Pneumonia Image Classification Project

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Summary

- Create model to detect pneumonia from x-rays
- Final model has 89% accuracy
- Final model can evaluate an image in 19 milliseconds

Outline

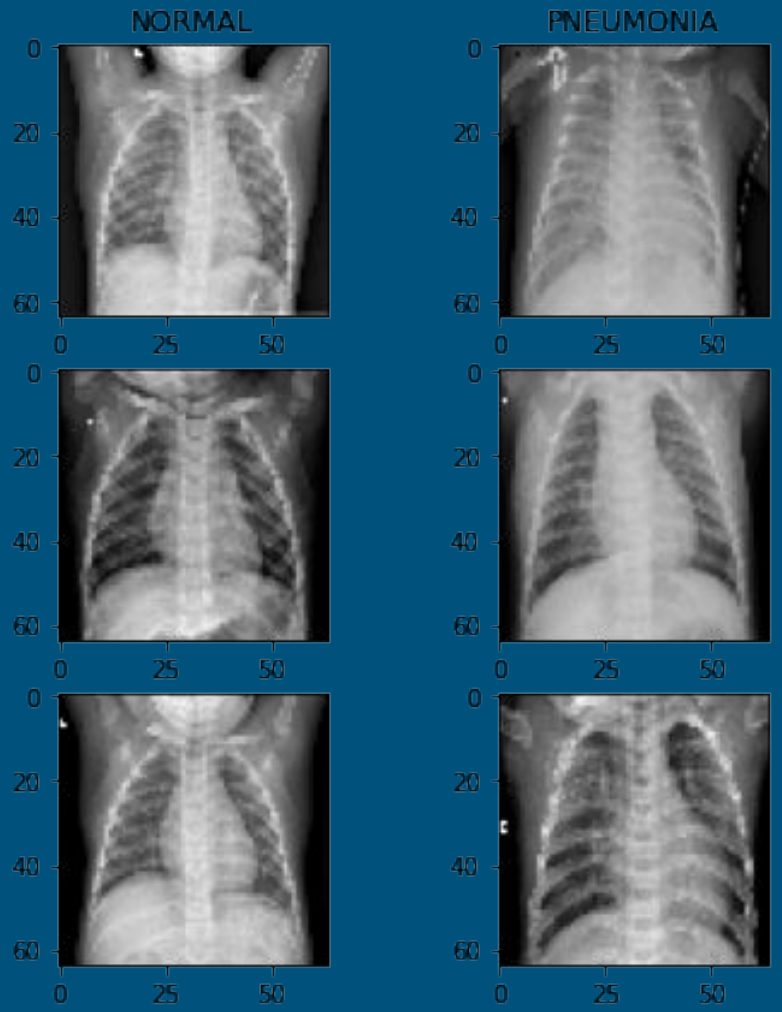
- Business Problem
- Data
- Methods
- Results
- Conclusions

Business Problem

- Radiology consultancy looking to improve efficiency
- Frequently required to identify pneumonia
- Neural network could identify faster and more economically

Data

- 5,856 chest x-rays
- Grayscale images
- Image quality varies



Methods

Data

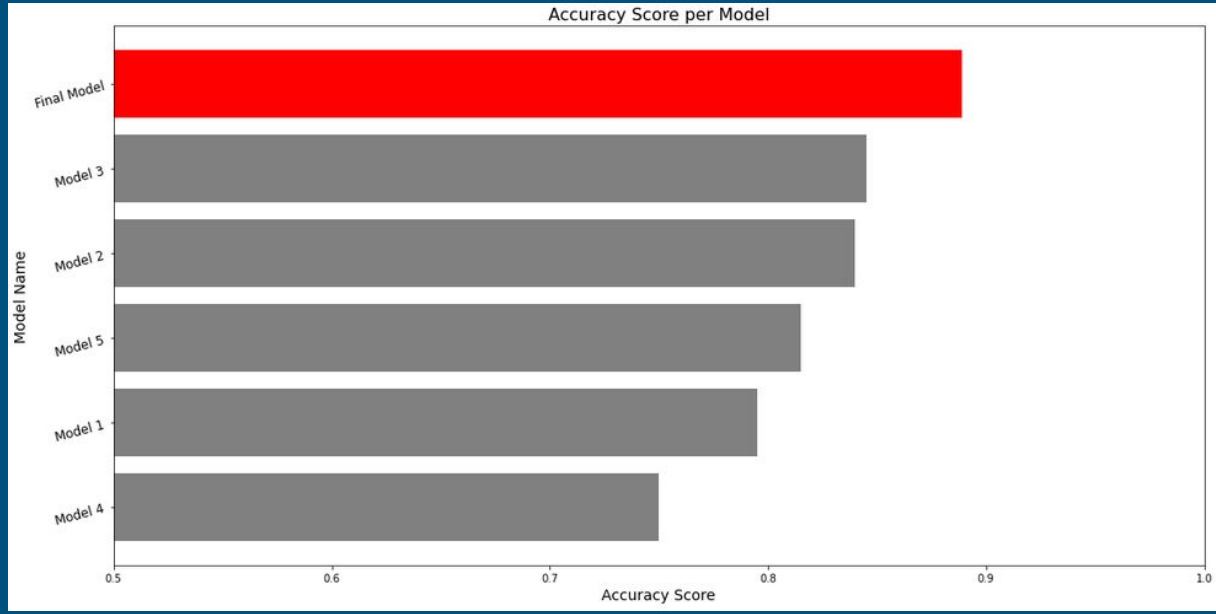
- Resize images
- Apply data augmentation

