of passengers, bags, and flights required by the growth of modern aviation. The response, more often than not, has been a patchwork of expansions and additions, instead of a wholesale overhaul or redesign."

Some designers, however, are considering news sensor-based, adaptive programming technologies to retrofit these undersize and incoherent western airport design with flexible, reprogrammable space and AR navigation tools (above right). These navigation tools are interesting in that they create large amount s of use-pattern data that could be taken advantage of by airport operators, including data on the number of passengers, type of desired activity, layover time, and common circulation routes.

Assuming a near-future scenario where Assuming a near-future scenario where these types of navigational tools become ubiquitous in airports, operator will have new access to large amounts of real-time information on how activity types and space demands change over the course of a day. Airports designed with multifunctional, adaptive, and responsive spaces could flexibly reprogram in response to these changes in space demands, creating a smoother and more enjoyable air travel experience.

Three program types best suited to flexible redistribution (waiting area, retail, food service) are selected and mapped out in Chicago O'Hare's Terminal 2. This project analyzes the distribution of these program types relative to their highest demand at peaks hours – demands which the current, inflexible airport simply cannot accommodate. Finally, sections of the airport are redesigned as speculative "responsive programming spaces". Both their distribution in the building and the design of the building and the design of their flexibly adapt to the needs and program loading of its customers at any point in the day, creating more enjoyable air terminal experience.

Security

AIRPORT SECURITY CHECKPOINT. ENHANCING THE PERCEPTION OF TIME

Srividya A.S, Aarushi Juyal

What are the primordial pain points that passengers experience during the security process and how might they be addressed to enhance the emotional journey of the passengers.

How might spatial representation impact the passenger's perception and experience of the airport? What are the factors that contribute to the negative and stressful experience of wait lines?

What are the Psycho-social repercussions of security bottlenecks?

Understanding the dynamics of passenger satisfaction is critical since the ultimate success of new screening procedures (from a customer service perspective) and the financial viability of the airline industry will be affected.

It is crucial to investigate the factors that significantly affect overall passenger satisfaction with security screening procedures, and to assess how this satisfaction has changed over time—presumably in response to changes in screening procedures and changes in passenger tastes and expectations. "Often the psychology of queuing is more important than the statistics of the wait itself."

THE PSYCHOLOGY OF SECURITY

• Security is both a feeling and a reality.

• Subjective versus Objective Experience of Security

• The 'Reality' part of the security process can be calculated mathematically.

• People are likely to exaggerate risks which are personally or morally offensive to them over risks which actually cause a threat.

Risk Perception: Exaggerate personal threats against actual.

Traces

1. a mark, object, or other indication of the existence or passing of something.

2. every small quantity, especially one too small to be accurately measured.

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3. a procedure to investigate the source of something , such as the place from which a telephone call was made, or the origin of an error in a computer program.

4. NORTH AMERICAN • WEST INDIAN: a beaten path or small road; a track.

Walkways

THE EPHEMERAL WALKWAY: IMBUING PLAYFUL SOUNDSCAPES INTO EVERYDAY AIR TRAVEL

Sinan Goral, Isa He, Ting Liang

This project sought to accomplish three tasks. First, it tried to study the etymology of our chosen terms (longevity and ephemerality) and visualize them in the surrounding environment. Second, it made an attempt to brainstorm potential airport applications and explore the studied terms in action.

Finally, it endeavored to suggest a final intervention relating to the airport setting. The design proposal took inspiration from the poetics of the moving walkway - something we inhabit in both a stationary and active way - and augmented the experience through motion sensors that trigger ephemeral and playful soundscapes with passerby. Both rushed and leisurely travelers can activate speakers that react to their respective movements.

The project acknowledges the multiple personalities and traveler bios that might exist in an airport setting. While some travelers may be rushed and not cognizant of playful sounds, others could be quite interested if they are already leisurely. We would hope that the playfullness of the intervention would slow people down during their commute, without being too didactic in the process.

