A MRI View of Brain Tumor Outcome Prediction

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Abstract

On the one hand, *cancer* and *tumor* are one of the most feared terms in today's society. It refers to an unstable growth of cells that potentially invade the surrounding tissues and may eventually lead to edema or even death. On the other hand, the term *tumor* is often misleading since people assume that it is the same as *cancer*, but this is not necessarily true. A *cancer* is a particularly threatening type of *tumor*. The word *tumor* simply refers to a mass, and in particular a *brain tumor* is a mass located in the patient's brain that may seriously threaten his/her life. Thus, it is crucial to study which factors may influence the outcome of a *brain tumor* to improve the given treatment or even make the patient more contented. Therefore, this study presents a decision support system based on *Magnetic Resonance Imaging* (*MRI*) data or knowledge (if the data is presented in context) that allows for brain *tumor outcome prediction*. It describes an innovative approach to cater for brain illness where *Logic Programming* comes in support of a computational approach based on *Case Based Reasoning*. An attempt is made to predict whether a patient will die or survive with or without a *tumor*, where the data or knowledge may be of type *unknown*, *incomplete* or even *self-contradictory*.

Keywords

Brain tumor • Feature extraction • Brain tumor outcome prediction • Logic programming • Knowledge representation and reasoning • Case-based reasoning • 3D slicer • Magnetic resonance imaging

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M. Mateev and P. Poutziouris (eds.), *Creative Business and Social Innovations for a Sustainable Future*, Advances in Science, Technology & Innovation, https://doi.org/10.1007/978-3-030-01662-3_1
10 pp.