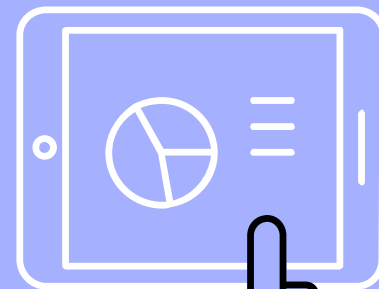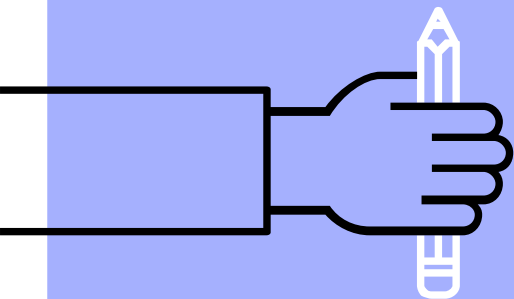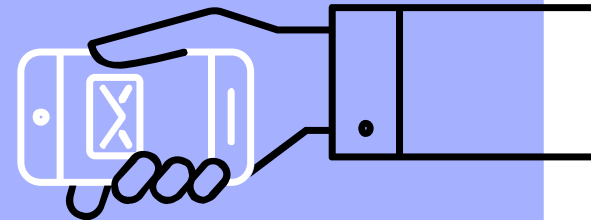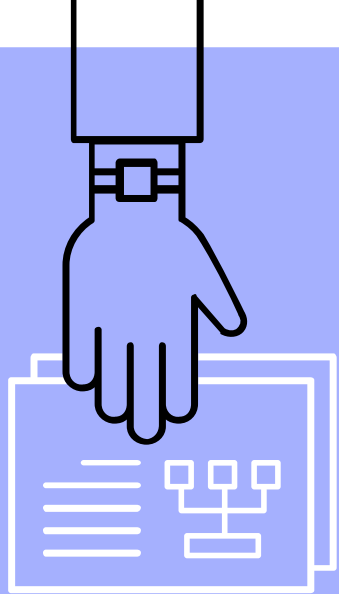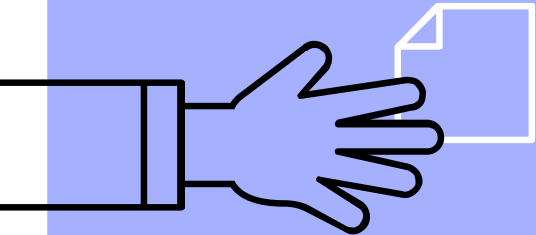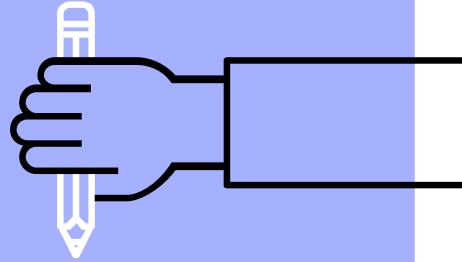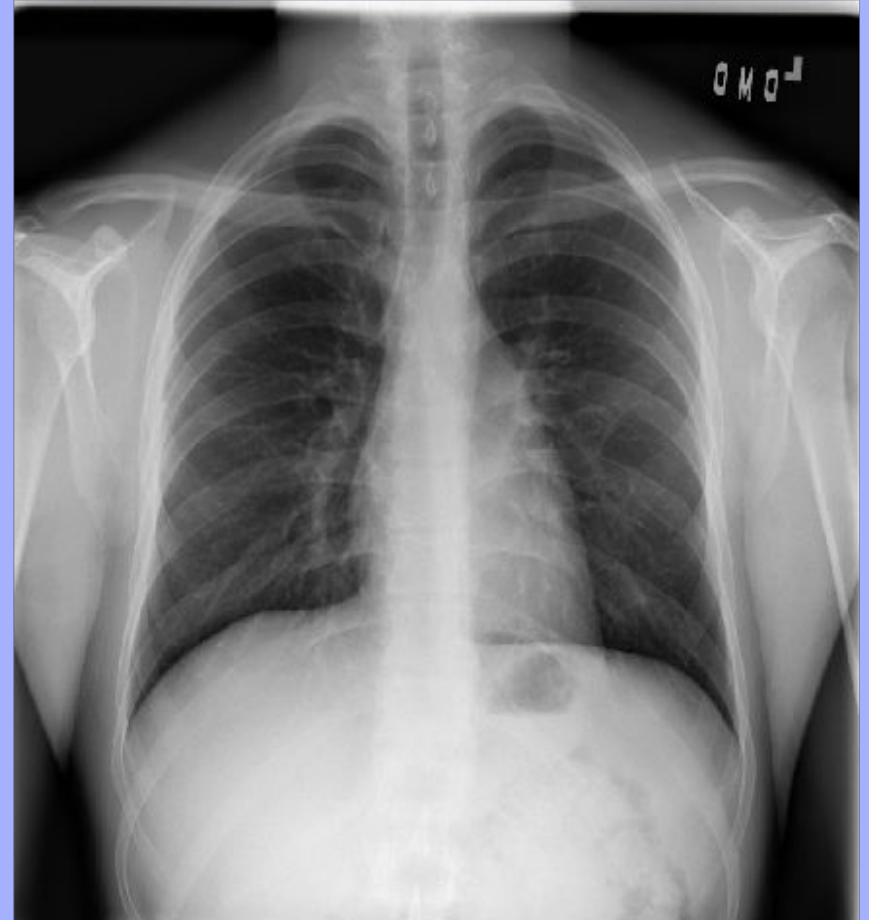# RSNA Pneumonia Detection Challenge