Wayfinding

AIRPORT WAYFINDING. INTUITIVE NAVIGATION

Andrea Saccogna, Agnish Dhar

Navigation in airports has always been one of the most annoying problem both to the passengers and to the airports authorities. People waste an enormous amount of time finding their way to the gates or to the services that they're looking for. Every airport accommodates daily passengers with a large range of prior experience, from frequent flyers, to passengers who fly every couple of years, to those who have never flown before.

In this problematic scenario, how can we make wayfinding in airports smooth, fast and customized? All around the world airports are adopting a various solution, both technological and spacial: apps, info panels, bluetooth beacons. Even if some of that ideas are actually improving wayfinding, how to get from home to the gate is still a problematic issues for most of passengers.

To understand how to reach more satisfying actions, it's fundamental to understand how people navigate inside and outside the airport, and what they feel about existing way-finding strategies. Surveys and case studies have shown that the passenger strategy depends mostly on the familiarity with flying.

The challenge of future navigation is to create a steamless platform that can guide you, both online and offline, throug your entire journey, exploiting different instruments.

2_Urban mobility projects

Bike add-ons

BLUE BIKES ADD-ONS. A MODULAR SYSTEM FOR VARIOUS URBAN NEEDS

Nicolas Ayoub, Romy El Sayah, Jackson Howell

The Blue Bikes have experienced great success in many cities throughout the world. We want to leverage this success by extending the program and taking it a step further. What if the Blue Bike model was augmented beyond a means of urban mobility, becoming capable of satisfying other requirements of daily urban life be it business or pleasure? Here we imagine what that might look like in the form of various extensions.

RESEARCH This project was inspired by our visit to Milan where we saw someone precariously riding a city bike with one hand while dragging a suitcase on wheels alongside their bike with the other hand. He needed a trailer! Our initial research discovered several well-executed precedents, even including finished prototypes. We found this encouraging, indicating demand for the concept. With this in mind we began thinking of how to take the idea even further.

IDEATION We began our brainstorming session with a focus on the most practical applications of the concept. We thought of attachments that would satisfy additional transportation and cargo needs, like rickshaws, baby seats and trailers. Later, we pushed the limits of the concept by imagining more abstract needs with technical components and potential revenue streams for users. For example, what if a user could attach a mower and earn money for every mile of lawn?

Geo-social

SUNDAY AFTERNOON FIND FRIENDS ON THE WAY

Guangyu Du, Shiyi Peng

Is apartment building designed to discourage your interaction with neighbors? Probably since the time when you move in a downtown building, you have yet to exchange more than a "hello" with people who live on either side of you. For being so packed full of life, a modern city block can be one of the loneliest places on earth. However, skyscrapers are not the only killer of geo-location based social activities, digital networking is also producing more provincialism than did the geographical confinement it supposedly transcended. Map, Recommending and Rating apps will never tell you whether your neighbor also want to watch that movie this Sunday afternoon, so that you may lose the chance of going together.

Urban mobility is a trip/journey to fulfill some needs. For us, the thing that matters is not the physical move from one point to another, but why/when/where/with whom you want to make that move. Imagine that many of us are going to George RR Martin's author event this afternoon, we took the same train and bus, get off at the same stop,

wouldn't it be great if the silent awkward ride is turned into an enjoyable chat on our favorite books? Communication make us closer, from strangers to friends, but the lack of geo-location-based communication channels has prevented this transformation to happen. Although privacy is a concern for most urban dwellers, we still want to propose a system that uses real-time geo-location information to help us find each other and share the journey.

Muun

M.U.U.N: URBAN MOBILITY x EXPERIENCE

Lucy Yip

M.U.U.N brings people and cities together to implement an integrated, tangible system promoting urban mobility, public engagement and sustainable tech, aiming towards a cleaner, more collaborative and decentralized solution to current urban issues.

Currently, the speculated future is one where urbanization and globalization focus on proposing engineered responsive systems based on data mining and real-time updated optimizations in many different aspects of the city's operational system. Yet, these systems are not only overly optimistic but also they neglected the core that is supposed to be behind their design, which is people's intuitions and feelings when interacting with the city that defines their lives.

