Poster: Urban Wanderer - Towards Reconnecting with Our Physical Surroundings

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UbiComp/ISWC'18 Adjunct, October 8–12, 2018, Singapore, Singapore
ACM 978-1-4503-5966-5/18/10.
https://doi.org/10.1145/3267305.3267657

Abstract
This paper describes our effort to reconnect people to their surroundings in an urban setting, making them aware of the immediate environment. We present an initial exploration, as well as a first prototype to support urban wandering. Our first insights are encouraging, as it seems our prototype enhances the experience of wandering and helps users with lower ambiguity tolerance to engage in wandering activity.

Author Keywords
Wandering; GPS; Navigation

ACM Classification Keywords
H.5.2 [**Information and Presentation**]: User Interfaces

Introduction
"Not to find one's way around a city does not mean much. Yet, to lose one's way in a city, as one loses one's way in a forest, requires some schooling." For Walter Benjamin, losing oneself in a city is less a matter of knowledge and experience but a mental state, an art that requires conscious effort to master. 100 years later, in "A Field Guide To Getting Lost", Rebecca Solnit elaborates the virtue of losing oneself by rephrasing Benjamin, "to be lost is to be fully present, and to be fully present is to be capable of being in uncertainty and mystery." Being lost is a situation where one is fully attending to the present moment without being

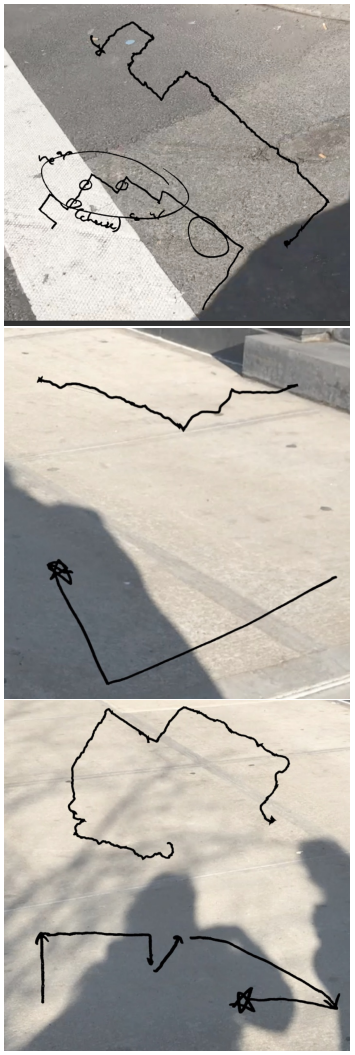

Figure 1: Sketches and actual GPS traces from the wandering exploration

constrained by the spatial/temporal context. For many writers, artists and scholars, being lost in the modern city has been a continuous source of inspiration.

Today, thanks to Google Maps and its alternatives, when finding one's way around a city is no longer a problem, losing oneself requires more intention than ever. However, while most location-based service has focused on recommendation and prediction, there's little "schooling" provided for people to experience the art of losing oneself.

Our research goal is to decipher and formulate the experience of losing oneself in an urban environment by studying the body-mind connection of wandering.

To this end, we present an initial exploration of this design space as well a first initial prototype, The Wanderer's Compass, to facilitate the wandering experience by providing physical stimulus to assist in entering and maintaining the state of being lost.

Related Works

There are a lot of smart phone applications that encourage exploration, from Foursquare over Facebook Places to Pokemon Go etc. Of course, also a lot of researchers explore this place [1, 5]. Other work also tries to encourage people to walk more seeing that we live a very sedentary lifestyle [2]. We see our research complimentary to this, as we want to encourge wandering and getting lost also as a mental exercise.

There seem to be positive cognitive effects for people not using GPS navigation [6].

This work has to be seen in the larger context of our research. We want to develop technology to support and augment human activities [3, 7, 4].

Understand Wandering

To experience the excitement of going to a place for the first time, you don't have to travel far away from home. A foreign land can be just several blocks away. You don't need the White Rabbit with a pocket watch to start an adventure. Follow a pigeon. Setup some rules (e.g. walk two blocks, turn left, then one block then right, repeat, reverse, repeat....).

Our first experiment aims to study the behavior of wandering and sense of direction during wandering by inviting participants to take an aimless walk in an unfamiliar neighborhood.

