

Executive Summary of AugmentIT

A Smart Phone App that generates kinematic feedback based on augmented reality data e.g. video and IMU (or other sensor) data

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NEED

In sports, improvement requires technique training. Technique training requires a) theoretical comprehension of a motion, b) physical praxis and c) identification of the difference between theory and practice, i.e. ideal and actual performance. The underlying quantitative three-dimensional motion kinematics cannot be understood intuitively and a (subjective) coach is the traditional way to solve this pain [1-4].

Feedback from a coach is costly and has a fluctuating uncertainty content. Furthermore, coaches are rare – especially for individual sports. Current quantitative solutions can be found in expensive, indoor, research laboratory based motion capture systems [5]. The proposed simple solution is to use existing, ubiquitous technology as a personal coach.

Mobile phone apps for sports have already become widely accepted in the market. AugmentIT is an app that takes performance data in- and output a step further.

APPROACH

Our goal with AugmentIT is to develop an inexpensive system for smartphones. With AugmentIT it is possible to record video from a smartphone and external sensors to analyse kinematic motion in an objective way. The primary component of this system is the phone storing wirelessly received data and the video stream from its own camera. Motion and performance data are combined on the phone with video from the phone's camera and data available to the user.

As every current smartphone, such as the Apple iPhone or Samsung Galaxy, incorporates a variety of sensors ranging from accelerometer, gyros, magnetometers to touch, light and video sensors an additional smartphone can be used as an external wireless sensor. Consequently, the user only needs the AugmentIT application running on his friend's phone, too. Dedicated external wireless sensor units may be included for a better experience [6].

Based on our previous application development, we estimate at least 5000 sold apps for a price of 22SEK per app (profit 15SEK per sale) within four months after release. This can be achieved without any significant marketing. Our aim is to sell 50000 copies and we intend

to make use of our good relation with a broad group of athletes to get into contact with many initial customers.

We also aim to develop a web forum where app users can share their experience, in same way that the usage of pulse watches was explored in their beginning. The web forum will furthermore provide an excellent feedback to us in order to improve the app, increase its value, and attract new consumers. We will use the forum to analyse our consumer's needs. Instead of reselling the app as an improved version, we will have a store included in the application to sell valuable plugins, such as data filters, analysis tools, audio feedback, hardware drivers etc. We will later sell wireless sensors for more advanced users and those that have particular needs, e.g. in kayaking [6].

In addition to measuring kinematics of athletes, we consider also the use of the technology in other applications e.g. in fall prevention, detecting users that have a need for additional support [7].

BENEFIT

This system would enable athletes to gain access to a better perception and understanding of their technique. A golfer, for example, will be able to not only see a video of the golf swing but also crucial motion data. When used repeatedly results and motion patterns can be compared conveniently, just what a coach would do as well.

COMPETITION

The top 10 most popular apps in the outdoor sport assistants segment e.g. Nike+, RunKeeper, runtastic, have over 1 million downloads [8]. There is a broad creative and technology interested community. It is a common habit to buy several applications in order to try them in order to find which works best.

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