M.U.U.N is a mobile, signal deposition charging station in the form of a moon, allowing people to push / kick / roll it around to suit their independent connectivity needs. It promotes the idea of communal engagement / support and renewable energy / sustainability. It is an interactive approach to extend urban mobility and connectivity.

O2 bike

HEALTHY CITY | HEALTHY YOU

Vaishnavi Magar

The O2 bike is a bike of the future that helps in purifying the air as you travel. The bikes have plant air purifiers fitted at several places. This uses the capacity of plant itself as well as technology. There are certain plants identifies by NASA plant study that has the capacity to purify certain VOC's in the air. Some of these plants are identified here.

The bike has two other digital technology aspect. The first one links your burned calorie amount to the amount of air purification that has been done. This displays on the wrist band. The second aspect is similar to an uber app. The service has the capacity to understand your routing based on the air purification in the environment. If path A has 30% vocs pulled out the app you tell you to choose path B which has only 4% vocs pulled out.

Thus by keeping yourself healthy you are also making your city healthy - an even better reason to now bike your way!

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OnboardX

ON BOARD EXPERIENCE

Cindy Xiao, Wen Wang, Lance Lu

Use of air travel has greatly increased in recent decades - worldwide it doubled between the mid- 1980s and the year 2000. The evolution of long-distance travel shifted from walking, carriage, to bus, train, and international travel: cruise and air travel. Nowadays, over 4 billion passengers choose flying as their primal means of long-distance travel. The air industry has been developed for decades, passengers are spending less time and cost on the flight, but the user experiences have not been improved since a long time ago.

During a long time flight, the in-flight activities are very limited compared to other transportations. When you are in the air, the only activities are: Eating, Sleeping, Talking, Or shaking with turbulence After years of developments, the pioneers of air travel industry have developed a conservative and yet most economical way for the passengers to temporarily escape from the physical boundary of the flight by installing a display on the back of each seat with certain primitive functions.

Play table

USING IMMERSIVE MEDIA AND GAMIFICATION TO TEST MOBILITY

Sinan Goral, Bobby Wang

This project sought to accomplish two tasks. First, it tried to explore specific mobility issues and construct equally specific narratives surrounding them. Finally, it attempted to post-rationalize from these case studies and suggest more basic frameworks for mobility to suggest a final and generalized prototype relating to mobility.

The final game took inspiration from two highly theoretical narratives, both of which explored details associated with competition, attraction, and repulsion. From these narratives, we extrapolated a more generalized and basic gaming framework.

3_Retail environments projects

AR Bookstore

GHOST BOOKSTORE AR HYBRID SPACE

Guangyu Du, Shiyi Peng

Bookstores are like your second homes, where you are welcomed to explore, ponder and linger for hours. However, the booming of online retail and express delivery in China is killing independent bookstores: Wind in Pine, One Way Street, Jifeng ... many local favorites in Beijing and Shanghai have shut down recently because of low-profit margin and expensive real estate. The death of independent bookstores manifests not only the loss of third spaces but also the vulnerability of urban identity, memories and social connections. The time when we lost the physical spaces, we

also lost the chance for meeting and exchanging ideas with other like-minded individuals, or making personal contacts with booksellers, who have joy in matching us with good books.

What if we combine online retail with the feeling of brick-and-mortar? By creating hybrid spaces, we can make more profit. We envision AR Ghost Bookstore layers that live on existing stores. Beyond regular store hours, AR books on storefronts are available for scan and purchase. Within regular store hours, AR bookshelves inside existing stores become community anchors where there are geolocation-based book previews and cultural events. Books will be delivered to you directly or sent to your digital devices collaborated with Abebooks/Amazon. With less onsite inventory, more customized content, we can still keep the flavors of different independent bookstores.

Dynamic retail

USE PATTERN DATA: RESPONSIVE FURNITURE. LAYOUT RETAIL RESEARCH STREAM

Matthew Pugh

Compared to online shopping experiences, physical retail stores present a static, single experience at all times of the day for all user groups. Store layouts have minor changes every few weeks and major seasonal changes, but little day-to-day and no user-by-user customization. Online shopping experiences, on the other hand, are extremely customized -- every user's amazon page, for example, is highly tailored to his or her preferences and web navigation patterns. Online retailers can accomplish this with data-driven techniques for recording how users mouse over, click through, and visually look at the webpage.

