Augmented Diving App

How to classify plants, fish and other thing under water without studying botany and zoology for year.

Everyone experienced this once: You are on vacation at the beach when someone asks you whether you would like to do a trial dive. Some accepted the offer - many have become amateur divers and continue to spend time underwater during vacations.

While professionals attend courses that teach botany and zoology, it is usually impossible for amateur divers to classify plants and animals they find underwater. After a dive, most divers compare recorded images and videos with information from the Internet (or specialist literature) or have to rely on their own memory. This is cumbersome and makes a reliable classification almost impossible. However, many divers are interested in what they have seen underwater and like to know the name of the plant or fish they've seen.

A few years ago, it was reserved for professionals, nowadays it's part of the standard equipment of most amateur divers: video recording devices from diving brands, action cams (GoPro, etc.), or even smartphones (waterproof, pressure-resistant cases) are used for underwater recordings.

The existing technology can be used to offer a complex AR solution with recording functions instead of a simple recording program.

In the initial state, the AR-APP shows the recording of the camera. The AI/AR component can be activated by confirming a button. The functionality recognizes when an object is in the focus of the camera for a longer time (configurable) and then displays information about the focused object in the camera image (augmentation). Interesting information that can be displayed is the correct name of the animal or plant, toxicity, predatory behavior, or warnings not to approach a plant or an animal (poisonous jellyfish).

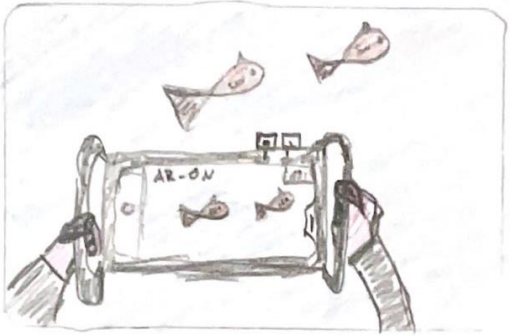
The information that is displayed in the AR view can also be switched on or off when playing the video, so divers can decide whether they want to see the recorded and augmented information.

Since an internet connection is not to be expected at sea, especially not underwater, the software must work independently. The recorded images, which are used to analyze/evaluate the objects, are evaluated locally by a trained model. Since dives are between 0- and 30-meters depth, the possible number of plants and animals encountered is limited to this habitat.

On top we have to recognize, that diving is an extreme sport that can lead to serious injuries if not practiced carefully. Since you shouldn't focus on the app only but also on your surrounding and tide, diving depth, etc. the app can display that information as well – so you do not miss crucial safety information which is displayed on your dive computer usually.

In addition to the diving mode, the tool can also be used for the analysis of land animals or plants - images can be transferred via an Internet connection to a service that takes over the evaluation - which means that an additional model is not required (which saves storage space).

Storyboard for diver AR-App



- Pilotfisch

- ca. 15cm - harmless

- Jellyfish

[Toxic!]

White-Tip-Reef-Shark

[Predator!]
[Danger]

- Turtle

- approx 76 y/o - Cute