

EcoCatcher – A mobile application to raise awareness of your surroundings and its value

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ABSTRACT

This paper discusses and describes the development of a prototype of a mobile application that has its purpose of increasing the knowledge and appreciation of the immediate environment around us. The application can be used by people of all ages but is foremost aimed towards young adults. By using it, it will give the users the possibility to understand the nature they have in their immediate environment and also the possibility to share their knowledge with other users. By doing several user tests and iterative developments of the prototype, the design has been developed to make the user be able to learn and share information about birds, trees, flowers and animals in their environment in an intuitive and user friendly way. The application was met with a positive response but since implementing an image recognition system and a database requires a lot of work and poses several problems, it is proposed to use existing technologies such as Google Image Search and Wikipedia for the final product.

Author Keywords

Responsible Design, User Interface, Nature, Animals, Environment, Appreciation

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous; See <http://acm.org/about/class/1998> for the full list of ACM classifiers.

INTRODUCTION

We do not usually stop and admire the environment around us. It is important to not take it for granted and consequently neglecting the value it gives us. Edward S. Reed, author of the book *Encounter the World - Toward an ecological psychology* [1], argues for the importance of appreciating our surroundings and how we everyday live side-by-side with nature and all animals without giving them value. He talks about how life is based on encountering the world, how we can get both meaning and value from our encounters with our surroundings.

“The message of this book is that what it means to be human is to live in our world in a very specific way, different from all other animals. Our way of life takes advantage of certain parts of our surroundings and tends to ignore other parts. Our way of life includes special modes of action and awareness

and also, as I emphasize, very specially evolved modes of interaction. Yet no matter how special our niche is, nor how special our way of life is, nor how imbued with symbolism our interactions are, we all still live in this one world. Like all animal species, we inhabit a particular niche. Our human niche, like that of only a very few other animals, is global, and the effects of our global activities are mounting toward disaster. Sadly, it may well be a race against time to see whether we can come to understand our way of life before it destroys the only home we have. In addition to having a difficult task, then, psychologists also have a major responsibility, one I urge us not to shirk.”

In the article *Imagination and the Science-Based Aesthetic Appreciation of Unscenic Nature* [2], Robert Fudge, discusses the importance of appreciating the nature that we see in our everyday lives. He states that people in general forget to appreciate the environment that they see every day and that they tend to focus more on the scenic nature. By the scenic nature, he refers to the part of nature that is more obvious, such as the view from a mountain or a sunset view. He thinks people forget that the “unscenic nature”, the part of nature that we see every day but that is not as obvious to us, also has a lot of beauty and should be given the same appreciation as the scenic environment. What we see in our everyday life might not seem as very special at first but if we look closer, we will find that there are many things to learn and cherish from it.

By raising awareness of the environment, more people can appreciate what is out there and thus also gain value from it. Protecting the environment from destruction and pollution is important in order for it to exist an environment to value; animals are hunted, forests destroyed and oceans overfished. The environmentalism movement fights this fight every day. It is a social movement that seeks to influence the political process by lobbying, activism, and education in order to protect natural resources and ecosystems. Educating the population of what is going on and helping us open our eyes to see what is out there is an important part of the environmentalism movement.

PURPOSE

By developing a mobile application called EcoCatcher, we hope to educate people and make them realize the value of

plants, animals and the environment that surrounds us every day. With the mobile application, we aim to reach people of all ages, with the only criteria that they own a smartphone. The application is realized in two iterations of prototypes and a discussion of further development.

METHOD

This project was carried out during a 4-week-period in the course Interaction Design 2 at KTH. We had weekly iterations with the class where we presented and exposed our findings and were given feedback on our work. During each week, user testing on our prototypes was also conducted on sources outside of the classroom. The user testing was conducted on two females (24 and 28 years old) and one male (25 years old). All the users were students. The project was divided into three steps. Sketching the idea, creating the first prototype and creating the second prototype. The target group for EcoCatcher is young adults. However, when exposing our idea to fellow interaction designers, we noticed a need from several other target groups as well. An example is the mushroom picker that wants to determine different types of mushroom.

