

vital Scans



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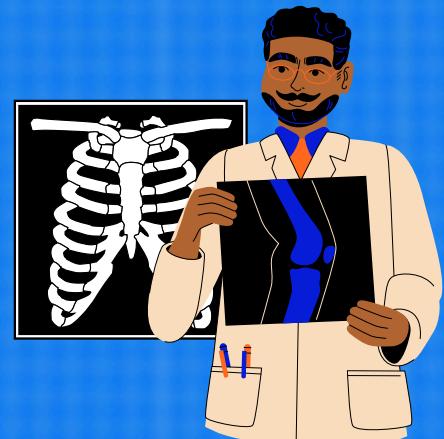
Simply upload your X-ray

receive an instant DIAGNOSIS



Problem Statement

- **Challenges in Healthcare:** Many healthcare facilities, especially in remote areas, struggle with limited access to specialists, long diagnostic times, and inadequate diagnostic tools. These challenges delay treatment and can lead to misdiagnosis or untreated critical conditions.
- **The Need for Faster Diagnosis:** Timely and accurate diagnoses are essential for effective treatment. However, traditional methods often involve waiting for expert reviews, which can cause delays. VitalScans.AI addresses this issue by automating the diagnostic process for certain conditions, reducing time spent on diagnosis and allowing medical professionals to focus on critical cases.



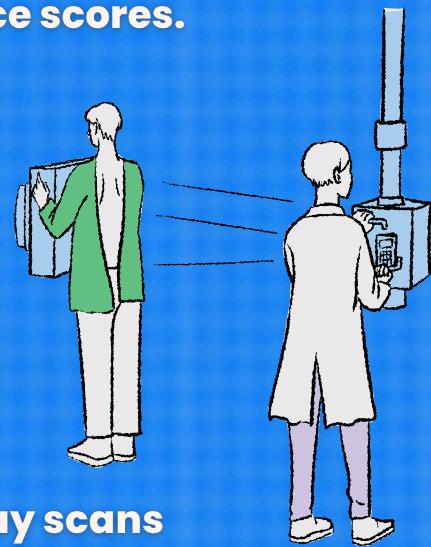
Motivation and Purpose:

The goal of VitalScans.AI is to address challenges in healthcare, particularly in rural areas or places where access to medical professionals is limited. By providing immediate, AI-based diagnostic feedback, the app aims to help doctors prioritize urgent cases, reduce diagnostic time, and increase accessibility to healthcare.



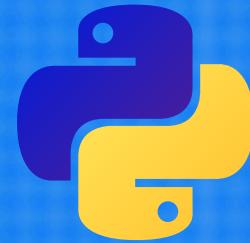
OUR SOLUTION

- **VitalScans.AI is an AI-powered diagnostic tool designed to analyze medical scans (primarily X-rays) and provide quick, accurate, and reliable diagnoses. The app uses pre-trained models and machine learning techniques to detect conditions like pneumonia, tuberculosis, and fractures in the uploaded scans, providing annotated results with confidence scores.**



HOW IT WORKS

- **VitalScans.AI allows users to upload X-ray scans through an intuitive web interface. The app processes these scans using pre-trained machine learning models from Roboflow that specialize in detecting conditions like pneumonia, tuberculosis, and fractures. The results are displayed with confidence scores and annotated images to help medical professionals quickly interpret the findings.**



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VitalScans.AI

Upload X-ray image for analysis

Pneumonia Tuberculosis Fracture
Choose File
Upload Scan

VitalScans.AI

Upload X-ray image for analysis

Pneumonia Tuberculosis Fracture

Screenshot 2024-11-30 at 11.04.45 PM.png



VitalScans.AI Results

Annotated Image



Prediction: Fracture Detection - v1.2024-04-12 4-09pm (Confidence: 77.43%)

Medical Assistant Chat

Hello! I'm your medical assistant. I can provide information about your fracture scan results and answer related questions. How can I help you today?

Does bone density affect fracture risk?

Yes, bone density does affect fracture risk. Low bone density, known as osteoporosis, can weaken bones and increase the risk of fractures. It is important to maintain good bone health through proper nutrition, weight-bearing exercise, and, if necessary, medication to reduce the risk of fractures.

Choose File

Upload Scan

Ask our Medical Assistant

Click on a question to ask:

Understanding Pneumonia

What is pneumonia?

What are the common symptoms of pneumonia?

What causes pneumonia?

Is pneumonia contagious?

How is pneumonia diagnosed?

Prevention and Risk Factors

How can I prevent pneumonia?

Who is at higher risk of developing pneumonia?

Are there vaccines for pneumonia?

Can pneumonia occur more than once?

Treatment and Recovery

How is pneumonia treated?

How long does it take to recover from pneumonia?

Can pneumonia be treated at home?

What should I eat or avoid while recovering from pneumonia?



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Why use VitalScan.AI

REDUCES DIAGNOSIS TIME BY 50-70%.

