ROVAR: Authentic Travel Leveraging Local Social Media

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ROVAR
Authentic Travel Leveraging Local Social Media
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A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Fine Arts in Visual Communication Design

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Abstract

In our era of constant technological development and an intricate network of information exchange, people tend to rely on online sources for their travels more and more. But because of the time crunch, people travel in, many places of authentic value go unnoticed. Take the ramen shop in Sankri, at the foothills of the Siwalik ranges of the Himalayas for example. It was here that I had one of the most authentic ramen noodles at a small little quaint shop which used hill spices to give it a unique flavor. This store was nowhere on the map, and if I had not stumbled upon it by mistake, I would have never had that experience which was truly authentic to that place. Many such sites are overshadowed by the commercial nature of travel currently present.

The travel and tourism industry are one of the largest industries in the United States, making a total contribution of 1.5 trillion U.S. dollars to GDP in 2015. The industry was forecasted to contribute more than 2.6 trillion U.S. dollars by 2027. The most popular vacation type for U.S. travelers was beach vacations in 2017, followed by all-inclusive packages. This commercial nature of tourism, places of authentic value tend to get lost, and people fail to have the local experience.

There are many travel guide websites and applications which give useful search results for different places to visit. Yelp, TripAdvisor, Bookings.com, and much more. But most of the time they do not accurately offer the most authentic locations in a place, and it does not put you in touch with the local culture. Airbnb does a better job at this by helping travelers meet the local residents and stay at their place as a rent-paying guest. This can include the travelers in the local culture.

My thesis explores the interaction methods involved in providing users with an authentic experience while leveraging local social media to bring local gems i.e., places that have an authentic value on the map and give a chance to the travelers at a truly authentic travel experience.

Travelers will be continuously notified of the local gems when they are near one using geofencing technology and augmented reality, so they don’t miss out on anything that borders being authentic to a region. They will also have an opportunity to contribute to the travel community and build their credibility as a traveler, by marking new places they discover, rate and even collect places that other travelers have marked. This application aspires to bring the joy and serendipity of discovery in the form of a mobile application.
Introduction

The sense of adventure and serendipity associated with discovery is a priceless outcome of travel. I began my research by trying to find out if this was a problem worth solving. With my research, I found out that there is a strong drive for it in the millennial generation and there were many causes to why authenticity in travel was so hard to achieve. The whole concept of authenticity in experiences has blurred lines. Authenticity is subjective. What might be authentic to you might not be my idea of authenticity at all.

As an approach to solving this problem, I decided that there is only one set of people who can decide on a broader term what is authentic to the region in question. Those are the locals. The residents of the area who have been living there for a considerable time forming a part of the community and culture, form the basis for defining what is truly authentic. Applications such as Google Local Guides already takes local knowledge into account and leverages it to make Google map systems better. They consider locals as their primary audience and have modeled the interaction model around locals.

Application platforms like Yelp and TripAdvisor, although targeted toward travelers more than locals, do not take serendipity into consideration in their interaction models. My thesis is about designing an interaction model that incorporates serendipity while allowing the locals to be the penultimate judge in selecting authentic experiences or "local gems" which the travelers should have.

How to help millennials leverage local knowledge to get an authentic experience and the serendipity accompanied by discovering new experiences?
Context

What is authentic travel?

It is my understanding that a journey is comprised of many experiences. It is the quality of these experiences that define the quality of travel. If somehow these experiences could be verified for authenticity, we can be sure that the experience the traveler would have is as authentic as it can get.

My initial understanding was that if we are to say something is authentic to a region, then it must have originated in the region. And my task was to define an interaction model that could help travelers reach these experiences. But cultural diversity developed by constant immigration of mankind to places has caused cultural influences between different areas of our planet. This fact contradicted my understanding since these cultural influences now define the lifestyle of the people living there. The food, the clothing and even the way people build homes in an area, are all influenced by people living both inside and outside the area.

Justin Francis, CEO of the www.responsibletravel.com website writes about authentic travel as,

“When you read more about human psychology you learn about the ‘protected self’ – the barriers we create and use to hide our hopes, fears, and insecurities from others. The ‘unprotected self’ reveals the soul and is authentic. What can we learn from this in tourism? Do the places and people that reveal most of their souls, who act in an unprotected way, appear the most authentic? I think perhaps they do because they reveal a truth about themselves.”

