X-Ray Classification using Neural Networks

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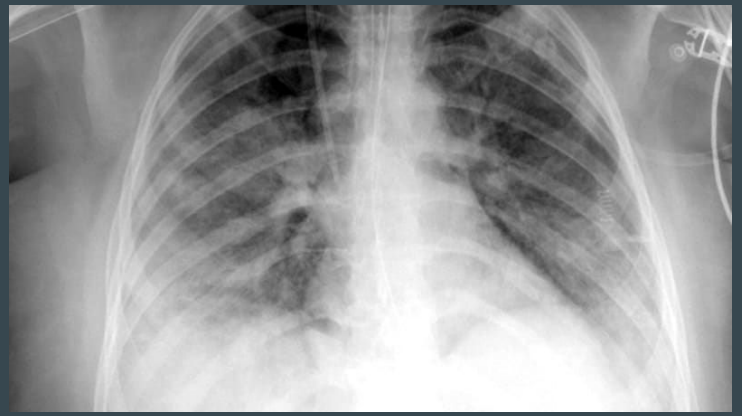
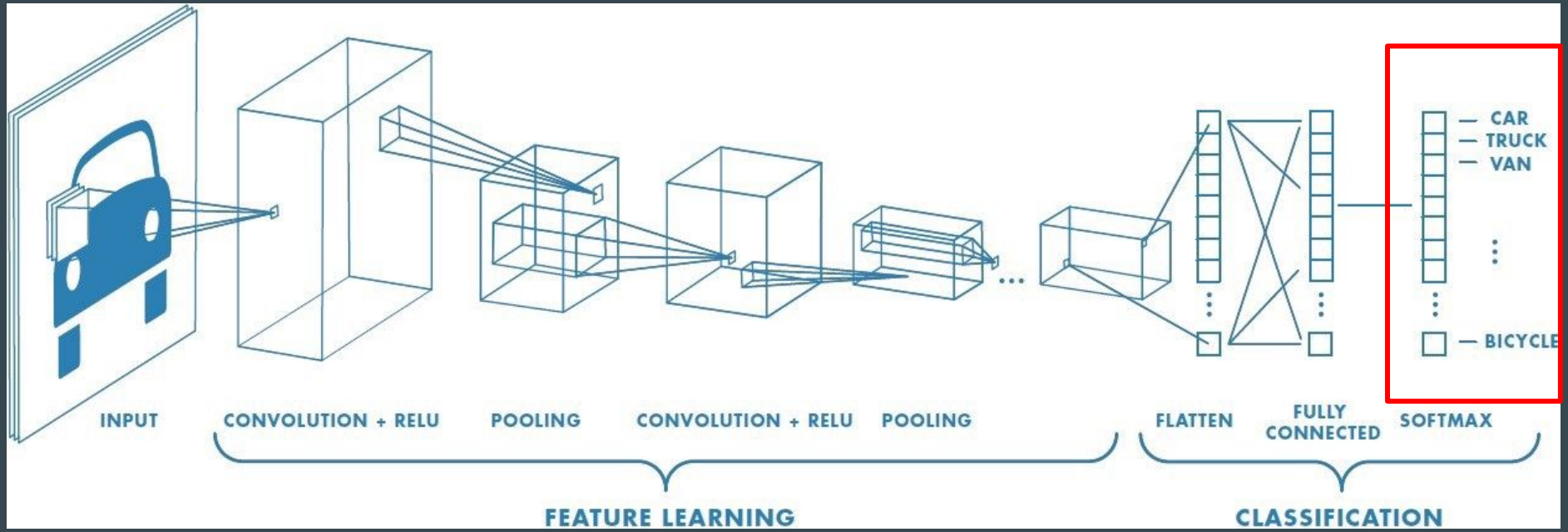
Project Summary



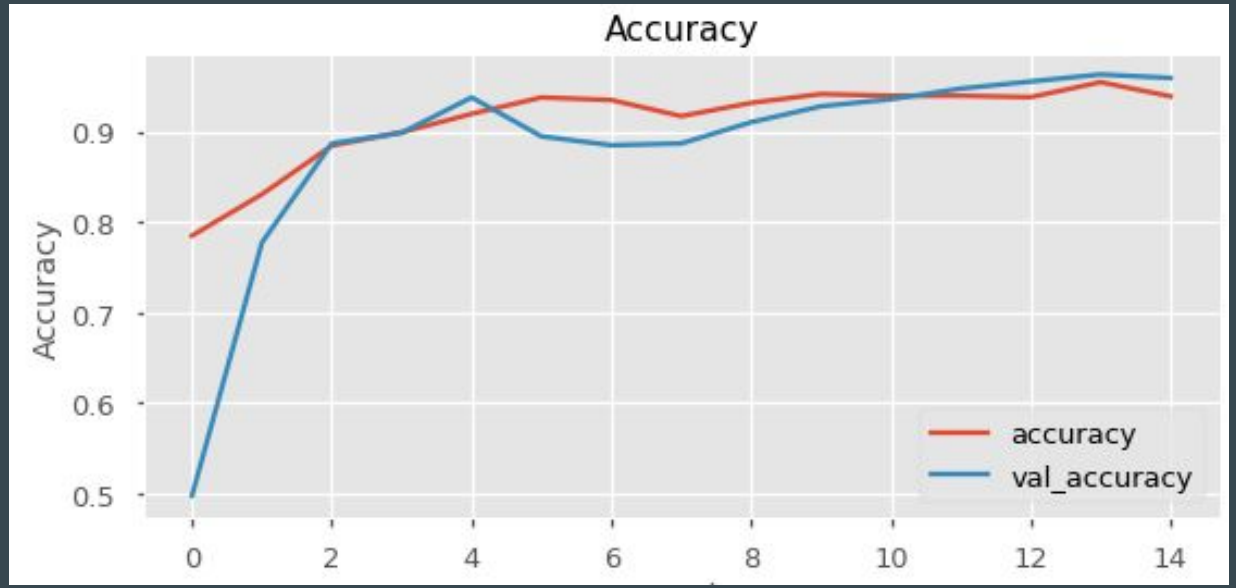
- “Flattening the curve” in 2020
- Overwhelming the health care system
- Extremely limited skill set- identifying health issues from an x-ray
- Screening and prioritization
- Pneumonia (5000 x-rays for training)
- Image analysis, classification, convolutional neural networks

