SUMMARY

Market research has shown that there are numerous companies providing beehive-monitoring systems in the world. Some of them even have either utility models or patents. The existence and success of these companies proves that, indeed, there is demand for "smart beehives" and that this project can enhance beekeeper's profitability. It was found, that all of those companies use internet connectivity in order to send data to the database from the device, while the technology described in this paper uses cellular connectivity only, increasing the range of coverage and stability of the signal.

Development process was divided into two parts: managing the data flow and creating the public website. Both of these parts were implemented using .NET framework and C# as a programming language. For cloud communication, Twilio services were used.

Upon completion of the initial version of the software, it was successfully integrated and tested with the existing device. Both, the data flow from the device to the database and the public website and notifications system work as expected.

The objectives of this project were to develop software for receiving and storing data sent from device, to provide beekeepers with the ability to monitor beehive productivity remotely and with flexibility to manage their devices through the software.

All of the objectives were successfully met and the initial, working prototype of the software is ready.

Further Development

At the moment, the tool displays text messages sent from the device as regular texts. For future, the organization of this text to the key-value pairs can be done. This way, it is possible to have values for all the variables (temperature, humidity, weigh) separately, which allows for advanced analytics and visualization.

In addition, the user interface can be improved together with user experience, to align buttons and action links in easily accessible and understandable locations.

For further development, not only personal but regional statistics visuals can be implemented. This way, beekeepers will be aware of the situations not only in their local area but will rather have insight on the bigger picture.