

## DeClEx-Processing Pipeline for Tumor Classification

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**Abstract :** Over the last decade, the prevalence of health issues has increased by approximately 29.1%, putting a substantial strain on healthcare services. This has accelerated the integration of machine learning in healthcare, particularly following the COVID-19 pandemic. The utilization of machine learning in healthcare has grown significantly. However, many present approaches are unsuitable for real-world implementation due to high memory footprints and lack of interpretability. We introduce DeClEx, a pipeline designed to address these issues. DeClEx ensures that data mirrors real-world settings by incorporating gaussian noise and blur and employing autoencoders to learn intermediate feature representations. Subsequently, our convolutional neural network, paired with spatial attention, provides comparable accuracy to state-of-the-art pre-trained models while achieving a threefold improvement in training speed. Furthermore, we provide interpretable results using explainable AI techniques. We integrate denoising and deblurring, classification and explainability in a single pipeline called DeClEx.

**Keywords :** machine learning, healthcare, classification, explainability

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