IMPROVES PATIENT OUTCOMES WITH TIMELY INTERVENTIONS.

ENABLES DIAGNOSIS IN RESOURCE-LIMITED AREAS.

BRIDGES THE GAP BETWEEN RURAL HEALTHCARE AND ADVANCED MEDICAL FACILITIES.

Visual annotations for detected abnormalities.

Confidence scores for predictions.

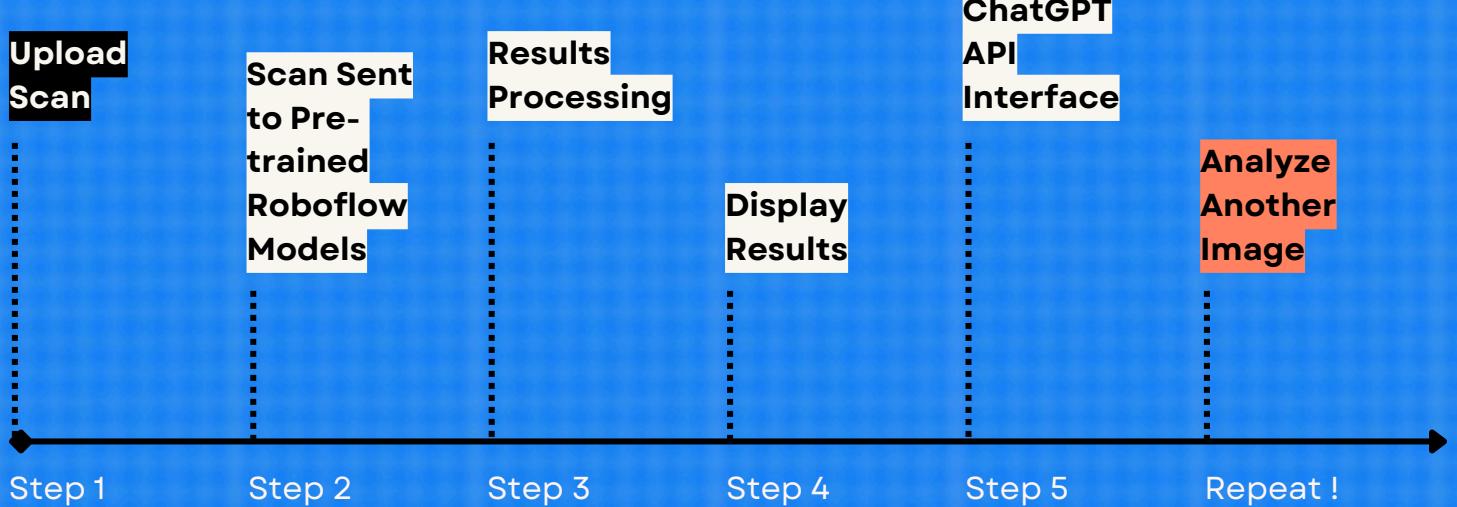
Interactive Q&A system for deeper understanding.



