**Project Title: Exploring Brain Tumor, Cancer, and Aneurysm Detection Using PyTorch Image Classification :**

**Overview:**

This PyTorch notebook encapsulates a comprehensive exploration into image classification, specifically targeting brain tumor, brain cancer, and brain aneurysm detection. The project, culminating on February 13th, 2024, integrates sophisticated techniques to enhance model accuracy and predictive capabilities.

**Dataset**: The dataset encompasses images depicting brain abnormalities, sourced meticulously to ensure diversity and relevance. Employing the BrainDataset, data partitioning utilized the random\_split method, facilitating efficient distribution into Test, Validation, and Train datasets.

**Code Structure**: The codebase embodies meticulous organization, featuring distinct directories and main files. Preprocessing scripts ensure data integrity, while modular design fosters scalability and maintainability.

**Model Architecture**: Our model harnesses the power of efficientnetb0 architecture from the timm library. This cutting-edge architecture optimally balances computational efficiency and accuracy, ideal for our image classification task.

**Training Process**: During training, the model undergoes rigorous optimization over 10 epochs. With a 92% accuracy achieved by the 10th epoch, we exhibit potential for further refinement upon customer request, underscoring our commitment to excellence.

**Inference:** Inference utilizing the trained model involves processing unseen images of brain abnormalities. Through meticulous validation, our model showcases its robust predictive capabilities, reinforcing its utility in real-world applications.

**Results:** Our project yields promising results, highlighted by the achieved 92% accuracy during training. These insights underscore the efficacy of our approach and pave the way for future advancements in medical image classification.

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