

## How It Works

1. Upload a **chest X-ray image** (PNG, JPG, JPEG)
  2. The system applies **CLAHE enhancement** and **normalization**
  3. **DenseNet121 model** predicts the result with a confidence score
  4. The dashboard displays **risk assessment** and **confidence visualization**
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## Supported Image Formats

- **Formats:** PNG, JPG, JPEG
  - **Recommended Resolution:**  $\geq 512 \times 512$  pixels
  - **Requirements:** Clear chest X-ray showing full lung area
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## Academic Information

- **Institution:** Indian Institute of Technology Jodhpur
  - **Course:** Introduction to Machine Learning
  - **Academic Year:** 2022-2026
  - **Student:** Karan Pratap Singh Rathore (B22CH013)
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## Important Disclaimers

-  **Research Purpose Only:** For educational demonstration
  -  **Not for Clinical Diagnosis:** Needs medical validation
  -  **Data Privacy:** Uploaded images are processed locally
  -  **Accuracy Note:** May vary with different machines and populations
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## Development

### Adding New Features

```
# Create feature branch
git checkout -b feature/amazing-feature

# Commit your changes
git commit -m 'Add amazing feature'

# Push to the branch
git push origin feature/amazing-feature
```

Then open a Pull Request 

## Local Development

```
# Create virtual environment
python -m venv venv
source venv/bin/activate      # On Windows: venv\Scripts\activate

# Install dependencies
pip install -r requirements.txt

# Run development server
streamlit run covid_detection_app.py
```

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### Performance Highlights

- **Dataset:** COVID-19 Radiography Database (40,000+ images)
- **Validation:** 5-fold cross-validation
- **Preprocessing:** CLAHE, histogram equalization, normalization
- **Augmentation:** Extensive data augmentation
- **Testing:** Evaluated on 2,000+ validation images

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### Contributing


Contributions, issues, and feature requests are welcome!  
Feel free to check the [issues page](#).

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### Contact & Support

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### License

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