



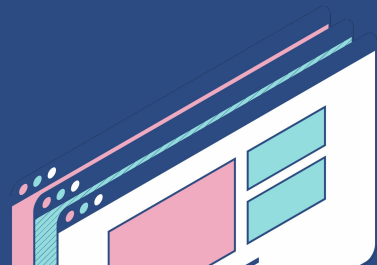
LabLabAI - Build with Low-Code: Langflow Hack

AI The Era Team



NeuroFlow

Enabling Faster Brain Tumor Detection Through AI



NeuroFlow Team



Muhammad Farhan

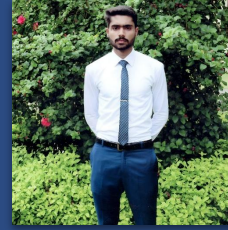


Robin T



Shumaila Batool

**NeuroFlow's
Domain Expert**



Sikander Nawaz

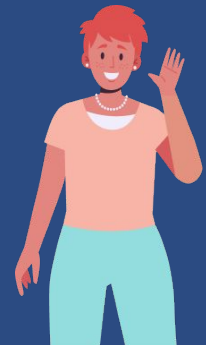


Ichwan H.



Joe Garfield

Currently conducting
Masters' Research on
Brain Tumor
Classification using
Imaging via CNN
methods

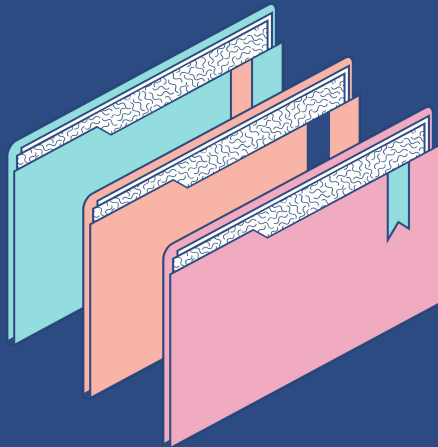




Problem Statement

Brain Tumor Detection:

A **Costly** and **Time-Consuming** Process



1. Lack of Real-time Image Analysis:

- Real-time analysis of imaging techniques is not typically available, resulting in prolonged wait times for patients and healthcare providers.
- Delays in diagnosis can result in the progression of brain tumors, making treatment less effective and reducing survival rates.

2. Need for Specialized Radiologists:

- Accurate interpretation of MRI and CT scans requires highly trained and specialized radiologists.
- There is a global shortage of such specialists, leading to delays in diagnosis.

3. Time-Consuming:

- Manual analysis of imaging results is time-intensive.
- Delays in diagnosis can occur due to the time required for radiologists to review and interpret scans.

4. Need for Continuous Monitoring:

- Brain tumor patients require long-term monitoring to track tumor progression and treatment effectiveness, which is often inadequately managed with current tools.

5. Data Integration:

- Integrating diagnostic data with patient health records can facilitate continuous monitoring and timely interventions.

6. Economic Burden:

- The economic impact of brain tumors includes both direct medical costs and indirect costs such as lost productivity and long-term care requirements.

Tip: Use links to go to a different page inside your presentation.

How: Highlight text, click on the link symbol on the toolbar, and select the page in your presentation you want to connect.

Solutions



Our mission:

To assist radiologists in brain tumor identification and classification using convolutional neural networks (CNN) for faster image processing with the help of AI.

AI-Powered Diagnostics:

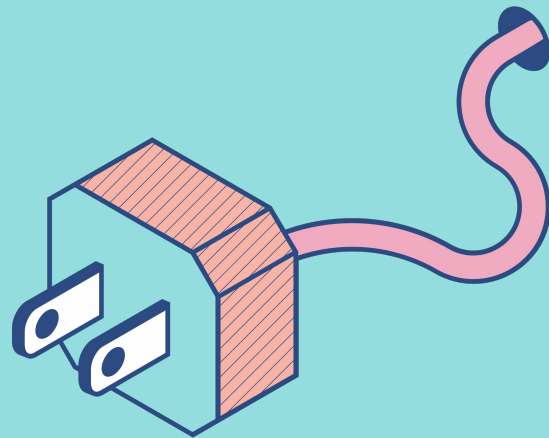
- Implement advanced AI models that can analyze MRI and CT scans in real-time.
- Use convolutional neural networks (CNNs) and LLM to detect tumor presence and characteristics instantly.
- Provide instant feedback to healthcare professionals, reducing the need for time-consuming manual analysis.

