Week 1

AI for Medical Diagnosis

Week 1
Discuss this week's modules here.
490 threads · Last post 3 days ago
Go to forum

Disease detection with computer vision

By the end of this week, you will practice classifying diseases on chest x-rays using a neural network.

Learning Objectives

- Data pre-processing: checking for data leakage
- Preprocess images properly for the train, validation and test sets
- Implement a weighted loss function to address class imbalance.
- Set up a pre-trained neural network to make disease predictions on chest x-rays.

Less

Welcome to the AI for Medicine Specialization

- **Video:** Welcome to the Specialization with Andrew and Pranav 4 min
- **Video:** Demo 1 min
- **Video:** Recommended prerequisites 1 min — Resume
- **Reading:** Connect with your mentors and fellow learners on Slack 10 min

Applications of computer vision to medical diagnosis

- **Video:** Medical Image Diagnosis 2 min
- **Video:** Eye Disease and Cancer Diagnosis 3 min
- **Lab:** Data Exploration & Image Pre-Processing 1h

How to handle class imbalance and small training sets

- **Video:** Building and Training a Model for Medical Diagnosis 2 min
- **Video:** Training, prediction, and loss 1 min
- **Video:** Image Classification and Class Imbalance 1 min
- **Video:** Binary Cross Entropy Loss Function 3 min
- **Video:** Impact of Class Imbalance on Loss Calculation 3 min
- **Lab:** Counting labels and weighted loss function 1h
- **Video:** Resampling to Achieve Balanced Classes 1 min
- **Video:** Multi-Task 1 min
- **Video:** Multi-task Loss, Dataset size, and CNN Architectures 2 min
- **Lab:** Densenet 1h
- **Video:** Working with a Small Training Set 2 min
- **Video:** Generating More Samples 3 min

Check how well your model performs

Video: Model Testing 2 min

Video: Splitting data by patient 1 min

Lab: Patient Overlap - practice 1h

Video: Sampling 2 min

Video: Ground Truth and Consensus Voting 1 min

Video: Additional Medical Testing 2 min

Quiz week 1

Practice Quiz: Week 1 Quiz: Disease detection with computer vision 10 questions

Practice multi-class disease classification on Chest X-rays

Reading: About the automatic grader 10 min

Programming Assignment: Chest X-Ray Medical Diagnosis with Deep Learning 3h Due Nov 9, 1:59 AM CST

Reading: How to refresh your workspace 10 min