

# Field Mining: Reconstructing Relations Between Humans, Objects, and the Environment

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This paper introduces a new research field, named *field mining*, as an attempt to reconstruct relations between humans, objects, and the environment. The approach of field mining consists of: 1) discovery of attractive features in nearby fields; 2) helping people discover attractive objects or the environment through Human-Event Interaction (HEI); and 3) evaluating the impact of the event from the perspective of participants' consciousness and behavior. This paper presents an overview of the concept, methodologies, significance, and case studies of field mining. It then concludes with a description of future prospects.

## 1. Introduction

When we arrive at unfamiliar places for a trip, all scenes meet our eyes, catch our attention, and pique our interest: beautiful landscapes, buildings with atmosphere, rotting signboards, etc. We might also become aware of birds chirping or of insects, or sweet smells of flowers there, although we rarely realize them in daily life. In this way, our five senses (touch, taste, hearing, sight, and smell) are activated by changes in the surrounding environment.

The same phenomena can be triggered by a small gadget, not a change in our environment. For example, by some cylindrical tubes placed in Tennouji zoo without any explanation (Fig. 1). Children passing by the tubes notice and become interested in them, peer into them, and find a lost property of animals with a smile of delight (Fig. 2). In this case, an intentional event using cylindrical tubes catches children's attention and helps them to discover an attractive object.

These phenomena suggest a simple hypothesis that finding attractive features in the field heighten our interest; accumulating these interests results in growing *imageability* of the field [1]. The phenomena will also nurture love of residents for their home district.

The phenomena that occur in cognitive or mental processes are considered as processes of reconstructing relations between humans, objects, and the environment. The methodologies of realizing the phenomena can be called *field mining*. Field mining is a new research field which is an overlapping of various research domains such as fieldwork, ethnography, urban engineering, media art, etc. It has no established approaches yet.

The approach of field mining consists of 1) discovering attractive features in a neighboring field, 2) helping people discover attractive objects or environment through Human-Event Interaction



Fig. 1 A cylindrical tube at Tennouji zoo.



Fig. 2 Children peering into a cylindrical tube.

(HEI), and 3) evaluating the impact of the event from the perspective of participants' consciousness and behavior. The following discussion presents the field mining concept, methodologies, significance, and case studies. It concludes with future prospects.

## 2. Field Mining Procedure

The field mining process comprises three phases: a preliminary survey phase, a design and

conduct event phase, and an event evaluation phase. The following descriptions outline each phase.

### **2.1 Preliminary survey phase**

Two aspects of attractions exist in a field: one is related to observable views such as objects or the environment; the other is related to unobservable information such as regional characteristics, cultures, and historical background. In both aspects, deep understanding of the target field is necessary; an event planner must survey related works, do fieldwork alone at the targeted field, and interview residents and related associations.

### **2.2 Design and conduct event phase**

After attractive objects, environment, and others are distilled from the information collected in the preliminary survey phase, the concept and approaches of an event are designed in this phase. Various approaches stimulating five senses (seeing, hearing, touch, taste, smell), affection, atmosphere, time axis, and unpredictability of attractive features are effective for involving event participants.

Three points should be kept in mind when planning an event: 1) An event should be designed from a participatory point of view; 2) An event should help people discover attractive features through Human-Event Interaction (HEI); and 3) An event should be designed to be as simple as possible. Photographs, sounds, illustrations, objects, pencils, voices, and any other device is a convenient way of realizing the three points. Quiz and game styles are also welcome.

### **2.3 Event evaluation phase**

For each stage of an event, i.e., before, during, and after participating in an event, the effectiveness of an event is evaluated based on changes of event participants' consciousness and behaviors. In the before stage, the number of people who passed by with and without a glance, those who stay and show interest, and participate in events, etc. are counted to understand the changes of behaviors. During this phase, what participants see, touch, say, etc., is observed to elucidate the changes of consciousness and behaviors. During the after stage, questionnaires are distributed for reporting the changes of consciousness.

## **3. Field Mining Characteristics**

### **3.1. Designed experiments to field experiments**

The targets of field mining are event participants (residents), not assigned experiment participants. All the factors should be controlled ideally to understand the factors affecting participants'

consciousness. However, in field experiments, unnatural situations created by controlling factors might restrict the event outcomes. In that sense, field experiments are different entirely from traditional designed experiments.

### **3.2. From data analysis to event design**

Because of the similarity between field mining and data/text mining, field mining seems to analyze data obtained from the field. Of course, data analysis includes the scope of field mining. However, in field mining, revealing the effect of events is the essential point, i.e., what kind of event can occur with what kind of consciousness.

### **3.2. Wisdom of Crowds**

An event is designed for transmitting discoveries that someone had discovered. The notion is, in other words, equal to the wisdom of crowds. That is, collecting each resident's discoveries and sharing them at an event.

