Contribution ID: **6** Type: **not specified**

Deep Learning Meets Quantum Computing: Revolutionizing Brain Tumor Detection with CNNs and QNNs

Tuesday 15 October 2024 17:49 (10 minutes)

Brain tumor detection is a critical task in medical diagnostics, where early and accurate identification can significantly impact patient outcomes. This research focuses on the development and optimization of deep learning (DL) models to enhance the accuracy and efficiency of brain tumor detection from magnetic resonance imaging (MRI) scans. By leveraging Convolutional Neural Networks (CNNs), our study aims to automate the process of tumor identification, reducing the dependency on manual analysis, which is often time-consuming and prone to errors.

We have developed a CNN-based model trained on a large dataset of annotated brain MRI images, achieving promising results in differentiating between various types of brain tumors. Our approach incorporates advanced data augmentation techniques to address the challenges of data scarcity and class imbalance, which are common in medical imaging. Furthermore, we explore the integration of Quantum Neural Networks (QNNs) to potentially improve the model's performance by harnessing quantum computing's capabilities.Our ongoing research aims to refine these models further and validate their effectiveness through extensive testing on diverse datasets, ultimately paving the way for their implementation in clinical settings.

Author: Ms EL ASLANI, MALIKA (LPMAT, Faculty of Sciences Ain Chock of Casablanca, Morocco)

Co-author: Prof. EL HACHEMI, OMARI LHAJ (LPMAT, Faculty of Sciences Ain Chock of Casablanca, Morocco)

Presenter: Ms EL ASLANI, MALIKA (LPMAT, Faculty of Sciences Ain Chock of Casablanca, Morocco)

Track Classification: Abstract reviews