

The bachelor thesis deals with the design and description of a tool that can simplify the process of monitoring varroosis. Using image processing methods, it detects individual mites from the picture of the bottom board in the beehive.

For better image resolution we used several images from one bottom board. Those images were then stitched into one image using image registration. In the first part we focused on the use of classical image processing methods that can detect varroa only on the basis of the approximation of the body of the mite with a parametrically descriptive curve. In the second part we used a more powerful convolutional neural network. During each of the 500 training epochs we saved the parameters of success. Finally, we inserted a test data into the trained network and compared it with expected outputs.

The thesis contains a theoretical description of algorithms and methods, their use in our detector, and interpretation of results.