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TITLE OF THE PAPER: Brain tumor detection using vision transformer

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The following submission has been created.

Track Name: Track 6. Interdisciplinary and Emerging Technologies

Paper ID: 1185

Paper Title: BRAIN TUMOR DETECTION USING VISION TRANSFORMERS

Abstract:
Brain tumors are among the most serious medical conditions that require early
discovery and accurate diagnosis. Current methods involve manual analysis of
MRI scans using human assessments, which is subjective and time-consuming. Recent advances in artificial intelligence, especially deep learning, have
become a gateway for transforming this area of medical imaging. This article
investigates the use of Vision Transformers (ViT) to identify brain tumors from
MRI images. The original work was made towards natural image recognition, but these Vision Transformers are showing remarkable performance in taking
large-scale image datasets through self-attention mechanisms.In this project, preprocessing and augmentation of publicly available brain MRI scan datasets
ensured high-quality input, which could be used for training the models. An
offthe-shelf pre-trained ViT model is fine-tuned for the task of high-precision
classification and detection of tumor regions. The performance was evaluated
with accuracy, precision, recall, and F1-score, showing notable improvements
over conventional convolutional neural network-based approaches.Results
demonstrate the possibility of relying on Vision Transformers to detect brain
tumors automatically: the solution is robust, scalable, and reliable, with high
potential for clinical applications in real-world scenarios. The study shows that
the future for healthcare could be better accuracy in diagnostic results and an
easier workload for medical professionals through integrating AI-driven
solutions. Future work aims to improve performance through larger datasets, multimodal imaging, and explainable AI techniques.