Modeling

- Iterative modeling
  - Dense Neural Network
  - Convolutional Neural Network
  - Transfer Learning Neural Network

Results

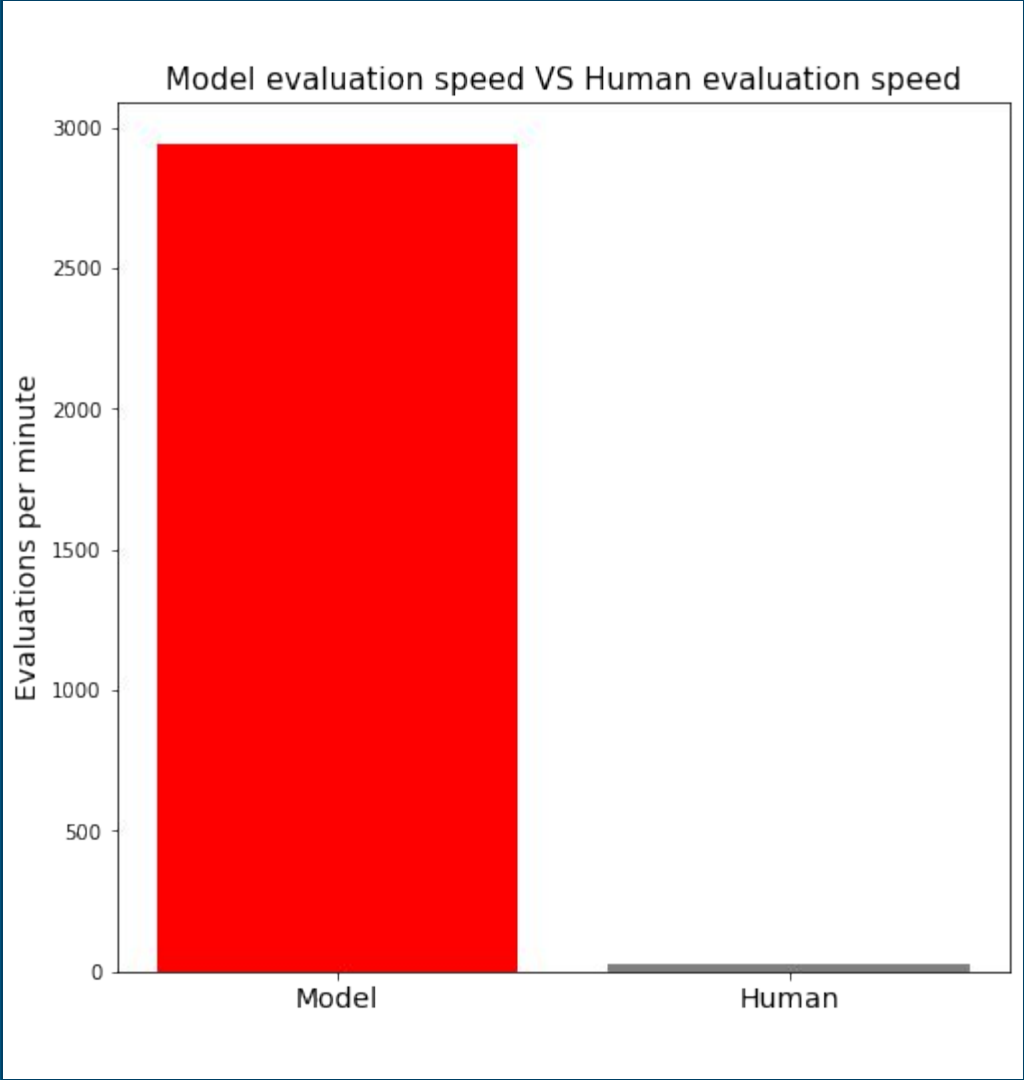
- Final model has superior accuracy
- False negative rate minimized



Conclusions

- Model can evaluate over 2,700 x-rays per minute

- Many times faster than human evaluation



Conclusions

Model Deployment

- Deploy internally
- Free up existing resources
- Radiologists only need to check difficult x-rays

Conclusions

Model Deployment

- Deploy as webapp
  - Involves security considerations
- Customers send x-rays directly to model
- Requires no action from radiologists

Conclusions

Next Steps

- Gather more data
- Purchase more computing resources
- Use neural networks for other illnesses

Thank You!

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