

Inspire, Guide, and Entertain: Designing a Mobile Assistant for Runners

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ABSTRACT

The paper presents the design of a mobile assistant for runners. We propose visual and auditory user interface for a mobile assistant, called Mobota. The system supports navigation on a new track, provides competition against a virtual rival, monitors real time user performance, entertains and encourages runners. We introduce entertaining and inspiring community notes that convey emotional messages from other sportsmen who exercise on the same track. The design and evaluation of Mobota provides an insight into the specifics of visual and auditory design of running assistants.

Categories and Subject Descriptors

H.5.2 [User Interfaces]: Graphical user Interfaces (GUI), auditory (non-speech) feedback, screen design

General Terms

Design, Human Factors.

Keywords

Training assistant, mobile sports, mobile UI, auditory design.

1. INTRODUCTION

Modern mobile assistants for runners provide a wide variety of functions, such as performance feedback, navigation or entertainment. Moreover, modern training assistants can encourage, motivate, and support sportive spirit.

In this paper we present a design of a universal training assistant that supports the essential running functions visually and acoustically. After an overview of the existing mobile running assistants, we describe the results of the interviews with professional and hobby runners. We implement the design on the platform of Mobota system [1]. The system includes a PDA-based mobile client to record the tracks, navigate or arrange a competition on a recorded track. The client is supported by a community web portal that enables sportsmen to exchange their tracks and results.

2. MOBILE ASSISTANTS FOR RUNNERS

Existing training assistants mostly support four essential training functions: performance feedback, navigational means, competition, and entertainment. Performance feedback of real

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time data is usually displayed in numeric way [2,3] or graphically [4,5]. The graphical representation is less precise than the numeric, but it is much faster and easier to estimate. Along with the visual data representation some systems use auditory performance feedback [7,8] in form of voice notifications of the training distance and time. Navigation is usually supported by means of digital maps or schematic maps of the entire track [6]. Some systems also provide voice directions at road forks and crossings. Competition spirit is a well known source of sport encouragement; however, this leverage is seldom used in modern sport assistants. Garmin [7] displays a virtual opponent on the screen; Nike+iPod [6] supports competition by means of online portal. Music is the most popular entertainment source in mobile running assistants. Some applications also use music as motivational means making users synchronize their stride to the beat [4,8,9]. All in all, the diverse running assistants support various essential functions; however none of them provides all functions at the same time. The inspiration of this work was to create a universal mobile assistant for runners that would support all essential functions, visually and auditory.

3. DESIGN GUIDELINES

We conducted the interviews with professional and hobby runners in order to understand the needs of the sportsmen. Due to the paper format, below we provide just the main findings.

The runners use navigational means mostly on new (unfamiliar) tracks. For navigation sportsmen prefer the maps with terrain view and streets information. The map should provide the overview of the entire track and a detailed view of the current segment. Most of interviewees refused to have audio announcement for the map (such as travel directions). The “wrong way” scenario is the most serious navigation problem the runners face. During the training the majority of runners prefer to see their speed, covered part of the track, and time. Acoustical signals are appreciated when a time unit is over and when a distance unit is covered. In a competition scenario, the runners need to know the gap between the opponents (expressed in distance or time) and the current race state (who is leading). For entertainment the sportsmen appreciate music and additional track-related notes left by other sportsmen who train on the same track (about nature, points of interest, danger places, and training tips).

The interview analysis enabled us to create audio- and visual design guidelines for running assistants. The auditory interface plays a critical role in outdoor training. We defined six critical training moments that require audio notifications: time / distance

unit is covered, wrong way is taken, a point of interest is being approached, competition status changes, finish is reached.

In a running scenario the visual information should be accessible within a short glance. Graphical icons are preferred to numeric labels. In the cases when an audio signal is not sufficient to interpret the situation, visual details may clarify the situation. For example, in the wrong way scenario the corresponding help may appear on the screen showing the right directions.

4. MOBOTA USER INTERFACE

Based on the design guidelines and interviews we created the auditory and graphical UI for Mobota. The basic screen contains a large map control showing the initial track, covered track, and user position (see Fig.1). The overview and detailed maps are quickly exchangeable. Performance data is customizable and are shown in a grouped manner. Audio notifications in the navigation mode are provided for the time or distance intervals, wrong way, and finish.

In the competition mode the interface reflects the progress of both opponents (covered way, performance). The presence of interactive notes is optional and can be customized by the users.



Figure 1. Navigation and competition screens.

Users' desire to exchange their impressions and tips with other community sportsmen has inspired our concept of interactive notes. The notes are rendered on a map as colored asterisks; they provide emotional content left by other sportsmen (see Fig.2).

In the final evaluation we made a study on user preferences in voice or signal for audio notifications. For this experiment the navigation and competition tracks were tested in two modalities (voice or signal). The results of the study showed that the users prefer to have time or distance notifications in voice, finish sound as a mix of voice and signal, and have no special preferences for interactive notes and wrong way event. More details on the experiment, results, and user rationales can be found in [10].



Figure 2. Interactive Notes rendered on the map.

5. CONCLUSION

In this paper we presented the design of a mobile assistant for runners. The assistant supports the essential functions of outdoor running and provides encouraging functions (animated competition against virtual rival and as interactive notes). The design contributes to the existing research on mobile design for sports applications. In perspective we plan to continue research on encouraging factors in sports and their implications to the design.

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