

Addressing Modern Challenges For Bees Through A Novel Mobile App [#]

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Abstract:

The importance of bees as pollinators for biodiversity and food security is elementary for mankind. Despite their significance, bees are increasingly exposed to unfavorable environmental influences caused by humans, and domesticated honeybees can also be a dangerous foraging competitor for wild bee species. To address these challenges, the project HIVEOPOLIS aims to augment honeybee colonies with technologies - internet, databases, satellite data and robotic actuators - that would otherwise not be available to them. As part of this project, we developed a mobile application to support the interaction of the hive with the surrounding ecosystem, i.e., to influence the bees in their interaction with the outside world through technology by means of an extended environment map. The application could also help connecting and engaging different social groups. By displaying various values - such as environmental and weather factors - beekeepers can plan an optimal placement of the hive or change it if necessary. Environmentalists can provide beekeepers with information, such as where to find plants of interest to beekeepers' bees or where wild bees are located. Managed hives should not be placed in protected areas where there is a risk of wild bees being displaced or attacked. The prototype was tested and evaluated by beekeepers and non-beekeepers in two surveys: first was an online survey with a video of the app and a subsequent questionnaire; the second was conducted hands-on with a group of beekeepers. Results of both questionnaires show that the application can help beekeepers and illuminate most desirable use cases, like weather forecast, plant recognition and a beekeeping journal. We will present the application, discuss possible scenarios for usage and discuss the result of the user studies.

Keywords: hiveopolis, beekeeping, mobile app

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