IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 2, September 2024

Brain Tumor Detection and Classification using YOLOv10 and AI Chatbot Using LLMs

Sanket Satpute[1], Jagruti Khairnar[2], Kunal Shinde[3] Rohini Sangle[4]

Prof. Jyoti Thakur[5]

Department of AIML (Artificial Intelligence & Machine Learning)[12345]

Loknete Gopinathji Munde Institute of Engineering Education & Research (LOGMIEER)s, Nashik, India

Abstract: *The integration of advanced medical imaging techniques and artificial intelligence (AI) has greatly improved the early detection and diagnosis of brain tumors. This paper introduces a novel system for brain tumor detection and classification using the YOLOv10 (You Only Look Once) model, enhanced by an AI chatbot powered by Large Language Models (LLMs). Leveraging the real-time object detection capabilities of YOLOv10, the system accurately classifies brain tumors from MRI images into four categories: Glioma, Meningioma, Pituitary, and No Tumor. This deep learning-based approach ensures swift and precise analysis of complex medical images.*

In addition, an AI chatbot is integrated to provide seamless interaction and information retrieval for both patients and healthcare professionals. Utilizing LLMs, the chatbot offers advanced conversational abilities, delivering detailed explanations about tumor types, potential treatments, and further medical advice based on the detected tumor characteristics.

This dual-system approach aims to enhance diagnostic accuracy while providing real-time, accessible support, ultimately improving decision-making for medical practitioners and enhancing patient outcomes. The proposed system exemplifies the synergy between cutting-edge AI technologies and medical diagnostics, showcasing the potential to revolutionize patient care.

Keywords: YOLOv1o, LLMs, Chatbot, Brain Tumor, Pinecone