Motivation

▷ Pneumonia accounts for over 15% of all deaths of children under 5 years old internationally

▷ Lung image processing is a bottleneck
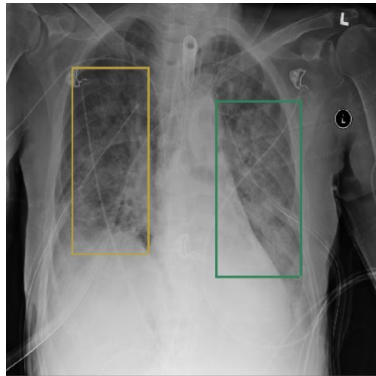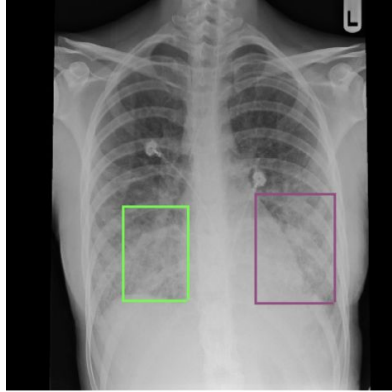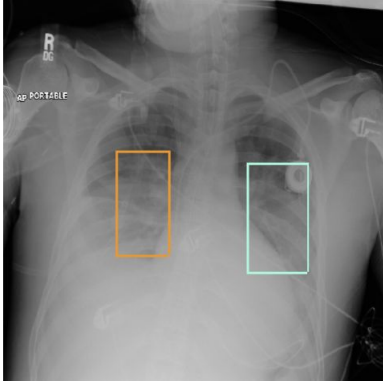
▷ Neural nets can automate!

Sample Set of Chest Scans

"Normal" Lungs

- ▷ Black = air
- ▷ White = bone
- ▷ Grey = tissue/fluid
- ▷ "L" in upper-left corner indicates left side

Sample Patient 1 - Normal Image

4

Lung Opacities

Characteristics

▷ Hazy grey where black should be

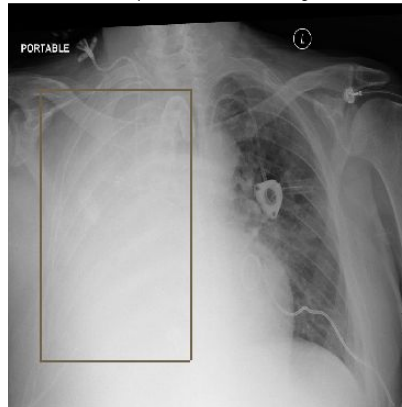▷ Boundaries of lungs less distinct

No Lung Opacities/Not Normal

Sample Patient 3 - Lung Nodules and Masses

Sample Patient 7 - Pleural Effusion

Sample Patient 8 - Increased Vascular Markings + Enlarged Heart

Sample Patient 9 - White Lung

Other Conditions

▷ Lung nodules and masses

▷ Pleural effusion

▷ White lung

▷ Enlarged heart

"Challenge" vs "Competition"

This is a cooperative effort!

New Topic

3

Reminder: MODEL UPLOAD DEADLINE
Julia Elliott 5 days ago

last comment by
Moshel 4h ago

💬 11

20

External Data
Michael Schimmer 2 months ago

last comment by
Yee Seng Ng 1d ago

💬 77

17

Welcome!
Phil Culliton 2 months ago

last comment by
Adithya Seshasay... 4d ago

💬 59

7

Respectful thought to the annotators
Alexandre Cadrin-Chênevert 5 hours ago

last comment by
taindow 5h ago

💬 1

5

Anyone had success with Retina-net so far?
Yakin 6 days ago

last comment by
Moshel 16h ago

💬 36

0

MaskRCNN model problem
boardz_master 10 minutes ago

last comment by
boardz_master 10m ago

💬 0

0

Image-level score if no predicted boxes and no labels
Sam Shleifer 3 days ago

last comment by
Sam Shleifer 3d ago

💬 1

0

bounding box coordinate question
radek 5 days ago

last comment by
Shai 4d ago

💬 2

13

U-Net lung segmentation (Montgomery + Shenzhen)
Eduardo Mineo last run 12 days ago

last comment by
3d ago

💬 0

1

Semi-supervised Learning
Mayank Kholia 5 days ago

last comment by
Mayank Kholia 5d ago

💬 0

csv submission upload error?

last comment by

Multiple Approaches
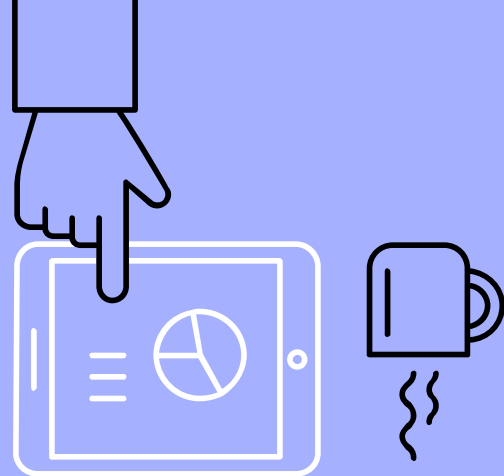
CNNs . . .

R-CNN

Regional CNN such that the CNN is forced to focus on a single region at a time to minimize interference.

Fast(er) R-Cnn

R-CNN but instead of feeding each region to the CNN, the entire image is processed to develop a convolutional feature map.

Mask R-CNN

Takes Faster R-CNN and instead takes object detection down to the level of pixels..

Demo and Reflections