BRAINX COMMUNITY

- Machine learning in healthcare for good.
- 1000+ member international community.
- brainxai.org or brainxcommunity.com
- Linked-in group: BrainX Community
- Monthly BrainX Community Live Sessions
BRAINX COMMUNITY

CONNECT
Connecting healthcare community with machine learning experts.

DATA
Let's solve data problems together.

LEARN
Sharing and learning together for exponential growth.
Deep Lesion

NIH release of a annotated 32,000 CT scan image dataset from 4400 unique patients for research and development.

DeepLesion: automated mining of large-scale lesion annotations and universal lesion detection with deep learning

Ke Yan; Xiaosong Wang; Le Lu; Ronald M. Summers

J. of Medical Imaging, 5(3), 036501 (2018). https://doi.org/10.1117/1.JMI.5.3.036501


Natural language processing (NLP)

This a repository of natural language processing tasks and datasets. An excellent resource for healthcare machine learning researchers and developers since a significant amount of data in healthcare is still unstructured clinical notes.

http://nlpprogress.com

Deep Learning: A Primer for Radiologists

BRAINX COMMUNITY LIVE!

June 2018 Session

June Session featured Satish Viswanath, PhD. who gave a presentation on Machine Learning applications in Oncology and GastroIntestinal diseases.

His presentation focused on his team's application of combining Imaging data with pathology features to augment understanding of malignancy and its treatment effect.

Literature review available via link below:

https://www.brainxai.org/learn/

Learn more about Dr. Viswanath and his team's work through link below:

http://engineering.case.edu/centers/ccipd/
BRAINX COMMUNITY

436 members

Start a conversation with your group

Enter a conversation title...

BrainX Community Live featuring Pengtao Xie, PhD: August 13, 2018. 5:30-7:30 PM. Cleveland, Ohio

BrainX COMMUNITY, a group of experts in machine learning, healthcare and innovation has grown to be 400+ international member strong within the last couple of months.
DATA

Everything about data including open source data sets in one location.

**NIH Deep Lesion**

NIH release of a dataset containing 32,000 CT scan images with annotated lesions belonging to 4400 unique patients.


**Blue Button 2.0**

A CMS initiative to democratize research and development using beneficiary data. Greater than 70 million patient dataset available. Learn more through links below:

https://bluebutton.cms.gov

https://www.youtube.com/watch?v=v5b8T6EELp8

**National Institute of Health**

The link below is for NIH's strategic plan for data science in healthcare. A must read for anyone using data in healthcare for research and innovation.


**NIH Clinical Center**

Largest open source Chest X-Ray data set available through NIH’s clinical center. See the link in the article
BRAINX COMMUNITY

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- BRAINX COMMUNITY LIVE
- mathurp@ccf.org
2018 Year in Review
Machine learning in Healthcare

Piyush Mathur MD, FCCM
Founder of BrainX Community, Anesthesiologist/Intensivist, Quality Improvement Officer, Anesthesiology Institute, Cleveland Clinic.

Francis A. Papay, M.S.(BME) M.D., F.A.C.S., FAAP
Co-Founder, BrainX Community, Professor of surgery at the Lerner College of Medicine at Case Western Reserve University, Chairman of the Dermatology and Plastic Surgery Institute, Cleveland Clinic.

BRAINX COMMUNITY LIVE
January 28, 2019
Introduction

• Comprehensive review of publications

• Goal: Share curated scientific information in a simple format.

• Will be available on https://www.brainxai.org as a repository.
Methodology

PubMed
Terms: “Machine Learning” or “Artificial Intelligence” and “2018”
Restrictions: Human subject and English Language

2274 articles

Exclusions
• Non-human
• Robotics
• Limited gene
• Commentaries

1068 articles
MEDICAL SPECIALITIES

- Specialities
- Bibliography reference number
- 26 specialities including General, Administrative and Education

*Some reference apply to multiple specialities
• 207 publications
• Reviews
• Generic or ML methodology articles
• Drug discovery studies
• Speciality related but of greater importance
- **OPERATIONS**
  

- **QUALITY IMPROVEMENT**
  

- **HEALTHCARE FINANCE**
  
• Largest publication cohort

• Lung Cancer and Breast Cancer

• Crossover from Imaging, Pathology and Genetics


• Reviews


• Radiotherapy

Radiology/Imaging
[762-933*]

- CT scans, Chest-Xrays, Mammograms, MRI
- Oncology, Behavioral Science
- Reviews
- Radiomics-Tissue classification/characterization
• **Mechanical Ventilation**


• **Predictive analytics for hypotension**


• **Sepsis - Early warning**


• **Delirium**

• **Automated Diagnosis**


• **Decision support**


• **Melanoma**

Cardiovascular [726-762]

- **EKG interpretation**
  


- **Atrial Fibrillation**
  

- **Imaging for ischemic conditions**
  
• **Psychiatry/Behavioral sciences [574-618]**

• **Ophthalmology [533-566]**

• **Neurology [445-517]**

• **Pathology/Lab Medicine [619-676]**

• **Genetics [355-444]**

• **Gastroenterology [324-354]**
Special mentions

**Democratization of ML application-International**

**Algorithm comparison and validation**

**Natural Language Processing techniques**

**Education**
Limitations

- Pubmed based
- Language exclusions-China
- Classification model errors
- Missing technical ML highlights
Future Directions

- BrainX Community “LEARN” section advanced classification and search
- ML based reviews
- Expanded searches
- Peer reviewed exclusions
Thank you

Researchers and authors who have contributed to advancement of this science for good.

https://www.brainxai.org