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B.E Computer Science & Engineering – IIIyear

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PROJECT TITLE

Storke Prediction Using CNN

AGENDA

Creating a stroke prediction system using Convolutional Neural Networks (CNNs) can be a fascinating project with potentially life-saving implications. Here's an agenda outlining the steps you might take:

- **Understanding Stroke**
- **Data Collection and Preprocessing**
- **Feature Engineering**
- **Designing the CNN Architecture**
- **Model TrainingEvaluation and Validation:**
- **Fine-tuning and Optimization**
- **Interpretation and Deployment**
- **Ethical Considerations**
- **Documentation and Communication**
- **Future Work**

PROBLEM STATEMENT

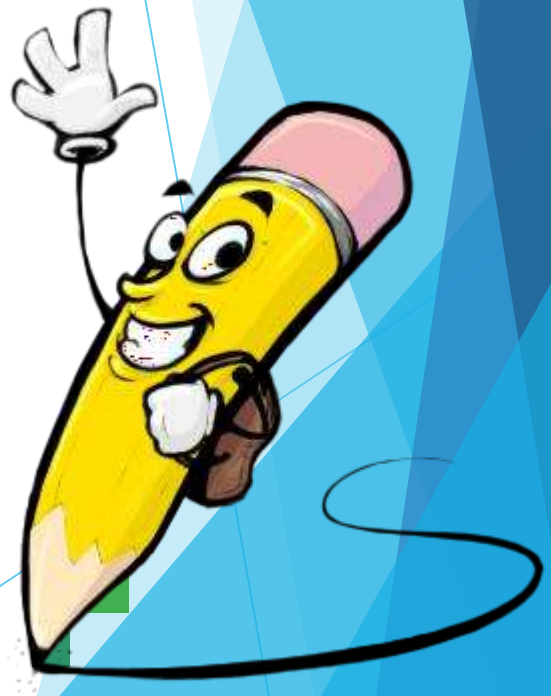
The problem revolves around predicting the likelihood of an individual experiencing a stroke based on medical imaging data such as brain MRI or CT scans. Given a dataset of labeled images, the task is to train a CNN model to accurately classify these images into two classes: stroke-positive and stroke-negative. The model should be able to generalize well to unseen data and provide reliable predictions for early stroke detection.

PROJECT OVERVIEW

Objective: The main goal of this project is to develop a predictive model using Convolutional Neural Networks (CNNs) to predict the likelihood of stroke occurrence based on medical imaging data.

Dataset: The project utilizes a dataset consisting of medical images, such as MRI or CT scans, along with associated patient information including demographics, medical history, and lifestyle factors. This dataset is crucial for training the CNN model to recognize patterns indicative of stroke.

Convolutional Neural Networks (CNNs): CNNs are a type of deep learning algorithm commonly used for image recognition tasks. They are particularly effective for analyzing visual data due to their ability to automatically learn and extract features from images.

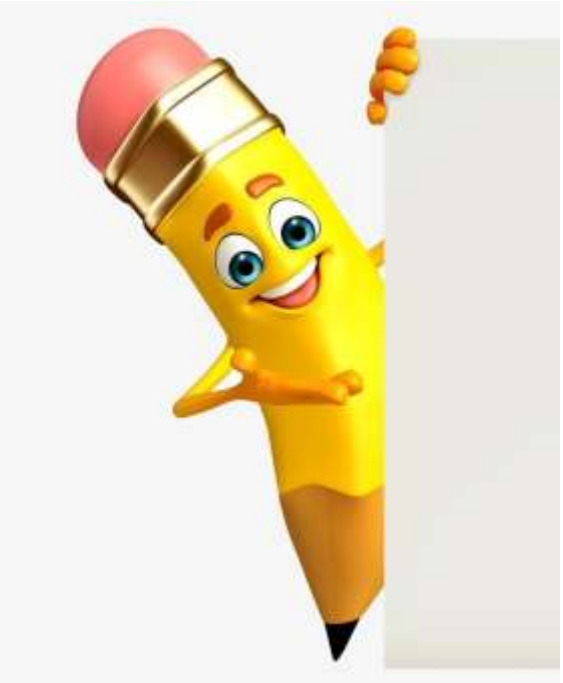


WHO ARE THE END USERS?

In stroke prediction using CNN (Convolutional Neural Networks), the end users typically include

- healthcare professionals
- doctors
- Nurses
- Researchers
- patients

YOUR SOLUTION AND ITS VALUE PROPOSITION



Our solution for stroke prediction utilizes Convolutional Neural Networks (CNNs), a type of deep learning algorithm that has shown remarkable performance in image recognition tasks, and we adapt it for medical imaging analysis related to strokes. The CNN takes as input medical imaging data, such as MRI or CT scans of the brain, and learns to identify patterns indicative of potential stroke occurrences.

MODELLING

Stroke prediction using Convolutional Neural Networks (CNN) involves leveraging advanced machine learning techniques to analyze medical images such as MRI scans, CT scans, or even ultrasound images to predict the likelihood of an individual experiencing a stroke. Here are some key points about modelling in stroke prediction using CNN

- Data Preprocessing
- Convolutional Neural Networks (CNN)
- Architecture Design
- Validation and Testing
- Interpretability
- Deployment

Overall, CNNs offer a promising approach for stroke prediction by efficiently extracting features from medical images, but careful model development, validation, and interpretation are essential to ensure accurate and reliable predictions.

RESULTS

```
[ ] dataset.describe(include = 'all')
```

	id	gender	age	hypertension	heart_disease	ever_married	work_type	Residence_type	avg_glucose_level	bmi	smoking_status	stroke
count	5110.000000	5110	5110.000000	5110.000000	5110.000000	5110	5110	5110	5110.000000	4909.000000	5110	5110.000000
unique	NaN	3	NaN	NaN	NaN	2	5	2	NaN	NaN	4	NaN
top	NaN	Female	NaN	NaN	NaN	Yes	Private	Urban	NaN	NaN	never smoked	NaN
freq	NaN	2994	NaN	NaN	NaN	3353	2925	2596	NaN	NaN	1892	NaN
mean	36517.829354	NaN	43.226614	0.097456	0.054012	NaN	NaN	NaN	106.147677	28.893237	NaN	0.048728
std	21161.721625	NaN	22.612647	0.296607	0.226063	NaN	NaN	NaN	45.283560	7.854067	NaN	0.215320
min	67.000000	NaN	0.080000	0.000000	0.000000	NaN	NaN	NaN	55.120000	10.300000	NaN	0.000000
25%	17741.250000	NaN	25.000000	0.000000	0.000000	NaN	NaN	NaN	77.245000	23.500000	NaN	0.000000
50%	36932.000000	NaN	45.000000	0.000000	0.000000	NaN	NaN	NaN	91.885000	28.100000	NaN	0.000000
75%	54682.000000	NaN	61.000000	0.000000	0.000000	NaN	NaN	NaN	114.090000	33.100000	NaN	0.000000
max	72940.000000	NaN	82.000000	1.000000	1.000000	NaN	NaN	NaN	271.740000	97.600000	NaN	1.000000

```
[ ] dataset.info()
```