We feel that we have had an authentic experience as travelers when we have an emotional connection to the place. The way to give travelers an opportunity to feel like this would be to help the place open up to them. When the people of a place open their hearts and treat travelers as their own and incorporate them into their culture, then the experience can be truly authentic for the travelers. I feel there cannot be anything more authentic than the local residents who form a part of the culture themselves.

75% of the millennial generation want to walk in the shoes of the local (Millennial study by Airbnb). In a survey conducted by Forbes, in 2016, revealed that this generation is no longer seeking a commercial atmosphere when traveling, and instead wants to fully immerse themselves into new cultures, and feast on local cuisine. In fact, of the group surveyed, experiencing a new culture (86%) and eating local foods (69%) were listed as common determining factors for motivating people aged 18 to 24 to travel -- ahead of partying (44%) and shopping (28%).

The demographics of my target audience that is millennial travelers are as follows: 94% were between 18-30 years of age. 98% of younger generations ranked ‘eating local cuisine’ as something that was very important. 88% of them traveled overseas between one and three times a year.
With this research in mind, I came up with a persona for my decision-making process. The persona took into account the typical mindset of the millennial traveler. The travel and tourism industry is already catering to the needs of those wishing for authentic travel. Since authentic travel is a blurry area, they decide to let the travelers define their idea of authenticity and curate the package in that way. This was an interesting approach because even though the traveler is choosing what kind of experiences they should have, the kind of experiences they have was decided by the travel agencies leveraging local knowledge. Thereby verifying it’s authenticity.

So all of my research led to me believing that the locals were the key. I need to let the locals have the last say in defining if a particular experience is authentic i.e a part of their daily routine or culture.
Gathering the Research

Since the target audience was between 20 and 30 years of age, I did not have to limit myself to simpler technologies.

First Thoughts

Broadly speaking there are two ends to the spectrum of technological constraints. One is a metropolitan jungle where along with access to all available technology along with a variety of experiences that can be deemed authentic, the other end of the spectrum is Sankri, where technology is not as efficient and the internet not so reliable. I decided to go with establishing a middle ground. I decided to solve for a place with a higher number of experiences to choose from because,

- Larger audience
- Minimal technology constraints
- Greater challenge to verify authentic value over other experiences
- It would be easier to extend this solution to remote areas than the reverse process

Here are a few of my learnings, assumptions, and considerations before I began to ideate on an interaction model

Learnings

- Locals are the main judge of what is authentic or special about their hometown
- Many solutions exist for this problem but none that encompasses serendipity
- Augmented reality has a lot of potential with respect to the gamification of the whole process

Assumptions

- There is already a database of authentic places created by travel influencers and locals of a community that the platform leverages to enable this interaction model
- The user has seamless connectivity in most areas they travel (or close by)

Considerations

- There is anxiety involved in choosing a new place to visit
- There is anxiety involved in the course of the journey while traveling to a place
- There is a sense of motivation that needs to drive travelers to choose authentic places over packaged tours and chains.
Users

The demographics of my target audience that is millennial travelers are as follows.

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- 98% of younger generations ranked ‘eating local cuisine’ as something that was very important.
- 88% of them traveled overseas between one and three times a year.

With this research in mind, I came up with a persona for my decision-making process. The persona took into account the typical mindset of the millennial traveler.

The millennial travelers love to immerse themselves in the culture of the locals. A sense of spontaneity and a sense of adventure is given importance for a more wholesome experience. Time is of the essence and the travelers need to have immediate access to relevant information about places of authentic value. Commercial destinations are less prioritized over local gems. Local cosines need to be highlighted over chain restaurants. I needed to consider various technologies that can make this happen to create an experience that captures the sense of serendipity while making the whole experience engaging and fluid.
Technology Considerations

Since the users were constantly traveling, mobility is an essential part of the application. That narrowed down the technical considerations.

Geofencing

Geofencing is the capability of the system to identify and specify location constraints. I looked at https://www.geocaching.com/ which utilizes geofencing to help travelers to physically find and collect caches.

I wanted to use a similar concept to help travelers find authentic places and collect “gems”. Geocaching also enabled users to share their experiences among other travelers thereby getting a sense of accomplishment and developing a sense of unity among travelers which was a keystone concept in this project as well.

Computer Vision

“One of the most interesting uses of computer vision, from an AI standpoint, is image recognition, which gives a machine the ability to interpret the input received through computer vision and categorize what it “sees.”

