

RespiraSense

FYP-I FINAL EVALUATION

OUR TEAM

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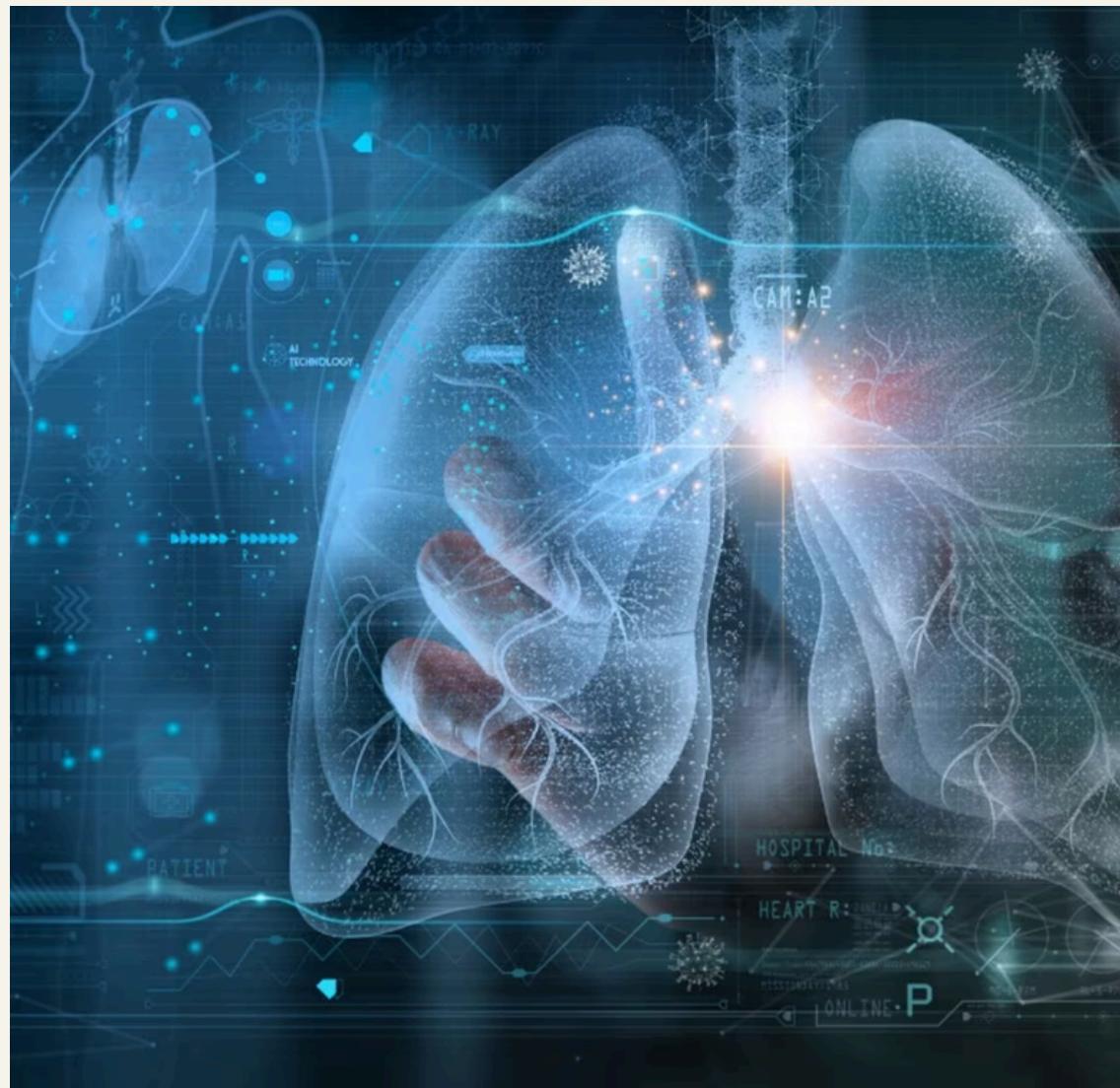
Mr. Muhammad Naveed

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INTRODUCTION



Project Name: RespiraSense

- AI-powered respiratory disease detection - chest x-rays
- Improve healthcare accessibility and diagnostic accuracy
- Target Diseases: Pneumonia, COVID, Tuberculosis

Key Features

- Real-time chest X-ray analysis
- Doctor recommendation system
- Chatbot to assist patient side users

Technology

- MERN Application
- Combined Machine Learning and Deep Learning Techniques

GOALS ACHIEVED

Disease Detection

- DenseNet201 Model chosen

Chatbot

- OpenAI API key used with Express.js for implementation

Development Features

- User Dashboard
- File Handling with Multer
- Basic Frontend

EXPERIMENTS AND RESULTS

- Classification of x-rays - Normal, Tuberculosis, COVID-19, Pneumonia
- DenseNet201 model
- Kaggle environment

Accuracy	81.04
Precision	0.81
Recall	0.81
F1 Score	0.80

DISEASE DETECTION DATASET

Kaggle Dataset

- 6054 – training class
- 2016 – validation class
- 2025 – testing class

Data Pre-processing

- Rescaling – normalization
- Rotation, Shifts, and Transformations
- Only rescaling is applied for validation and test data



CHATBOT DATASET

Kaggle disease symptom dataset

- 773 unique diseases and 377 symptoms
- 1 indicates presence, 0 absence

Converting original dataset into textual format

- Preprocessed using python - converted into csv
- If no symptoms then default response

Converting the CSV file to .jsonl format

- Compatible with OpenAI
- JSON structure with messages representing user and assistant input

Final Dataset

- 5639 sample interactions



FUTURE GOALS

Recommendation System

- Machine Learning - content based filtering

Development Features

- MongoDB Connection
- Appointment booking
- API Creation

Chatbot

- Fine tuning and integration into main application

Model

- Improving Accuracy from 81% to 85% - 90%

CONCLUSION

- **AI-Powered Healthcare:** Advanced respiratory disease detection and patient support.
- **Key Features:** Disease detection, chatbot, and doctor recommendations in a MERN app.
- **Model Performance:** DenseNet201 achieved 81.04% accuracy on test data.
- **Future Goals:** Improve accuracy, add appointment booking, and enhance chatbot.
- **Impact:** Better diagnostics, accessibility, and healthcare support.

PROTOTYPE

THANK YOU