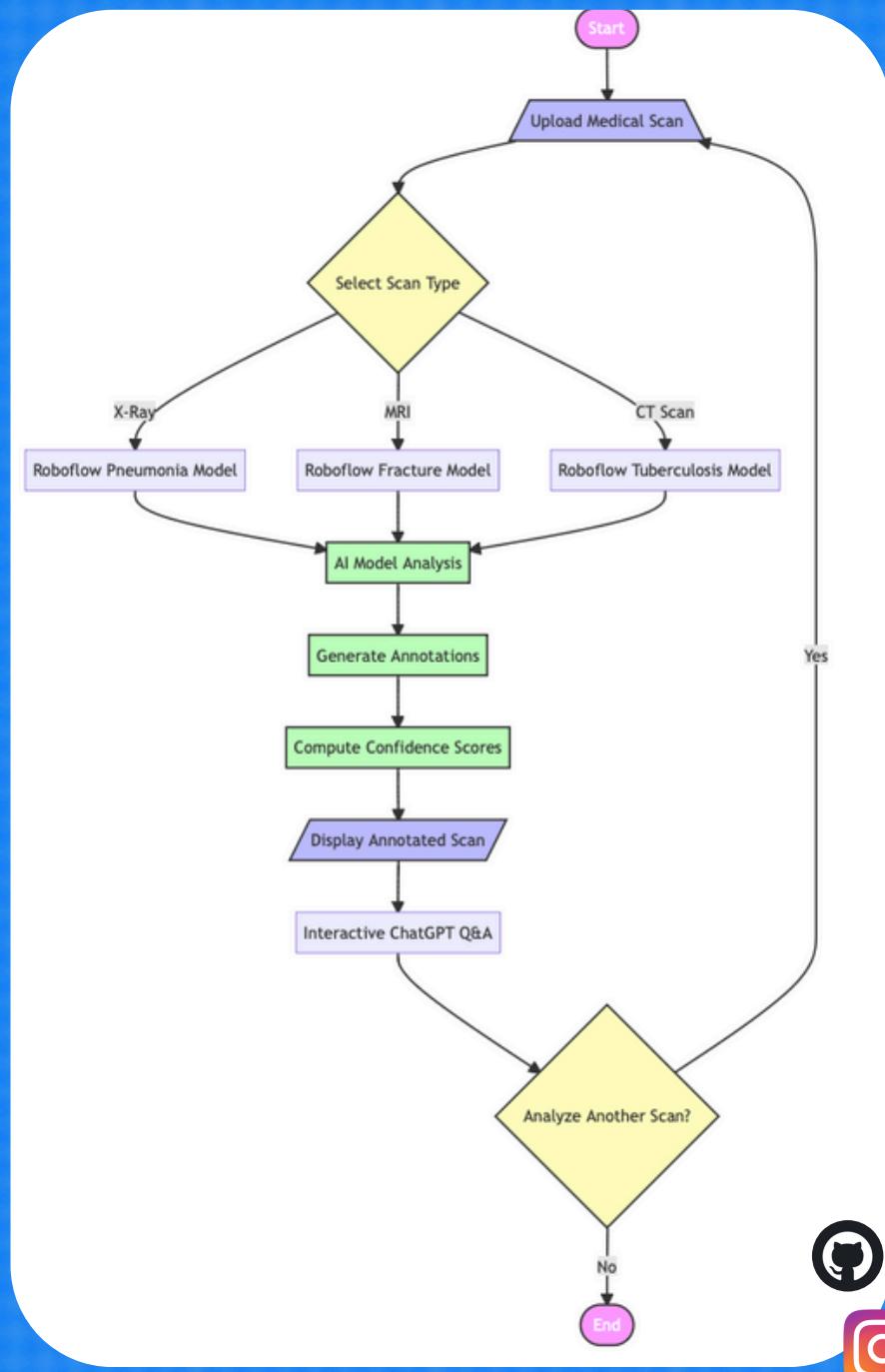
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ALGORITHM



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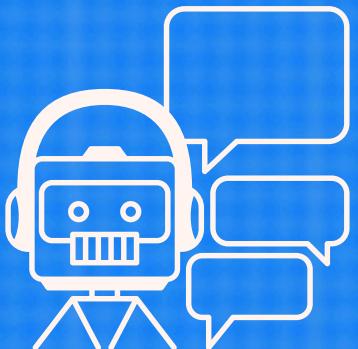


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Features

KEY FEATURES

- **AI-Powered Diagnosis:** The app uses pre-trained models from Roboflow to detect specific conditions in medical scans, providing quick and reliable diagnostic results.
- **Annotated Results:** Scans are annotated with detected conditions, helping doctors visualize abnormalities and understand the severity of the case.
- **Confidence Scores:** Each diagnosis comes with a confidence score, allowing medical professionals to understand how sure the model is about its prediction.
- **Interactive Chatbot:** The chatbot allows users to ask questions about the results, helping them understand the diagnosis better and make more informed decisions.
- **Pre-written FAQ System:** In addition to the chatbot, the app also provides pre-written FAQs addressing common questions about each condition (e.g., "What is pneumonia?" or "How to treat tuberculosis?").



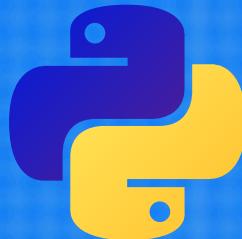
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HOW IT'S MADE

- **Frontend:** Utilizes **HTML, CSS, and Bootstrap** for a **responsive design** and **Jinja2** for **dynamic templating**.
- **Backend:** Built on **Flask** to handle **server-side logic** and integrates the **OpenAI API** for the **ChatGPT-based Q&A system**.
- **AI Models:** Powered by **Roboflow's pre-trained models** for **Pneumonia, Tuberculosis, and Fracture detection**.
- **Data Handling:** Employs **Python** for **image processing** and **API integration**, using **REST APIs** for model inference.
- **Other Tools:** Incorporates **Git** for version control and **Figma** for **UI/UX design**.



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USE CASES SCENARIO:

- **Remote Healthcare Centers:** Quickly analyze scans without on-site specialists.



- **Triage in Emergency Settings:** Prioritize patients with urgent conditions.



- **Medical Training:** Aid in teaching radiology with real-world annotations.



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Conclusion:

- **VitalScans.AI offers a solution to the critical problem of delayed diagnoses and limited access to healthcare experts. By providing fast, accurate, and accessible diagnostic results, it helps improve patient outcomes, especially in areas with limited medical resources. The combination of AI-powered analysis and interactive features like the chatbot makes this tool a comprehensive and valuable addition to modern healthcare systems.**



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Link to Git Repo:
<https://github.com/BENi-Aditya/VitalScans.AI>