The experimental procedure consist of meeting the participant in an unknown neighborhood. Then taking a 30 mins walk with the participant without look at any navigation app. The only instruction for the participant was to walk aimlessly and return to the starting point. We ask the participant to draw the path the participant went. We also record the track with a GPS module.

We had 5 participants (age:23-28), all from academic background (students, researchers).

Figure 1 shows some of the drawings the participants produced together with the actual GPS traces.

Participants lose track of direction after several turns. They have better sense of direction with a destination and recognize larger blocks than smaller ones. Physical borders such as river, railroad, highway, and landmarks enhance sense of direction.

Participants are often drawn to places with a specific atmosphere (color, sound, people...) of a block or specific place (stores, cafes, graffiti...) at street corner. Al- though the participants were instructed to walk aimlessly, they were

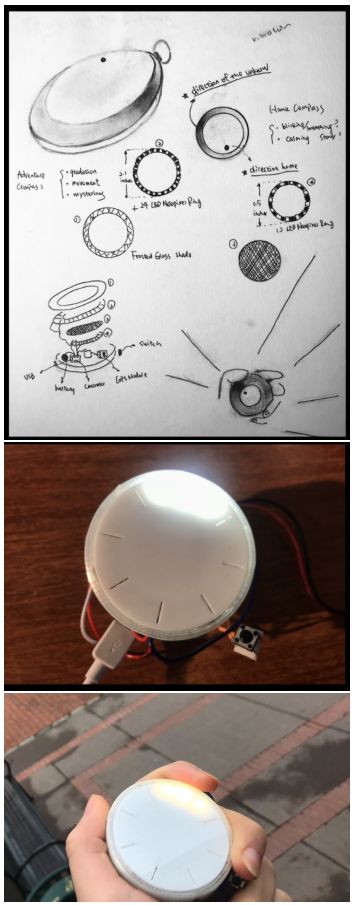

Figure 2: Wanderer's Compass: Sketches and Initial Prototype and in use.

inclined to walk towards certain places

Most participants didn't pay attention to street name while wandering.The GPS data show that people slow down, sometimes make a sudden change in direction when they see something interesting. The participants remember most of the spots that attracted them during the first trip when they were back to the place for the second time.

Initial Prototype: Wander's Compass

To help users to get lost, we designed a programmable digital compass, with the purpose to guide users to unexpected places by suggesting random directions or following predefined rules.

After first sketches and tirals, the final "Wanderer's Compass" prototype consists of a NeoPixel LED Ring, a FLORA Wearable Ultimate GPS Module, LSM303 FLORA Accelerometer/Compass Sensor, a vibrating Mini motor disc, a battery and the FLORA main board.

The GPS module tracks the path of each journey. We apply geofencing, so for beginner wanderers, we provide vibration feedback if the user wanders too far away (adjustable distance from the start). This measure reassures a sense of safety to the user.

Initial User Study

We wanted to test the initial prototype can help users with lower ambiguity tolerance to be more explorative.

This experiment aims to study the correlation between individual's ambiguity tolerance and the his/ her comfort level during an uncertain journey, and test whether wandering with "Wanderer's Compass" helps release stress during the journey.

The experimental procedure is as follows. The users fill out a pre-test questionnaire related to navigation applications, as well as the "Tolerance of Ambiguity Scale" test developed by Bunder (1962) [8]. Afterwards the users explore an unknown urban area with the "Wanderer's Compass", choosing a random direction to make turns. After this, the users have a checkout interview and post-test questionnaire.

For this user study, we had 13 participants (age: 22-28, occupations: design student/financial analyst/programmer).

Discussion and Conclusion

From the pre-test questionnaire, we got to know that all participants use navigation app frequently. 70% use it everytime they go to a new place. 77% check the app many (more than 4) times while navigating.

Based on the TAS test results, we can divide the 13 participants into three groups: 6 with high tolerance (score 85-96), 3 with medium tolerance (score 71-77), 4 with low tolerance (score 65-69). As expectParticipants with higher TAS score feel more comfortable during an uncertain journey. Low TAS group experience a decrease in stress level during an uncertain journey using the "Wanderer's Compass".

Our research indicates that individuals with higher ambiguity tolerance feel more comfortable during ambiguous situation while navigating urban environment.

Our initial prototype of the "Wanderer's Compass" seems to enhance the experience of wandering and helps users with lower ambiguity tolerance to engage in the experience of wandering and release their stress in an uncertain situation.

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