### **3.3. Social importance**

An event can be a good opportunity for residents to cultivate love of their district by reconstructing relations with objects and the environment. From an academic point of view, accumulating the effect of each event would contribute to formalizing field mining. As the formalization of field mining proceeds, an event could easily be held and residents would benefit. The win-win situation between residents and researchers would finally contribute to improving the quality of life.

## **4. Case Studies**

This section briefly presents an outline of four case studies that were conducted in 2006 and 2007.

### **4.1. Conscious reformation using affection-annotated maps**

A large earthquake hit the Hanshin-Awaji area in Japan in 1995; many residents evacuated the area because old houses were damaged. As not only evacuated residents but also new residents came into the area after redevelopment, new problems emerged: different levels of new and old residents' affection for the area caused friction between them in organizing cooperative events. In this event, we aimed at stimulating their affection for the area to bridge the gap of that difference.

We first distributed questionnaires to local residents living in the Oogi district of the Hanshin-Awaji area. Then we made two types of *affection-annotated maps* from questionnaire results of new and old residents, respectively (Fig. 3 shows





Fig. 3 Affection-annotated map reflecting older residents' questionnaire results.



Fig. 4 An event with annotated maps.

the map obtained from old residents' questionnaire results). We held an event showing these maps in a booth at Oogi festival to share the information of residents' affection, as shown in Fig. 4. We videotaped all interactions among event staff and event participants and observed their consciousness' reformation by analyzing the videotapes.

#### 4.2. Go outdoors for lunch with flyers

In a business district, we can see many outdoor open spaces available to sit down and relax. If people increasingly make use of spaces for having lunch, as well as indoor places such as offices or restaurants, people would feel the diversity of lunch styles in a business district. They can also rediscover an attractive environment surrounding their workplaces.

In this event, we first observed the behavior of people having lunch outdoors around Yodoyabashi and Honmachi districts in Osaka. Based on those results, we then made flyers, each of which showed a map with outdoor open spaces where people could eat lunch (Fig. 5). By distributing about 1,100 flyers

with questionnaires to passers-by in Yodoyabashi and Honmachi districts, we investigated how the flyers would change peoples' consciousness. By analyzing the results of the questionnaire, we clarified that the map can stimulate peoples' consciousness by evoking an interest in having lunch outdoors.



Fig. 5 A flyer showing outdoor open spaces for lunch, named *Obentoubiyori*.

#### 4.3. Conscious reformation with soundscape

A "sound" affects not only the acoustic sense but also various cognition including imagery and memory. The concept of *soundscape* proposed by Schafer [2] utilizes features of sound as stimuli for re-recognition of the world around us. We conducted an event employing soundscape methodology to provide local residents living in the Juso area the opportunity to facilitate conscious reformation (Fig. 6). We distributed questionnaires to all event participants and videotaped the whole event scene for evaluation. Based on analyses of the videotapes and questionnaire results, we observed that the interaction between event participants related to sound can trigger a reformation of consciousness.



Fig. 6 An event with soundscape.

#### 4.4. Exchange event with annual festival

Ishibashi mall is an old-fashioned shopping street located near Ishibashi station, a train station near Osaka University. The aim of this event was to hold a natural situation in which workers at the Ishibashi mall, local residents, and university students could mutually communicate.

For this purpose, we used a long slope, named *Handai slope*, leading to the gate of Osaka University from Ishibashi mall as the stage of a race event. After the race, we prepared a rest and communication place.

At the race event, we coordinated activities (Fig. 7): 58 participants and about 20 event staff gathered. They communicated with each other after race event (Fig. 8). Following on this success, we are planning to make the event as annual festival of this district.



Fig. 7 Event participants running at Handai slope.



Fig. 8 Staff in Ishibashi mall serve preparing hot meals for event participants.

#### 5. Conclusion and Future Directions

Field mining is intended to garner attention to attractive features in nearby fields for reconstructing relations among humans, objects, and the environment using Human-Event Interaction (HEI). This paper introduces the concept, describes the process and significance, and presents four case studies. The events explained in Section 4 were simple, but they achieved the purpose of field mining: inspiring discoveries of event participants.

So far, our approach to field mining relies deeply on the methodology of field work, not on computers at all. However, field mining is an interdisciplinary research theme. A huge space remains for researchers in other research domains. Collaborating with researchers in various domains can suggest important future directions to expand the possibilities of field mining. For example, collaboration with researchers on human-computer interaction will realize a variety of event interactions supported by computers. Collaborating with media art professionals will produce fascinating events. Collaborating with practitioners who are engaging in local area revitalization will suggest important activities to make social contributions.

An easy-to-use framework of field mining should be established in future studies for putting local residents of all ages, from children to elderly people, into field mining to improve the quality of their lives.

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