Editor's Note

ALTHOUGH Medicine has always been considered a Health Science, today it is not possible to obviate its relationship with other disciplines as Humanities and Basic Sciences.

Doctors from everywhere and everyday work with the most sophisticated technology are trying to make their profession more accurate and precise, taking in consideration, at the same time, the human part of their daily labour.

In this volume of the Journal, we will try to explore the relation between different medical specialities, basic science and engineering. In fact, modern Medicine requires the participation of these professionals who are involved with doctors in multidisciplinary teams. In this sense, Medical Engineering, is a new degree that is offered in a vast number of Universities along the world.

This relationship between Medicine and Sciences can be found in any medical speciality so that, our aim in this volume, is to show different examples of doctors working together with other scientifics in any area of Medical sciences.

The volume consists on twelve papers. Each paper explores a particular area of this multidisciplinary approach.

The first paper [1] studies the use of Brownian motion based diffusion weighted MRI for head and neck cancer diagnosis. In this field of medical applied images, we have decided to publish three more papers. One of them explores the relationship between tumor´s edge and malignant behaviour in lung nodes [2]. For this purpose they combine CT scan images with fractal segmentation analysis. The same philosophy is found in the following two articles that focus in breast cancer. This type of tumor is the most prevalent in women around the world and early and accurate diagnosis is the key point for a successful treatment. The first article [3] analyzes the usefulness of neural networks and supported vector machines for the study of mammography and MRI (magnetic resonance) lesions. In the second one [4], the authors introduce a mathematical method to analyze radiologic-mammography contour of the lesions to distinguish between benign and malign pathologies. The aim of both articles is to achieve an accurate diagnosis minimizing the errors.

There is also a paper that tries to investigate which is the best method to treat mandibular fractures taking in consideration biomechanical aspects [5]. Neurophysiology and its relationship with neural networks is deeply studied in the following article, trying to find its role in epilepsy [6]. In this area of knowledge, neural sciences, we have chosen three papers. The first one [7], introduces a brain computer interface for microcontroller driven robot based on emotiv sensors, which will be useful for patients who are unable to control or operate their muscular movements. The second one [11], explores the relationships and links between blood markers and personal history of substance abuse with neuropsychological performance. The last article analyzes the value of web-based interventions to promote health and treat mental disorders [9].

Coming back to cancer related disciplines, the last two papers focus on skin and blood malignancies. Melanoma is one of the most malignant tumours of the body. In this paper [8] related to this aggressive tumour, the authors focus again in early detection to allow a curative treatment, throughout digital imaging processing techniques. The other paper [10] is dedicated to Hematology and it analyzes the possibility of using image segmentation in the diagnosis of leukemia, a frequent blood cancer.

Finally, we have included a technical note and reflection about virtual surgery and navigation methods in maxillofacial surgery [12].

We hope you find this volume interesting and you enjoy as much as we did putting it together.

Dr. José Luis Cebrián

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