

DECISION SUPPORT SYSTEM BASED ON ORDINAL SCALES FOR GRADING OF BRAIN TUMOURS

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Abstract. *The aim of this study was to develop a decision support system based on ordinal scales for discrimination of low from high malignancy brain tumours. Clinical material comprised 96 biopsies of brain tumours, such as gliomas. Cases were reviewed on a microscope by an experienced histopathologist who evaluated the malignancy status and the appearance of specific diagnostic histological characteristics based on a Likert-variant scale. Ordinal features produced were transformed in quantitative variables using normalization and distance-based methods. These features comprised the input of a decision support system that was assembled with several classifiers, such as the k-Nearest Neighbor, the Probabilistic Neural Network and the Support Vector Machine. Results (accuracy prediction 90.5%) have shown that the proposed system might be used as an accurate and reliable second opinion tool in diagnosis of brain tumours.*

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