

SUPERVISOR'S REVIEW OF MASTER THESIS

The project aims at methods of using artificial neural networks to the analysis of multispectral images. The ultimate goal here is to verify suitability of the selected image processing algorithm. I consider the thesis topic to have higher than average difficulty.

The thesis itself is very well written, using an appropriate language and thesis structure, which makes the thesis easy to follow. The work is structured into theoretical and experimental parts.

The author uses an encoder-decoder model (autoencoder with recursive error feedback) for connecting two RBF (Radial Basis Functions) neural networks using the k-means clustering algorithm to process multispectral information. Using it, the data are divided into a suitable number of clusters based on spectral similarity. The system is thus able to perform processing in the optimal case without the intervention of a supervisor. This option is very suitable for processing multispectral images with a large amount of data.

The second part (experimental) is a practical verification of the theoretical conclusions. The author focuses on a case - verification of a model for monitoring the health of vegetation. It was necessary to carry out a large number of real measurements throughout the year. The data obtained by multispectral scanning are then processed using the algorithm described in the theoretical part.

The main goal of this work was to verify the suitability of the algorithm for processing multispectral images. The specific interpretation of the values of the determined vegetation indices is then a matter for botanical experts and is outside the scope of this work. The evaluation of the experimental results and the stated conclusions can be considered correct.

The most positive aspect of this project for me was the student's extremely enthusiastic attitude. He chose the topic himself and work purposefully and systematically. The author regularly consulted more complex issues and actively sought solutions to problems.

The author has fulfilled the assignment of the diploma thesis and therefore I recommend his work . My final evaluation of the master thesis is A – excellent.

In Olomouc, June 4, 2020

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