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# Week 1

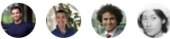
AI for Medical Diagnosis

## 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

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### Quiz week 1

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

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### 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