Interestingly, some pilot retail stores (such as "zippin" and "amazon go") suggest the possibility that physical retailers could soon generate and respond to similar types of use-pattern data as online retailers have been utilizing for the past 15 years. Given that these sensor-laden retail stores will soon have access to a similar level of user data as online shopping, how could this data be leveraged to create more customized, adaptive experiences over the course of a day, better responding to different user group's shopping needs and preferences?

This project draws from online retail data collection concepts such as "dwell time" and "conversion rate" to imagine new types of visualization for physical retail stores. Without changing the general design aesthetic or branding of the store, sensors are discretely gridded into the ceiling and used to create heatmaps of dwell time, purchase conversion, and other forms of customer use-pattern data.

These mappings have the potential to inform constant re-organizing of the store with robotic furniture (similar to the robotic warehouse shelves already in use in Amazon warehouses). Such a reorganization is tested below, where the experience of the store changes to reflect different general customer preferences over the course of a day.

Self-driving

RETAIL IN MOTION. RETHINKING URBAN SPACE WITH SELF-DRIVING RETAIL SPACE

Poyao Shih, Zhaodi Wang, Matt Pugh

Developing cities often have large amounts of unused "junk spaces" and inflexible building programming that limits the street's ability to change over time. Some recent trends in cities like Los Angeles show a strong desire for more

flexible, spontaneous, and changing urban conditions, such as the rising popularity of pop-up stores, farmer's markets, and food trucks. How could urban environments respond to and encourage this more flexible, spontaneous urban character?

This proposal imagines a more flexible, responsive, and adaptive city that uses autonomous vehicle technology to move mobile stores in the city. The flexibility of these self-driving retail spaces allow them to occupy underutilized "junk spaces" in the city and allow the experience of the city street to constantly change, creating a streetscape experience that better responds to urban resident's constantly changing needs.

The self-driving retail concept is tested in three different types of urban space. First, the vehicles are imagined occupying empty spaces around infrastructure, creating a retail experience similar to that of a food truck. Second, they are tested in underutilized alleys between buildings or empty lots, creating a retail experience similar to that of a pop-up shop. Finally, they are imagined in a concept for a new type of architecture tailor-made to accomodate these self-driving stores, creating an urban experience similar to that of a farmer's market.

Store window

SHOP ME FAÇADE. INTERACTIVE SHOPPING SCREEN

Vaishnavi Magar

In a row of shop along a street or a mall, how do you decide which store to step into? How can the shop increase its retail by pulling in additional customers just through its appearance or rather storefront? This project uses interactive technology to pull in customers and help increase the profits of a store. Often times there are great items in a store which remain unseen due to its poor branding or additional efforts to attract a customer.

Imagine while walking down a shopping street in your casuals you look at a reflective surface that projects a beautiful dress on you. You are immediately drawn to visit inside the store. Moreover if the surface displays the actual price and then shows you the discounted prices you are guaranteed to visit the store. This is the technology that this project proposes for the future of retail.

Unicart

UNI-CART. A LOCATION BASED SHOPPING APP TO PROMOTE LOCAL BRANDS

Cindy Xiao, Wen Wang, Lance Lu

Uni-Cart is a whole new way of combing online and offline shopping experience. By categorizing the local boutique stores and many convenience stores to the online database, the user can easily navigate the item that he/she wants and able to secure and pickup within an hour. It is a great way of finding something that you need in hurry and save you hours for figuring out the right route to do the shopping.

In addition, the Uni-Cart provides the possibility for local shops to be rediscovered and expose to the public more by using our inventory system. Uploading the inventories in the system, the algorithm with a push notification to whom that may express the interest before. Using Uni-Cart can give local shop and local convenient store another chance to compete with the e-commerce giant, Amazon.

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