

# IDENTIFYING MALIGNANT TUMOURS BY ANALYSING RELIABILITY COEFFICIENTS: APPLICATION TO BREAST-CANCER DIAGNOSIS

**Walid Cherif**

National Institute of Statistics and Applied Economics, Morocco

**T**here is a growing trend towards artificial intelligence applications in medicine, and particularly machine learning approaches. Supervised machine learning algorithms are of vital importance to many medical problems, they can help to diagnose a disease, to detect its causes, to predict the outcome of a treatment, and most importantly, to detect the signs and symptoms of a tumour. 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 firstly because it is the most common type of cancerous disease among women of the western world, and secondly because 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: (i) the clustering of class instances, (ii) the selection of most significant signs, and (iii) 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  
w.cherif@insea.ac.ma