Attention Multiple Instance Learning for Cancer Tissue Classification in Digital Histopathology Images

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Abstract : The identification of malignant tissue in histopathological slides holds significant importance in both clinical settings and pathology research. This paper introduces a methodology aimed at automatically categorizing cancerous tissue through the utilization of a multiple-instance learning framework. This framework is specifically developed to acquire knowledge of the Bernoulli distribution of the bag label probability by employing neural networks. Furthermore, we put forward a neural network based permutation-invariant aggregation operator, equivalent to attention mechanisms, which is applied to the multi-instance learning network. Through empirical evaluation of an openly available colon cancer histopathology dataset, we provide evidence that our approach surpasses various conventional deep learning methods.