Computer vision and its capabilities will be a keystone in determining the authenticity of a gem, to prevent duplicates of the same gem in an area, and to pinpoint the AR coordinates of a gem while geofencing.
Augmented reality (AR)

Geofencing and computer vision, can enable the information architecture I had in mind. I chose augmented reality to be the appropriate technology to bind geofencing and computer vision together in the form of an interaction model. Pokémon GO is a great example of an application that combines geofencing and AR.

Geofencing, computer vision, and augmented reality can be used together to create an experience that can achieve the required goal set. Geofencing would be used to determine the proximity of a traveler to a pinned local gem. This change in proximity would be used as a cue to change the experience of the application to provide necessary feedback and draw the user closer. AR creates an immersive experience rather than have the users stare at their phones and miss out on what would be happening around them. AR also has a lot of potentials to make the experience more engaging and gamify the process. Computer vision can be used to handle edge cases and identify pinned gems that are inaccurate. Along with geofencing, computer vision can be used to prevent duplicates of the same gem.

Considering these technologies, paved the way to determine the spectrum of capabilities that the solution can have. This was necessary to keep the solution pragmatic while also ambitious with respect to the interaction model and the overall user experience. With the capabilities of the application in mind, I began my design process ideating and conceptualizing the solution.
Design Process

The design process began with sketches to explore some ways of using augmented reality to gamify the experience of finding local gems. It also served the as a stepping stone for conceptual development early in the process.

Initial Approach

The initial approach was to add places of authentic value on the map. These local gems would be pinned by the locals and the traveler would add only those local gems to the AR screen which they were interested in. There were multiple interaction models to achieving this result. I ideated on a few (fig 2) I thought were appropriate and A/B tested them with potential users.

The response to these designs being compared to Yelp and TripAdvisor, I realized that the user selling point (USP) of this application was to drive emotion and serendipity more than just leveraging the local knowledge. So, the approach to design the interaction model had to be changed altogether.

(fig 2) Initial Concept sketches
Conceptualizing Serendipity

Since serendipity played such a crucial role in the traveler’s experience, I started ideating on a model that would circle around the concept. The second approach was inspired by the first one. I wanted to have the locals plan the trip for the travelers by pinning locations and having only authentic locations on the map. The general approach to my solution had 4 main goals.

- **Local Contribution:** Leverage local knowledge and let the locals pin locations of authentic value.

- **Authentic Locations:** Having only authentic locations on the map and filter out commercial destinations and chains.

- **Serendipity:** Instill a sense of serendipity in the travelers’ experience.

- **Time Saving:** Reduce time to find places of authentic value while the user is on their travels.

A change in the approach, demanded a change in the use case (fig 3). The revised use case took into account the serendipity aspect. The gems would appear on their own. This would be achieved by using a **personified field of vision. A field of 90 degrees would be used to make the gems appear in the direction of movement.**

(fig 3) Final use case
Visualizing Familiarity

As the users collect gems, their familiarity with the place develops. I wanted to capture this phenomenon in the form of interaction.

The initial screen the user would see in a new location that is not their hometown would be desaturated. As the traveler collects gems, the saturation of the screen keeps increasing as demonstrated here.

The screen is desaturated when the traveler has not collected any local gems and continues to saturate with color as they collect some gems.

The increase in saturation levels acts as necessary visual feedback for the users on progressing through collecting gems in a location. This also plays into the gamification aspect of the application and can be used as a motivational element for the users to collect more gems. The saturation level they achieve is non-reversible and will remain the same when they leave and return to the same location. Since every traveler is a local somewhere, the screen saturation is maximum for a traveler when they enter their hometown or city and immediately desaturates when they leave their hometown. Geofencing can be used to achieve this.
Local Gem Movement

Revealing Local Gems

The local gems had to be revealed as the user enters the geofenced radius. The way to reveal these gems was decided after exploring some interaction models and A/B testing them.

Proximity and Direction

The local gems would have to move with proximity and direction to the user’s position. This is a necessary visual feedback for the user since they are staring at the AR screen while in movement.

