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A Review on Brain Tumors and Artificial Intelligence: Exploring the Significance of Artificial Intelligence in Medical Imaging

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Abstract

The escalating prevalence of brain tumors presents an intricate challenge to modern healthcare, demanding precise and prompt diagnosis and treatment. Their multifaceted nature, varying forms, and intricate anatomical locations underscore the urgency for advanced diagnostic methodologies. Amidst this clinical urgency, the emergence of artificial intelligence (AI) heralds a transformative era in medical imaging and brain tumor diagnosis. This review paper navigates the complex terrain where the resilience of neural malignancies converges with the dynamic capabilities of AI. The demand for timely and accurate diagnosis of brain tumors amplifies the significance of AI-driven medical imaging. AI's prowess in reshaping medical image analysis specifically for brain tumors cannot be understated. Its ability to discern subtle anomalies in imaging data accelerates early detection and intervention, crucial in improving patient outcomes. The confluence of AI and brain tumor diagnosis presents an unprecedented opportunity to revolutionize healthcare. This synergy doesn't merely represent a technological advancement but a lifeline for patients, offering hope and innovation amidst the complexities of neural disorders. Our exploration delves deep into the symbiotic relationship between AI's capabilities and the unmet needs of brain tumor diagnostics, envisaging a future where technology augments healthcare for improved patient care and outcomes.

Keywords: *Artificial Intelligence, Brain Tumor, Medical Imaging, Neuro-Oncology*