DESIGN PROCESS

The design process was divided into three steps. A sketching-phase where the initial idea was brought to life. A first prototype where feedback from the sketch was taken into consideration and the idea further developed into a clickable prototype and lastly, a second prototype where design and functionality was updated.

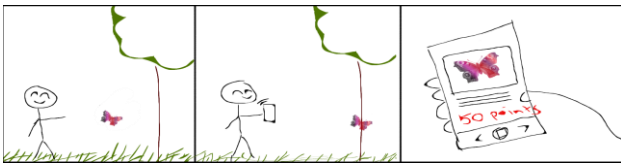


Figure 1 - The sketch shows the initial idea about being able to gain information about a butterfly by taking a photo of it.

Version 1 – Paper Sketch

We started by sketching the idea (see Figure 1). The sketch shows a person walking in nature who spots a butterfly and wants to know what kind of butterfly it is. By using the EcoCatcher application, she finds out what kind of butterfly it is and depending on the rarity of the butterfly, a certain amount of points is given to her on the app. The application has an image recognition feature that compares the image of the caught object with pictures on the internet and in this way it recognizes (with a probability) what the user has captured on camera.

To evaluate the idea, the sketch was shown and explained to interaction designers as well as potential users. The potential users were the ones participating in the user test described in method. The majority of the response was positive but almost

everyone wanted to have an application that would give information about all animals and plants, not only butterflies. The most common reaction from the people exposed to the idea was that they would primarily use the app to find out about different plants. They stated that they many times wonder about the name and origin of flowers they see around them and with the EcoCatcher they would be able to find the information that they seek. They thought that it would be better if the option of finding information about animals was available as well.



Figure 2 - The picture shows that the location of where the Grey Wolf was captured on camera is now hidden.

Version 2 – Clickable Prototype

The first clickable prototype was the next step in our process and when creating it, the feedback from the first sketch was taken into account. The first version of the prototype gave the user the opportunity to take a picture with the application, receive points and information about the catch and the possibility to see what other people had caught. The user could catch everything that is connected to the nature such as trees, flowers, birds, insects and mammals. For each catch, the user receives points depending on the rarity of the caught object. The user also receives information about the plant, animal or insect that has been caught, information consisting of how rare it is, where it is usually seen, how many have caught it before and the location where the user caught it. The first prototype also gives the user the opportunity to see her total amount of points and information about how many objects the user has caught along with when they have been caught.

To evaluate the first version of the prototype, the same people that were interviewed for the sketch were used. The

test users got the possibility to try a clickable prototype that had the main features such as photo matching, profile menu and a news feed feature. Each test was made separately and the test user did not know about the feedback from other test users. The test users were allowed to click around the prototype freely and give their opinion about the design and the different features. The different opinions of the test users were documented on paper during each test session and later analyzed when all the tests had been done. The general thoughts about the prototype was that it was easy to use but that there should be more information given to the user other than only information about the caught object. Suggestions of adding information about what the user has caught previously, what other people have caught and the possibility to look up animals and plants were given. All these suggestions were taken into account when creating the next version of the prototype. Some test users also thought that some of the icons were hard to understand and that they should be replaced with icons that better resemble the feature that they stand for.

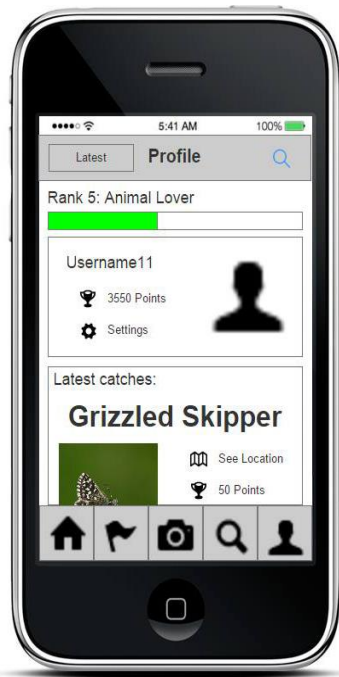


Figure 3 - The profile menu of the first version of the clickable prototype.