Automated Reporting:

- Generate automated reports summarizing the findings, highlighting critical areas that need further examination.

Cost-Effective Solutions:

- Develop cost-effective diagnostic app that use AI to reduce the need for expensive imaging techniques.
- Implement cloud-based solutions to lower infrastructure costs.





Real Use Case Impacts

1. Cost Savings for Radiologists:

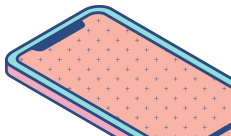
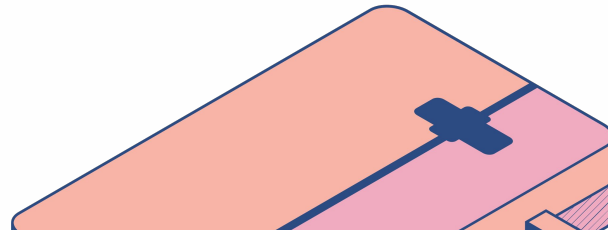
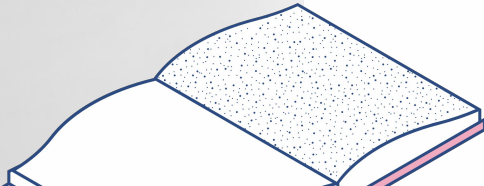
- AI can handle up to 80% of routine diagnostic tasks, reducing the workload on senior radiologists and allowing junior radiologists to manage more cases.
- Potential savings of \$5 million annually per radiologist in labor costs.

2. Economic Benefits for Hospitals:

- Reduced need for highly specialized radiologists can save hospitals approximately \$5 million annually.
- Faster diagnosis and treatment can decrease patient hospitalization time, saving up to \$2.5 billion per year.

3. Overall Global Financial Impact:

- Potential to reduce overall diagnostic and treatment costs by 20%, equating to savings of up to \$15 billion annually in the global healthcare system.
- Improved patient outcomes and reduced mortality rates can save an additional \$5 billion in indirect costs annually.



Potential Revenue



Year 1:	Total revenue: \$45 million
Year 2:	Total revenue: \$72.45 million
Year 3:	Total revenue: \$116.75 million
Year 4:	Total revenue: \$188.38 million
Year 5:	Total revenue: \$302.75 million

5-Year Total Projected Revenue: \$725.33 million
(or \$0.725 billion)

How We Calculated It?

Number of hospitals/radiology centers: 150
Revenue per hospital/radiology center: \$300,000

Total revenue:
150×300,000=
45,000,000 (or 45 million)

The oncology devices market is expected to hit **\$7.1 billion by 2031, growing at a 17.0% CAGR.**

This growth is fueled by rising cancer rates, improved diagnostic and treatment technologies, an aging population, and initiatives for cost-effective, high-quality care.

Currently, in this field, the branches where AI is gaining a larger impact are represented by the diagnostic areas, which count for the vast majority of the approved devices (>80%), and in particular radiology and pathology.

Market Size



How Does Langflow Help?

