How to start Deep Learning

1. How to study deep learning
   1) 온라인 강의 수강
      - Udacity / Deep Learning (https://classroom.udacity.com/courses/ud730)
      - 모두를 위한 딥러닝 – 기본적인 머신러닝과 딥러닝 강좌 (https://www.inflearn.com/course/기본적인-머신러닝-딥러닝-강좌/)
      - CS231n: Convolutional Neural Networks for Visual Recognition (http://cs231n.stanford.edu/)
   2) 관련도서 구매
      - 밑바닥부터 시작하는 딥러닝 – 한빛미디어
      - 딥러닝 첫걸음 – 한빛미디어
   3) 딥러닝 모델 구현
      1) 프로그래밍 언어 : Python
      2) Deep learning library : pytorch, tensorflow, keras, caffe ...
      3) GPU.. : Titan Xp(12GB), 1080 Ti(11GB), 1060(3GB)

How to start Deep Learning

2. How to get dataset (training/test)

1) 연구용 Public DB 사용

- NIH 100,000 Chest X-ray DataSet(https://nihcc.app.box.com/v/ChestXray-NIHCC)
- ISIC Dataset (for skin disease) (https://challenge2018.isic-archive.com/)
- Cardiac dataset (http://stacom2017.cardiacatlas.org/)
- Cancer Imaging Archive (TCIA) collections (http://www.cancerimagingarchive.net/)

2) Challenge DB 사용

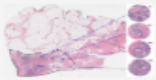
- 유관학회(MICCAI 등) Grand Challenge
- Kaggle Challenge → 상금!

3) 의료 데이터 공개 사이트 정리 → https://github.com/awesomedata/awesome-public-datasets

Grand Challenges in Biomedical Image Analysis

https://grand-challenge.org/All_Challenges/

2018



BreastPathQ

SPIE-AAPM-NCI BreastPathQ:Cancer Circularity Challenge: Participants will be tasked to develop an automated method for analyzing histology patches extracted from whole slide images and assign a score reflecting cancer cellularity for tumor burden assessment in each.

Hosted on: grand-challenge.org

HC18

Automated measurement of fetal head circumference using 2D ultrasound images

Hosted on: grand-challenge.org

PROSTATEx

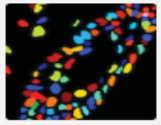
Classification of clinical significance of prostate lesions using multi-parametric MRI data

Hosted on: grand-challenge.org

Peripheral Artery:Vein Enhanced Segmentation (PAVES)

Peripheral Artery:Vein Enhanced Segmentation (PAVES) is the challenge focussed on providing easily interpretable and relevant images that can be readily understood by clinicians (vascular

Open for submissions
Data download
Results: 50
Latest result: Aug. 19, 2018
Associated with: SMRA
Hosted on: grand-challenge.org



Multi-Organ Nuclei Segmentation Challenge

MICCAI 2018 challenge for Multi-organ nuclei segmentation from H&E stained histopathological images.

Open for submissions
Associated with: MICCAI 2018 Satellite Events-Challenges
Hosted on: grand-challenge.org

Medical Segmentation Decathlon

The MSD challenge tests the generalisability of machine learning algorithms when applied to 10 different semantic segmentation task.

Data download
Hosted on: grand-challenge.org

Kaggle Challenge

https://www.kaggle.com/datasets

동물, 사물 등 일상데이터 뿐만 아니라
전문의료데이터 획득 가능

Cancer Imaging Archive (TCIA) collections

* Cancer Imaging Archive (TCIA) collections : 암 종류에 대한 데이터 수집 가능

http://www.cancerimagingarchive.net/

Collection	Cancer Type	Modalities	Subjects	Location	Metadata	Access	Status	Updated
TCGA-HNSC	Head and Neck Squamous Cell Carcinoma	CT, MR, PT, RTSTRUCT, RTPLAN, RTDOSE	227	Head-Neck	Yes	Public	Ongoing	2018/08/30
HNSCC-3DCT-RT	Head and Neck Squamous Cell Carcinoma	CT, RTSTRUCT, RTDOSE	31	Head-Neck	No	Public	Complete	2018/08/30
Acrin-FMISO-Brain	Glioblastoma	CT, MR, PT	45	Brain	Yes	Limited	Complete	2018/08-30
Anti-PD-1_MELANOMA	Melanoma	CT, MR, PT	47	Skin	No	Public	Complete	2018/07/31
CPTAC-PDA	Ductal Adenocarcinoma	CT, MR, DX, CR	43	Pancreas	Yes	Public	Ongoing	2018/06/30
CPTAC-LUAD	Adenocarcinoma	CT, MR, PT, CR	11	Lung	Yes	Public	Ongoing	2018/06/30
CPTAC-CM	Cutaneous Melanoma	MR, CT, CR	2	Skin	Yes	Public	Ongoing	2018/06/30