

Deep neural networks for a classification problem

Abstract

We plan to evaluate different machine learning techniques, in particular methods from deep neural networks for solving a classification problem using data collected by means of continuous-wave (cw) laser. Real sample data has been provided by Prof. Emma Ene together with references to methods for data processing. Insects are classified based on the observed wing-beat frequency. A method for identifying the frequencies of wing-beat using Fourier transforms is described in [1]. The method applies to the type of sample data that we have available. Machine learning has been used for classification in [2] by applying different algorithms to the data processed with the Fourier transform. Article [3] develops a Bayesian classifier and builds a confusion-matrix that gives the cases that have been classified correctly together with those placed in wrong categories. Reference [4] provides an introduction to the problem together with sample data and the code for the analyses performed on it. Finally, reference [5] describes some of the early machine learning algorithms, in particular support vector machines (SVMs) and some philosophical ideas of machine learning as statistical learning theory.

References

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