Version 3 – Updated Prototype

After receiving feedback on the first prototype, a second version of the prototype was made. The design was improved, for example icons that were a source of confusion for users were replaced with more intuitive icons. To prevent illegal trophy hunters to use the EcoCatcher application for finding rare animals, the location of where an animal or plant was caught was modified. If the caught animal or plant was rare (e.g. a grey wolf), the location would be hidden. Higher amount of points gives the possibility to edit information

about the animals or plants that the application does not recognize and by doing this, the user helps other users to find out what they have caught. This feature was added thanks to the feedback received from test users of the first prototype where they felt that they wanted the obtained points to have more importance other than just being a comparison with other users.

After making changes and adding features in accordance to the feedback received from the test users, the second version of the prototype was evaluated. The same process as well as same test users as in the previous evaluations were used. From the feedback received an extra feature was added in the last version of the prototype, a feature similar to Wikipedia that made it possible for users to help other users in finding information about the object that they had caught. In some cases the photo matching would not be able to recognize what object that has been caught but with the Wikipedia feature the users could help other users and improve the database by adding their knowledge. To add even more importance to the attained points for a user, only users with a certain amount of points were allowed to add information. The picture below shows the menu where a user does not have enough points to add information in the database.

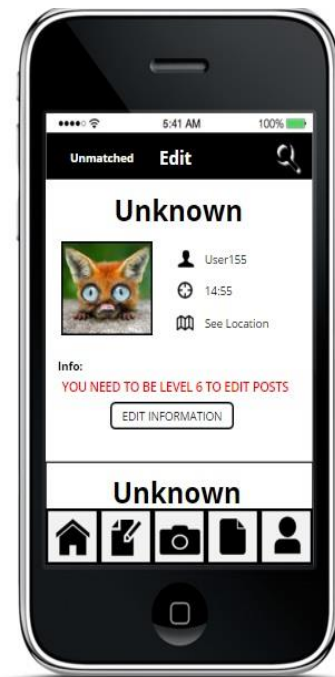


Figure 4 - The menu where users with enough points can add or edit information, in this case the user has not enough points.

From exposing the second prototype to the interaction design class, certain problems of implementations surfaced. Creating an image recognition software is by the least a complicated and long process and implementing a database

with features supporting the application would pose problems by increasing the development process and cost. By utilizing already existing services such as Wikipedia and Google Image Search, these problems could be avoided.

DISCUSSION

We believe that the more you know and the more you acknowledge your surroundings, the more you care about it. In this paper we aim to explore this and try to make people more aware about their surroundings and thus we hope to make people care more about the environment. Awareness can result in more caring, and that is precisely what this application is aiming to do. From the feedback gathered during the different iterations, this app was given a positive response from interaction designers and sources outside of school. There is however a problem of implementing the final application. For this app to be implemented, it would need a huge database and most importantly, an effective way of identifying animals and plants from photos. Due to these factors, an implementation would be hard to do as well as hard to fund. We propose a solution based on similar technical platforms that are already being used. Instead of having an internal database and its own image recognition software, we propose to use Wikipedia together with perhaps Google Image Search. By connecting already existing technical services and binding them together with an algorithm, we would increase the chance of this application

making it out on the market and lowering both the cost and time of implementation.

FUTURE WORK

The next step in this project would be to implement an application with a greater functionality and binding services like Wikipedia and Google Image Search together with an algorithm. After this, the application needs to be tested out and updated in iterations until a finished product would arise. Funding would also need to be considered to pay for future implementation in a non-academic environment.

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