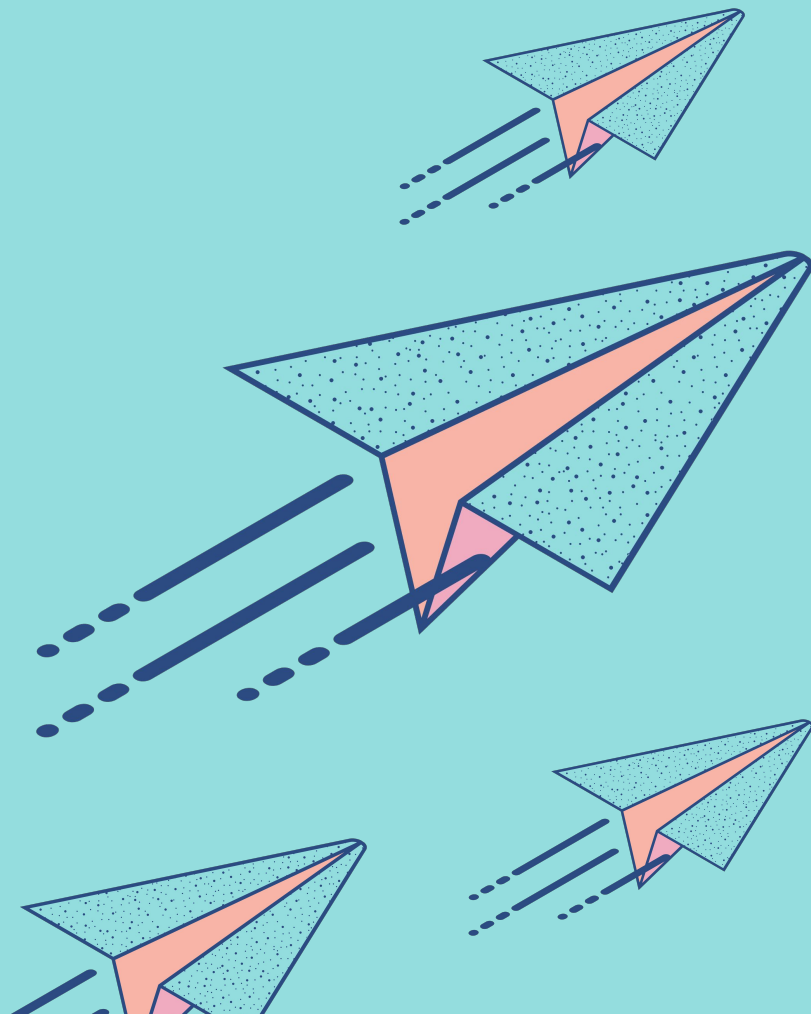
Idea:

Replicating Shumaila's Existing CNN Image Processing to the LangFlow Platform

Currently, our research uses manual high-level code and calculations to implement the Convolutional Neural Network (CNN). This involves complicated work to generate the classification.

However, with Langflow, we have successfully replicated our tedious manual process of image calculation using seamless low-code integration via Langflow and Hugging Face.

This saves us a significant amount of time on complex coding work while still achieving the same results as Shumaila's current manual model.



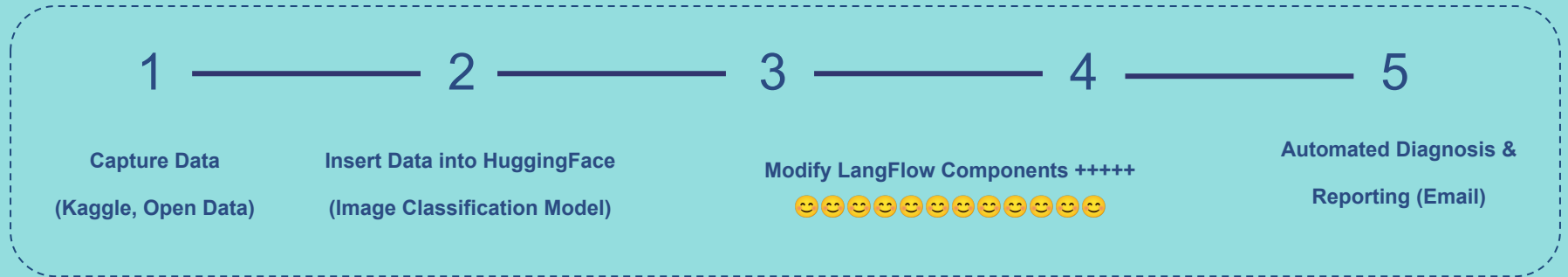
Comparison: Existing Process vs LangFlow

Creating Automatic Generated Process from Brain Tumor Imagery Classification to Email Reports



Comparison: Existing Process vs LangFlow

Creating Automatic Generated Process from Brain Tumor Imagery Classification to Email Reports