The ideation for both these processes and the final prototype can be found at the link: https://akshaykumararun.com/revealing-gems?preview_id=2250&preview=true

The final version of the gems appearing with the direction of the user's phone is shown below. The different forms of the gems depend on the proximity of the user to the actual location of the gem. The reason for 3 phases of the gem was to enable display of multiple gems simultaneously while keeping visual clutter to a minimum.
Emotion Driven Design

Rovar the bot is used as an Easter egg feature to drive emotion into the interaction model. Rovar acts as a compass by moving its eyes in the direction of the closest gem, it reacts to gems appearing on the screen with a smile, and clicking on Rovar shows the most likely place a local would visit at that time of day helping the travelers walk in the shoes of the local.

Rovar can both direct users to a gem as well as act as an Easter egg feature for walking in the shoes of a local

Having a UI element that constantly reacts to changes in the interface adds the sense of spontaneity and reinforces the gamification aspect of the application. For solo travelers, this acts as a virtual companion. Having travelers walk in the shoes of the locals helps achieve one of the main reasons for travel for the millennial generation. Driving emotion through reactive cues adds a sense of delight and engagement into the user journey.
Making the Design Comprehensive

Design decisions cannot be forced on the users. There needs to be a way out or an alternate way to accomplish something especially while dealing with an interaction model that is not conventional. So, to make the design more comprehensive, I incorporated a gem list that has filters such as food, adventure, sights etc. that have gems listed from the nearest ones to the farthest at their fingertips.

A list enables users to discover gems all at once

Saving time searching for places of authentic value is one of the main goals of the application. Having a list view helps users view places of authentic value around them all at once and curate their experience accordingly. Although this takes away an aspect of the serendipity, it still makes the design comprehensive targeting the users who are in a time crunch and want less leg work involved. Flexibility to curate the experience is also a great way to render the experience to what their view of authenticity is since authenticity is subjective.
Solving Traveler Anxiety

A map is necessary to keep the design comprehensive. It is also convenient and reduces the traveler’s anxiety in finding places. I wanted the transition from AR to Map screen done with respect to the inclination of the device. My initial approach had a trigger such as a button or a screen itself to go from the AR screen to Map view.

Link to some of my ideation for this process and the final prototype: https://akshaykumararun.com/map-to-ar?preview_id=2253&preview=true

According to my research, people hold their phone to read at a rough angle of 60 degrees from the ground. I leveraged this into my interaction. From the threshold of 90 degrees to 60 degrees, the user would see the AR screen, and then from 60 to 0 degrees, the user would have the map. This also helps save time and helps users curate their experience to their needs while still maintaining the gamification aspect of the experience.
AR Navigation

Travel is more about the journey than the destination. Since transit is a major part of it, AR navigation allows the users to be involved with their surroundings more than staring at a map screen while on the move. While driving, or in transit, the user can see the path they have to travel on being lit. This is also a convention usually followed in AR navigation.

The last stretch of the use case involves legwork. The same concept of being involved with the surroundings is the reason for the AR navigation model. The fact that crowds can pose a problem while walking when the user is staring at the phone is taken into consideration. Since the traveler is walking looking into their screens, the arrows accommodate crowds and adjust to give the direction in which they need to walk.
Collecting Gems

I ideated on the interaction that was affordance as well as a metaphor for collecting gems. The final version of the collecting gems problem has the user matching a silhouette of the gem to the actual AR gem. This solution is pragmatic as the silhouette appears when the gem is in the view of the screen which means no extra interaction, and the solution is easy to implement as well.

The traveler collects the gem by matching the gem shape to the AR gem and receives a pop up for feedback.

Geofencing plays a huge role here in order to identify and change the experience to the “collect mode”. As soon as the augmented gem is in the frame, the experience needs to adapt and ROVAR needs to express delight. Once the gem is collected, the review pop-up can be given when the user leaves the vicinity of the gem. The user also has a chance to share their achievement with others. They can leave a comment or any information that they think might be helpful to other travelers. This helps them contribute and build their credibility as a traveler in the travel community.
Local Contribution

Every traveler is a local somewhere. By taking responsibility as a local, the users can contribute to the application. On the local side of the application, the screen is completely saturated. The gem can be placed on a surface that is stagnant. On placing the gem, the local now adds in the necessary information that should be displayed on the traveler side of the application.

