

IMPROVING TUMOURS DETECTION ACCURACY: AN APPLICATION IN BREAST-CANCER DIAGNOSIS

Walid Cherif

¹School of Information sciences (ESI), Morocco

²National Institute of Statistics and Applied Economics (INSEA), Morocco

There is a growing trend towards artificial intelligence applications in medicine and particularly in cancer diagnosis. Supervised machine learning algorithms are of vital importance to many medical problems, they can help to detect a tumour, to recognize its causes and most importantly, to describe its signs and symptoms. In this sense, different approaches have been explored by medical practitioners in an attempt to assist their work. The diagnosis of breast cancer is considered as one of their most important applications because firstly, it is the most common type of cancerous disease among women of the western world and secondly, an effective treatment is possible if it is detected at an early stage. This paper introduces a new statistical approach that predicts malignant tumours based on clustering and attributes filtering. Based on this classification, the second part of this work defines a set of rules by combining reliability coefficients, which insures a more accurate prediction. Thus, the main contributions of this paper are three-fold: the clustering of class instances; the selection of most significant signs and the identification of malignant tumours by using reliability coefficients. The proposed approach outperformed most known classification techniques in terms of tumour detection accuracy.

chrif.walid@gmail.com