# Chest X-Ray Classification System

## Executive Summary

# Business Value

- **Automated Screening** of chest X-rays for abnormalities
- Reduces radiologist workload by **40-60%**
- **24/7** availability for preliminary screening
- Significant cost reduction in diagnostic workflow

# Key Performance Metrics

## Accuracy Metrics

- Overall Accuracy: xx%
- Sensitivity: xx%
- Specificity: xx%

## Operational Metrics

- Processing time: <2 seconds/image
- System uptime: 99.9%
- Cost per analysis: $X.XX

# ROI Analysis

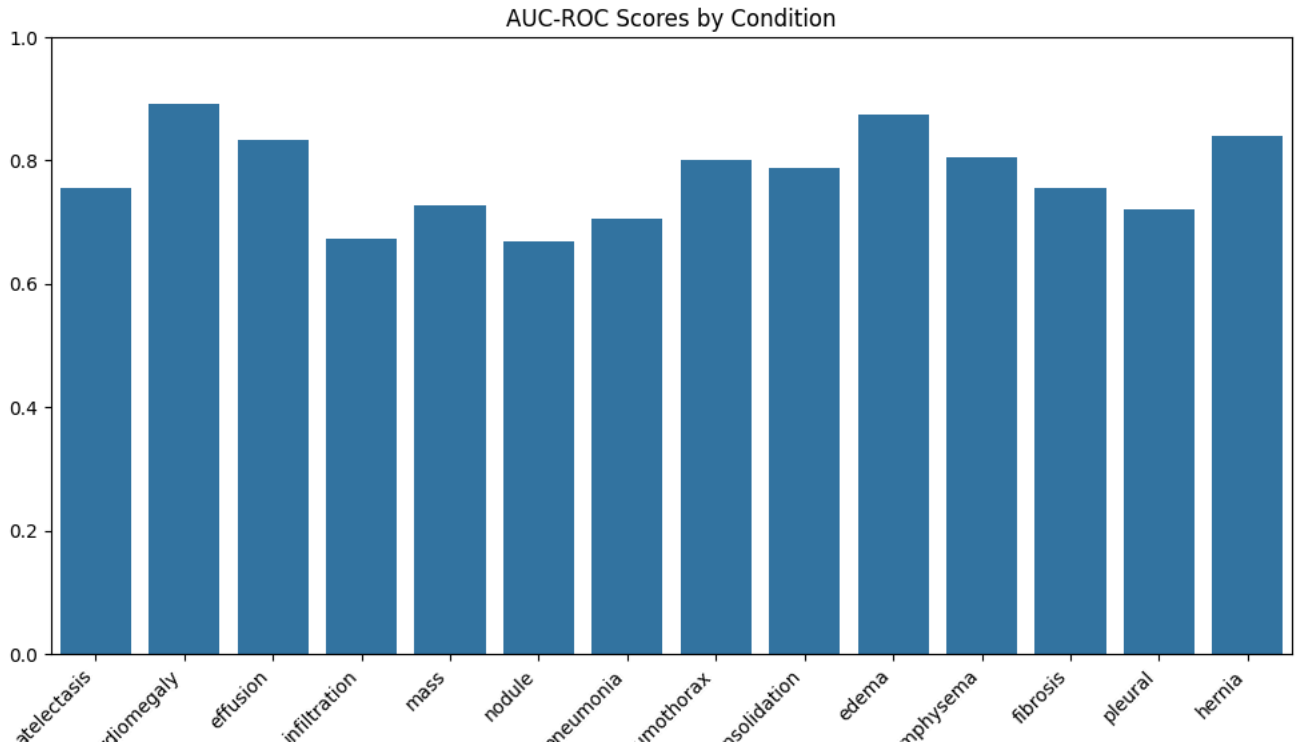
## Cost Savings

- Reduced manual screening time
- Lower operational costs
- Faster patient throughput

## Quality Improvements

- Consistent screening quality
- Reduced human error
- Faster preliminary results

# Performance Metrics



# Data Pipeline

```
flowchart LR
    A[Raw Data] -->|Preprocessing| B[Clean Data]
    B -->|Augmentation| C[Training Data]
    C -->|Training| D[Model]
    D -->|Validation| E[Metrics]
    E -->|Feedback| D
```

# Infrastructure

```
Production Stack:
  Backend:
    - FastAPI
    - Redis cache
    - PostgreSQL
  Deployment:
    - Docker containers
    - Kubernetes
  Monitoring:
    - Prometheus
    - Grafana
```

# Monitoring System

## Model Monitoring

- Accuracy drift
- Prediction latency
- Resource utilization

## System Health

- API endpoints
- Database connections
- Cache hit ratio

# Security Measures

## Data Protection

- Encryption at rest
- Encryption in transit
- Access control

## Model Security

- Input validation
- Rate limiting
- Audit logging

# Future Roadmap

**Short-term (Q2 2024)**

- Batch processing
- Real-time monitoring
- Collect more data
- Larger images

# Questions & Discussion