Classification of Cell Biopsy Data from Skin Diseases

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Abstract

Skin diseases are quite common, exhibit large degree of complexity and affect the patients` life. As quite often different skin diseases have similar symptoms, a reliable and valid diagnosis is difficult enough. Usually, a biopsy is necessary for a diagnosis.

This thesis focuses on the development and application of pattern recognition methods for skin diseases cytology biopsy data classification. Specifically, cytological biopsy of 113 cases of two different skin disease data was used. The first category is seboreic dermatitis with 61 cases, and the second group is chronic dermatitis with 52 cases. For each case, 33 features are available (e.g. erythema, scaling, itching, melanin incontinence, acanthosis).

Standard feature selection was performed, using a combination of Rank sum method and exhaustive search, and the discrimination capability of the selected features was tested using different classifiers (MDC, k-NN, SVM, PNN) and assessed by means of the Leave One Out (LOO) method.

Finally, the developed methods were compared, so that we find the combination of feature selection and classification methods that provide results with utmost accuracy.