SmartSurfPredictor: Executive summary

The Big Picture

Basic idea

You as a keen surfer, browse the web every day in order to find out about the current swell forecast at your preferred surf spots. This takes a lot of time. SmartSurfPredictor is an intelligent Agent that does this job for you. It informs you about conducive environmental factors at your preferred surf spots considering your individual preferences.

SmartSurfPredictor runs on mobile devices (Android, iOS) and on the magicseaweed.com website*. Install the app on your phone or sign up online and start receiving notifications for your favourite surf spots!

Why is SmartSurfPredictor intelligent?

SmartSurfPredictor learns about your personal preferences. With each rated forecast, your preferences are better known and applied when rating the next forecast. The more forecasts you rate, the better SmartSurfPredictor will perform.

Why is SmartSurfPredictor independent and autonomous?

Once started, SmartSurfPredictor acts completely autonomously. You do not need to manually request the current best forecasts. SmartSurfPredictor will find forecasts itself and notify you about great surfing conditions regularly without any further interaction.

Why is SmartSurfPredictor proactive?

SmartSurfPredictor will decide itself when to notify you. You will be automatically provided with an overview about current forecasts twice a day. If you wish, it also pro-actively suggests new surf spots to you*. Like this you might discover new, secret spots you did not not they even existed!

Additional features for SmartSurfPredictor*

SmartSurfPredictor will analyse each forecast to recommend which type of surfboard (e.g. short board or long board) would be suitable for each surf conditions and day. It will also help you to get there by providing you with GPS directions and much more.

Set-up and learning algorithm

The first time you run the application you will be guided step-by-step through a set-up wizard. At this stage you will provide the SmartSurfPredictor with some feedback about a number of forecasts. This data will be used to train a Neural Network. This Neural Network will be able to predict whether you want to be notified about new forecasts or rather not.

With every rated forecast SmartSurfPredictor gets to know you better and the Neural Network improves in performance.

The Demonstrator

The SmartSurfPredictor Demonstrator fetches live forecasts from magicseaweed and rates them according to your preferences. In short, the basic functionality (data conversion, classifier, notifier, basic graphical user interface) is implemented. The agent is intelligent, independent, proactive and autonomous.

You can easily give your feedback by a click of a button, when you read the daily forecast. SmartSurfPredictor is constantly learning about your preferences and growing with your surfing skills.

However, it is a local Java application (not Android / iOS / Web app). For licensing reasons, the demonstrator only offers a limited number of surf spots to choose from. Some of the additional features (such as GPS integration, suggestion of new surf spots or surf equipment) have not been implemented.

Set up

SmartSurfPredictor Demonstrator has a quick set-up feature. You will select your favourite surf spots and then provide 20 feedbacks. These feedbacks will then be used for the initial training of the Neural Network. You can always change your favourite surf spots or rate more forecasts in order to improve the classifier.

From then on, you will automatically get two notifications a day, one at 9AM and another one at 3PM.

You are also able to request forecasts by clicking on the "show Forecasts" button in the welcome screen of the GUI.

Download

The source code and an executable jar for SmartSurfPredictor is publicly available online:
https://github.com/mbbuehler/SmartSurfPredictor
For running the demonstrator, run "java -jar ssp.jar".

The uncompiled source code on GitHub will not run properly without providing a valid API key for the magicseaweed API. So please use the "ssp.jar" file for running the application.

Statement

Within this assignment, where the work of others has been copied, transcribed, adapted, quoted or paraphrased then that work has been clearly identified as such, its authors have been acknowledged and references to all source material have been quoted.

Forecasts and more data are kindly provided by magicseaweed: http://magicseaweed.com/

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