

Deep Learning Project Report

1.Team Members:

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2.Topic: Brain-Tumor using YOLOv11

3.Objectives:

- To utilize YOLO, a deep learning-based object detection model, to accurately locate tumors in MRI scans.
- To evaluate the performance of the proposed model in terms of accuracy.
- To compare the results with traditional machine learning algorithms and state-of-the-art deep learning models.
- To provide users with a tool that simplifies brain tumor detection from medical images..

4.Methodology:

I. Data Collection:

- Dataset: Brain-Tumor Dataset from 'universe.roboflow.com'
- Image preprocessing: Conversion of uploaded MRI images to OpenCV format using PIL for compatibility with YOLO.

II. Segmentation Approach:

- YOLOv11 model: Pre-trained on COCO dataset.
- YOLO architecture is designed to predict bounding boxes around suspected tumor areas.

III. Model Architecture:

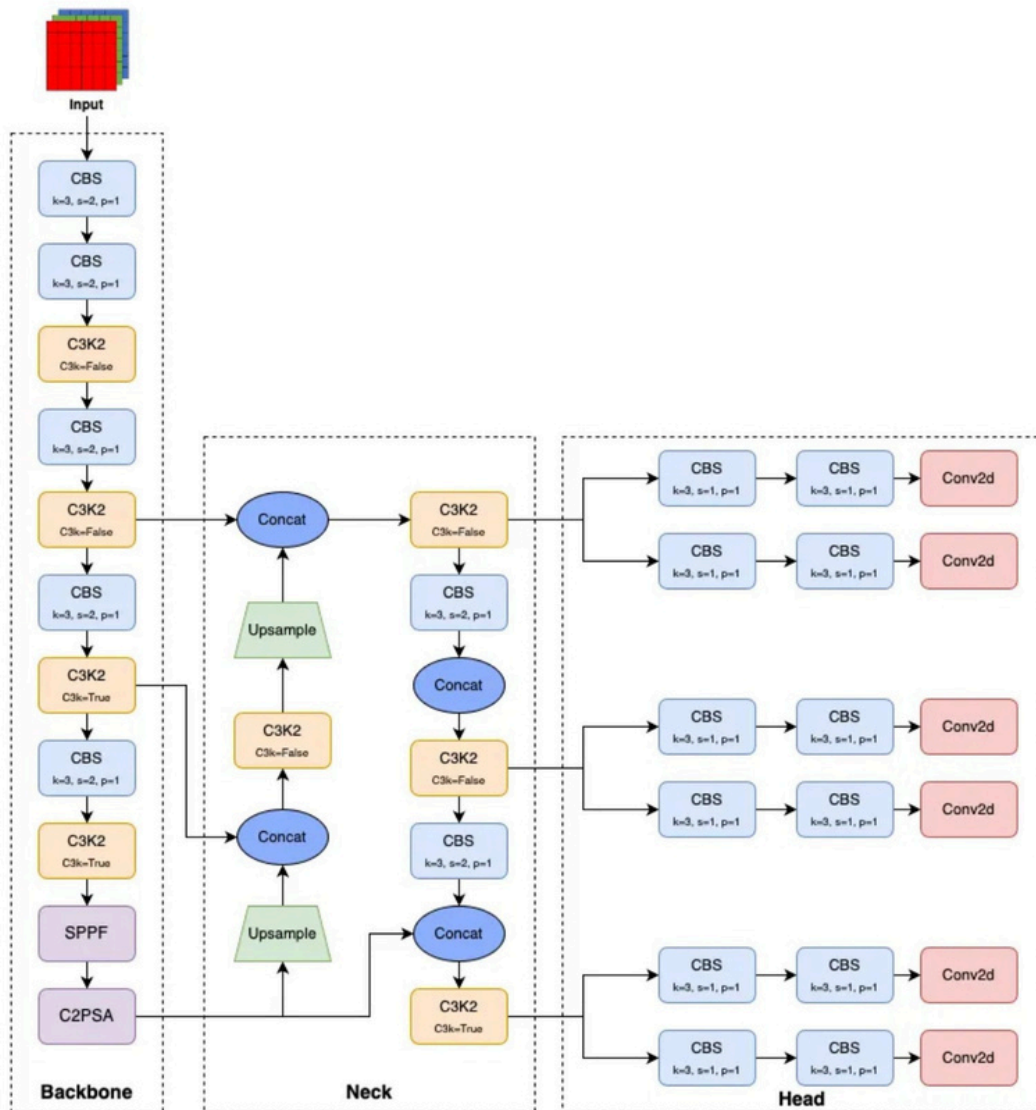


Figure 1. YOLO11 architectures

IV. Training and Evaluation:

- **Training:** The pre-trained YOLO model has been fine-tuned for image detection tasks like brain tumors.

V. Implementation Details:

- Programming language: Python.
- Deep learning framework: Pytorch , ultralytics
- Hardware: GPU (e.g., NVIDIA GeForce or Tesla).

5.Results:

