ONLINE DATA SCIENCE

Module 4 Final Project

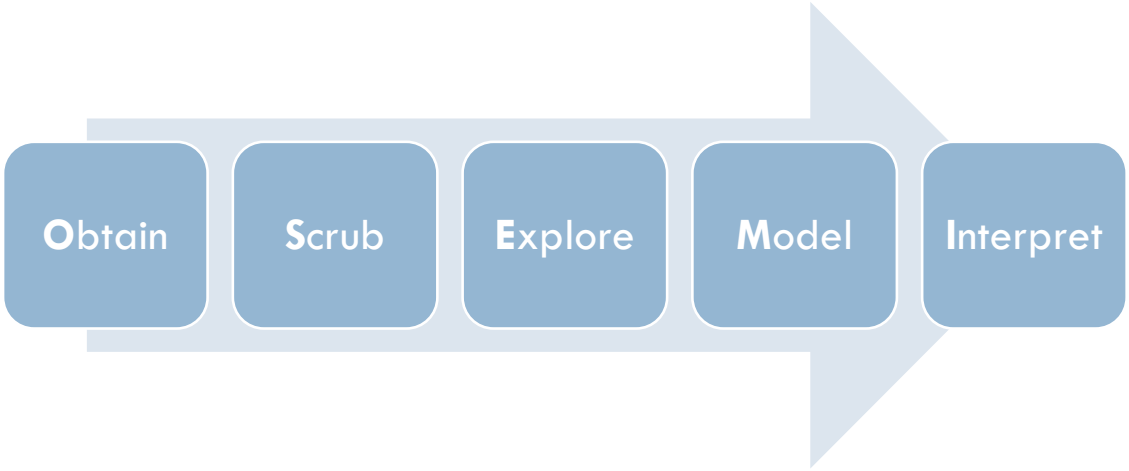
1

Diagnosing Pneumonia with X-Ray Images

Using convolutional neural networks to empower telemedicine's diagnostic capabilities.

2

Process—OSEMN Framework



3

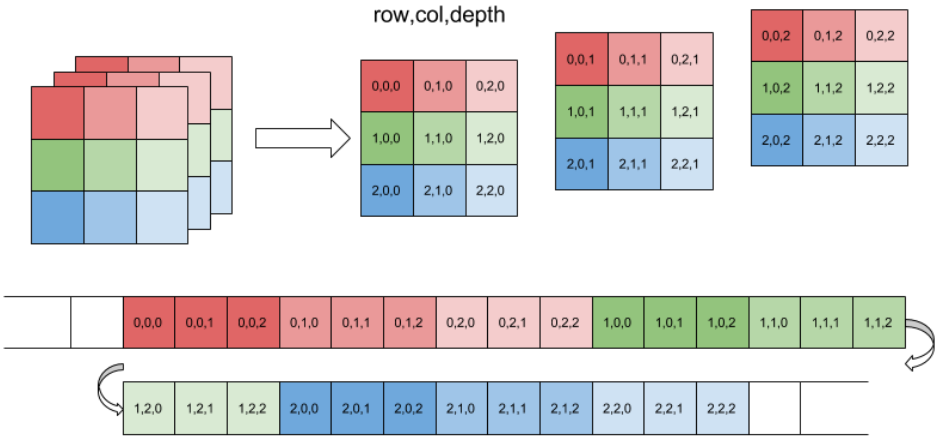
1. Obtain

"This dataset contains thousands of validated Chest X-Ray images of independent patients."

Kermany D, Goldbaum M, Cai W et al. Identifying Medical Diagnoses and Treatable Diseases by Image-Based Deep Learning. Cell. 2018; 172(5):1122-1131. doi:10.1016/j.cell.2018.02.010.

4

2. Scrub



5

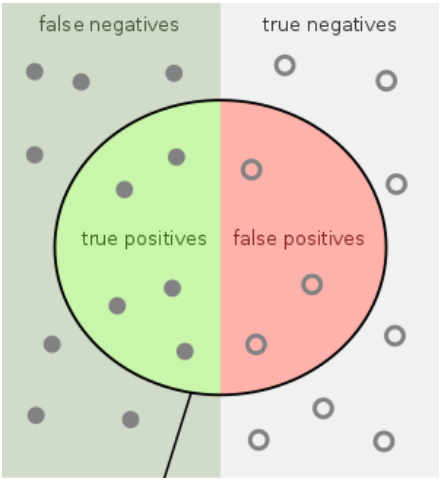
3. Explore

Normal

Pneumonic

6

4. Model



Accuracy—93.6%

- For every 10 predictions made, 9.36 were correct.

Specificity—91.4%

- True-Negative Rate
- For every 10 non-pneumonic cases, 9.14 were correctly identified as such.

7

5. Interpret

Specificity

Test's ability to designate patients without pneumonia as negative

Sensitivity

Test's ability to designate patients with pneumonia as positive

8

Future work

- Increase data by using images larger than 96x96
- Extend the network to allow for more learning
- Continue tweaking model parameters, or variables
- Employ time-saving methods

9

Thank You!

10