Convolutional Neural Networks (CNN)



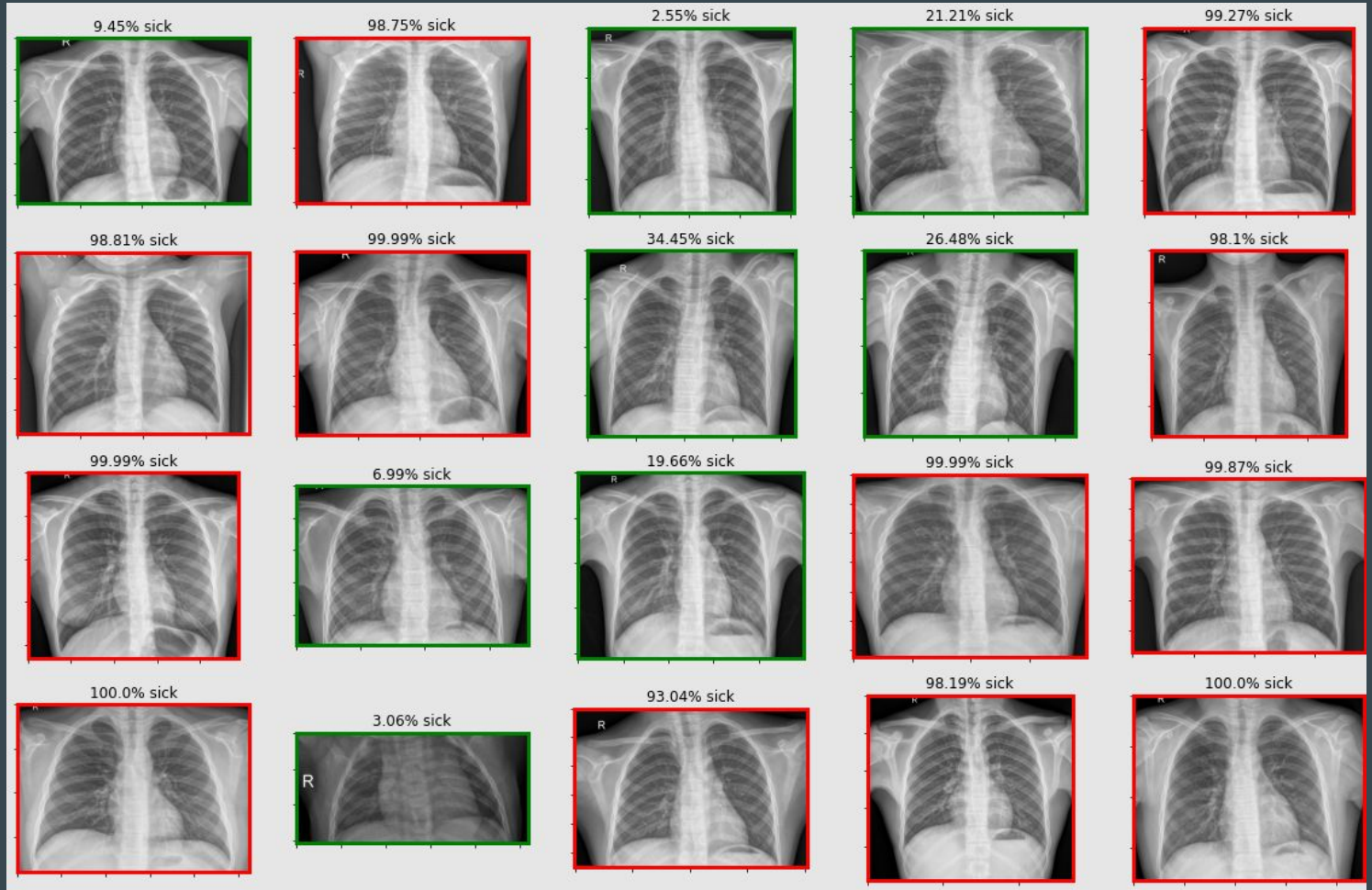
- Training/Learning= Give the CNN many images and give it the answer
- Classification = The answer

Training a CNN



- Refinements over time
- Blue line (val_accuracy) = more indicative of accuracy with **NEW** x-rays (~95%)

Test Image Results



Actionable Insights

- Perfect for initial screening
- Get people the help they need faster
- Higher than 80% sick = get that patient in the pipeline for getting professional treatment
- Anything in excess of 20% sick, less than 80% = seek further help -> prioritize getting human eyes on the x-ray to get a professional diagnosis
- Less than <20% = lower priority as necessary

Future Work

- Beyond pneumonia
- Lot of processing power, faster/more training with better GPUs
- Model improvements, changes to convolutional layers
- Training equally on “normal” x-rays

Thank You!

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