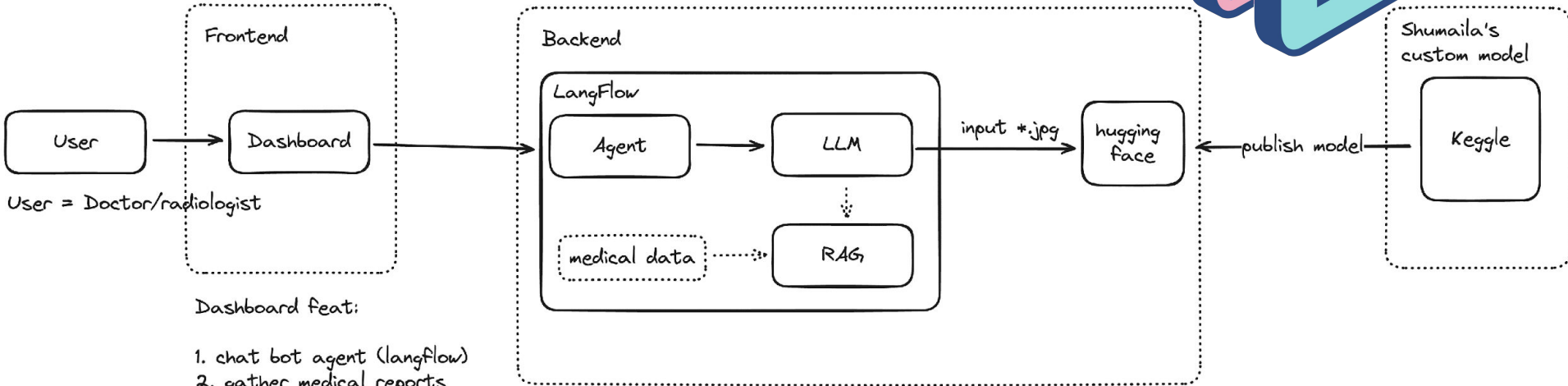


We successfully replicated Shumaila's months long, arduous process of creating the existing model and output in just 3 days using HuggingFace and LangFlow

Architecture

Current LangFlow Limitation

HuggingFace image to text components
LangFlow condition components
Import pre-training/custom model to LangFlow



Dashboard feat:

1. chat bot agent (langflow)
2. gather medical reports
3. summary / reports
 - 3.a. what is the tumors and name tumors
 - 3.b. phase of tumors
 - 3.c. characteristics of tumors
 - 3.d. treatments
4. automated email for the reports

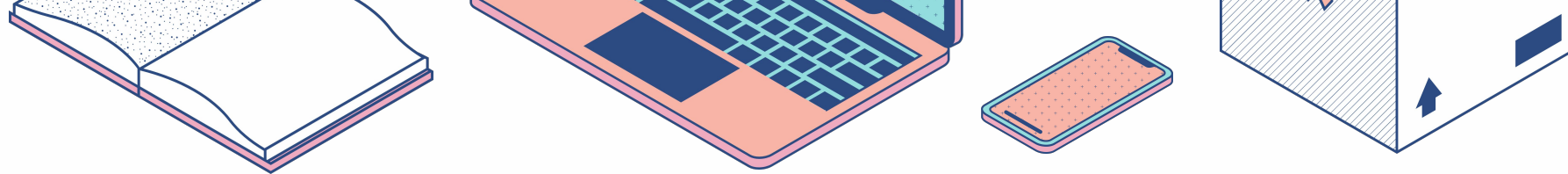
Agent will do:

1. simple classifications based on symptoms
2. ask for image to upload for determining brain tumors



What's Next For **NeuroFlow**

- Create the working Homepage + Embedded LangFlow Playground
- Increase the Dataset for CNN for higher acc. Up to 99%
- Integration with Medical Databases for Real-World Medical Use Cases and Creation of Strong Business Value for Commercial Purposes



FULL DEMO LINKS FOR DETAILED WALKTHROUGH

https://drive.google.com/drive/folders/10ND1pBdSs_IJpeymfc3ZQbcRrzipIkLA

Thank You!

