

I.E. Livieris, E. Pintelas, A. Kanavos, P. Pintelas. [Identification of blood cells subtypes from images using an improved SSL algorithm](#)

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Abstract - Nowadays, the classification of blood cells subtypes constitutes a typical method for diagnosing many diseases, and inflammations. The application of an efficient cell classification method is considered essential in modern diagnostic medicine in order to increase the number of analyzed cells per patient and decrease the analysis time. The recent advances in digital technologies and the vigorous widespread of the Internet have ultimately led to the development of large repositories of images. Due to the effort and expense involved in labeling data, training datasets are of a limited size, while in contrast, electronic medical record systems contain a significant number of unlabeled images. Semi-supervised learning algorithms constitute the appropriate machine learning methodology to exploit the knowledge hidden in the unlabeled data with the explicit classification information of labeled data for building powerful and effective classifiers. In this work, we evaluate the performance of an ensemble semi-supervised learning algorithm for the classification of blood cells subtypes. The efficacy of the presented algorithm is illustrated by a series of experiments, demonstrating that reliable and robust prediction models could be developed by the adaptation of ensemble techniques in the semi-supervised learning framework.