Computer vision is used to identify stagnant surfaces where the gem can be placed. It can also be used to verify the credibility of what is being pinned. Geofencing can be used to prevent duplicates of the same gem in the same location. If there is already a gem pinned for a location, and geofencing fails to pick up on the duplicate because of a higher distance between the old gem and the new pinned gem, then matching schemes and algorithms can be used to see if that gem by the same name and description exists. This two-fold verification for duplicates helps prevent redundant gems for travelers and makes verifying a gem for authenticity much more accurate.
Handling Edge Cases

In the model I was following, there was a scenario I had to pay close attention to. When two local gems were close to each other, it could cause the gem cards to overlap. I tested the interaction models through low fidelity prototypes.

Links to some of my ideation for this process and final prototype:
https://akshaykumararun.com/gem-clutter?preview_id=2255&preview=true

I decided the best way to handle this would be to pull down on the overlapping cards to exchange positions.

The gems can be shuffled to solve gem clutter when they overlap
Evaluation & Discussion

There are some grey area questions that I felt needed to be answered before the whole project can be complete.

How to verify pinned local gems for authenticity?

When the locals pin a location on the application, there needs to be a workflow (fig 4) to authenticate it. The workflow that I am adopting is that the gems after they are pinned, need to be authenticated by locals before it can appear in the traveler side of the application.

![Diagram showing the process of authentication](image)

(fig 4) Process of Authentication

There is a specific number of local likes a newly pinned gem needs to receive before it can appear on the map on the traveler side of the application.

How to find the value of ‘x’?

The number of likes a gem needs to receive is deemed 'x' as it is a variable that keeps changing. It depends on parameters such as population density, behavioral patterns etc. The value of 'x' can be found more accurately than I can by using voting algorithms. Here is an example of what I mean.

Consider the user is pinning a fast food restaurant on a Monday in Brighton, Rochester, NY, as a local gem for that area.
The population density as of 2017 in Brighton is 2.38K per sq. mile. Behavioral patterns of US eating habits suggest that 25% of people go to a fast food restaurant during a workday afternoon. If in those 2.38K people, if say 1000 local people are using ROVAR, the value of x is calculated in the following manner.

25% * 1000 = 250. Considering possibilities such as people wanting to go eat somewhere else, or people have brought their own lunches etc., we can graciously consider 10% at least will go to the fast food place that afternoon since it is a local gem and they are within 1 mile from it. Which means, 10% * 250 = 25.

So, in conclusion, 25 locals would need to like the gem in a 24-hour time span for it to become live on the traveler side of the application. Considering the prowess of voting algorithms out there, this value can be much more accurate.
Conclusion

The millennial generation wants a travel experience that helps them walk in the shoes of the locals. They prefer local cuisine over chain restaurants and immersing themselves in the local culture over commercial destinations. Time constraints are a major factor that influences the nature of experience a traveler has. Travelers can succumb to the commercial nature of travel because of this reason. The sense of adventure and serendipity associated with discovery are a priceless outcome that is missing from such experiences.

With ROVAR, travelers are able to get an authentic travel experience while succumbing to the serendipity of discovery. The places they see are authentic and have been accumulated leveraging local social media. Having only authentic locations on the map ensures the users can rely on any experience they stumble upon to be deemed authentic by the locals.

The overall experience of finding these gems takes serendipity into account. Using augmented reality, the experience is made more engaging. Visualizing familiarity, and conceptualizing what serendipity might look like, and helping the travelers walk in the shoes of the local while also driving emotion into the interaction model helps make this experience more fluid and spontaneous.

The travel process of finding these gems have been accounted for with affordances and sufficient decision making. The interaction model is designed to drive emotion while driving the necessary functionality and maximizing ease of use. Solving for traveler anxiety by giving access to gems in the form of a map, and making the design comprehensive by providing a list view, helps users curate their experience according to their idea of authenticity and also fit the time crunch they would be traveling in.

Taking edge cases into account such as solving for gem clutter when two or more gems are close to each other, defining the process for verifying a gem for authenticity and preventing duplicates of the same gem in a vicinity, helps fortify the interaction model. Taking all these factors into account, ROVAR is an effective design solution that is engaging, fun and functional for the problem of authentic travel.
Source of Imagery

Pictures and videos that are used in the application are from Pexels, Pexels Videos and Google Images. These sites are free for commercial use with no attribution required. Links to different images used for various screens of the application design screens are listed below.

https://www.pexels.com/photo/americain-american-flag-architecture-bridge-450597/
https://www.pexels.com/photo/person-walking-on-the-road-1563256/
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