Entertainment Technology in Transportation against Frustration, Aggression and Irrationality

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Abstract
This workshop addresses two strong fields within the Mobile HCI community: games & entertainment and transportation user interfaces. Using transportation technology (e.g., a car, plane, or traveling in public transportation) can be frustrating due to crowded streets, delays, and other travelers. Frustration may lead to aggression and negative experiences of other road members and passengers [4] leading to irrational behaviors [6]. Games & entertainment technology offer potential to resolve these negative user experiences. This workshop brings together entertainment and transportation user interface experts, who are willing to understand mobile entertainment technology as a potential solution to improve the experience of all travelers, drivers, and workers within the transportation field. The overall aim of the workshop is to create a common understanding of the challenges of entertainment in transportation, as well as further extend the research agenda for entertainment in this context from both from a scientific and an industrial perspective.

Author Keywords
Entertainment; games; transportation; user interfaces

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

Traveling can be an emotionally straining activity (e.g., [6]). The levels of frustration and anger can reach high levels when travelling on the road because we often have to leave our comfort zone to travel from A to B. These are moments when humans show their anger to others. Dr. Jekyll becomes Mr. Hyde. It seems that especially when being on the move people tend to act irrationally and experience other negative emotions such as sleepiness, boredom, frustration, loneliness, and sadness [7].

Since the beginning of mankind, entertainment and playing games were activities to reduce stress, support amusement, and strengthen social ties between social actors. Entertainment and games have shown their ability to create peaceful competition, while allowing (positive) distraction and even learning new information. This positive nature of play shows the potential of games and related forms of entertainment to improve the situation of users in moments that are not comfortable. In unpleasant situations, games can cheer us up or calm us down, frustration and even aggressions towards other travelers can be reduced by common forms of entertainment [5]. Nevertheless, entertainment in transportation suffers from a number of threats. If the means of transportation are self-controlled (e.g., driving a car), entertainment applications might cause distraction and mental workload when all attention should be placed on the road. In other transportation situations, fellow travelers might get annoyed or the limitation of space might hinder a gaming application from being successful.

In order to overcome these hurdles, this workshop aims at bringing together researchers from the transportation HCI field and the entertainment or gaming domain. We, thereby, refer to all kinds of transportation means, from cars, buses, trains, and ships to airplanes and maybe visionary transport systems like space ships. It is about making use of these cool bubbles we travel in and seeing what fun we can have while doing so.

Related Work

In recent years, there was increased activity among HCI researchers to investigate the transportation context from an HCI perspective, e.g., the car and other means of travelling [2]. Games & entertainment have a much longer tradition in HCI research. Apart from the long existence of a games & entertainment community at CHI, several conferences address research in this area (e.g. ACE, ICEC, Fun and Games). From the perspective of automotive research, most efforts were solely focused on the driver. Only a limited number of researchers have taken the whole car as playground into account (see e.g. [1][8]); however, there is a growing community that sees that potential. Other means of transportation are just now starting to be seen from an entertainment perspective; for example, [8] use (exertion) games to explore the properties of trains as playgrounds.

Based on the growing activities in both domains, we identify the potential for organizing a workshop giving practitioners and researchers the possibility to combine research interests from transportation context with a

games & entertainment perspective. This will open up a new application area for entertainment experts and widen the perspective of transport interface experts on their topic.

Motivation

Entertainment and gaming in transportation systems cannot be like gaming and entertainment at home, but also should not be. On one hand, there are safety issues and regulations to be considered: children have to sit still, occupants need to hold on, the driver needs to focus on the road, etc. On the other hand, all means of transportation offer a wide range of possibilities for innovative gaming and playful approaches. The context properties make gaming in transportation challenging, but also hold interesting opportunities. Some of the negative transportation experiences, such as frustration and aggression, could be incorporated in the gameplay in order to change them into a ludic experience. The nature of travelling opens a wide design space for new concepts of play, some of which are not possible or at least are less fun in static environments.

It is necessary to create a more comprehensive understanding of what makes good entertainment technology or a good game in transportation. Furthermore, it needs to be investigated to what extend established gaming concepts (e.g., flow) are applicable in the transportation context. So far, it remains unclear how games in transportation can be engaging and social but not distractive and annoying in parallel. This can be only achieved by entering the transportation context and studying the materials it offers [3]. Only when taking the specifics of the transportation context into account, can entertainment applications be successful.

One main question is how entertainment technology can be designed to take the characteristics of a transportation situation into account. We envision applications or technology that is only exciting and fun because it is used in the transportation situation. We are convinced that while generic games might be fun at home and while travelling, a real impact on the experience of all travelers can only be made when the entertainment system is so interwoven with the transportation context that it only can be used in these situations.

Another important issue to discuss is to what extend are entertainment mechanisms transferable to the transportation context. A wide discussion is missing on games that reduce frustration and anger while being enjoyable during travel. One aspect of using transportation technology that has to be taken into account in context sensitive entertainment is that trips are often repetitive (e.g., daily commute) and this repetition is likely to cause boredom. A game itself has to take that into account, avoiding that the repetitiveness of the trip leads to a boring gameplay.

Regarding interaction modalities for transport entertainment, it remains unclear how all passengers can engage in a playful activity. Designing interactions for passengers of transportation systems is a challenge since they sit in an environment with reduced possibilities to include interaction modalities. Developments in display technology, such as augmented reality, offer wide possibilities for innovation.

Additionally, on a more technical perspective, the transportation context or modality offers a vast amount

of sensor data that can serve as input for games & entertainment applications (e.g., timetables, status of the vehicle, road sensors). In a way, the transport modality can be seen as controller of future games. This inclusion of transportation data and the context has the potential to make games meaningful but needs to be explored further.

Finally, transportation scenarios are very diverse in terms of social space. Entertainment and gaming in transportation, therefore, has to take the social space in the vehicle, as well as outside of the vehicle, into account. Solutions must be found on how to use these very special characteristics of the transportation context and make them a feature in entertainment applications.

Objectives

This workshop addresses the following issues:

- Identify potentials how to reduce frustration, aggression, and irrationality through entertainment approaches
- Understanding the context and what design properties make a good entertainment application
- Research the social aspects of gaming in the transportation domain, including passengers as well as personnel
- Explore entertainment applications and game concepts that suit the transportation context and make use of the context data as game input
- Discuss suitable interaction modalities for gaming for all passengers
- Discuss the effect how switching between transportation modes can be resembled in entertainment
- Discuss how to make use of transportation context data as input for entertainment applications

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