

I.E. Livieris, A. Kanavos, V. Tampakas and P. Pintelas. [An ensemble SSL algorithm for efficient chest X-rays image classification](#)

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Abstract - A critical component in the computer-aided medical diagnosis of digital chest X-rays is the automatic detection of the lung abnormalities since the effective identification at an initial stage constitutes a significant and crucial factor in patient's treatment. The vigorous advances in computer and digital technologies have ultimately led to the development of large repositories of labeled and unlabeled images. Due to the effort and expense involved in labeling data, training datasets is of limited size while, in contrast, electronic medical record systems contain a significant number of unlabeled images. Semi-supervised learning algorithms have become a hot topic of research as an alternative to traditional classification methods, exploiting the explicit classification information of labeled data with the knowledge hidden in the unlabeled data for building powerful and effective classifiers. In the present work, we evaluate the performance of an ensemble semi-supervised learning algorithm for the classification of chest x-rays of tuberculosis. The efficacy of the presented algorithm is demonstrated by several experiments and confirmed by the statistical nonparametric tests, illustrating that reliable and robust prediction models could be developed utilizing a few labeled and many unlabeled data.