

1 Opening

- <https://nvlabs.qwiklab.com/>
- NVIDIA Deep Learning Institute (no charge)

2 Medical Image Segmentation Using DIGITS

- cardiac MRI LV detection
- goal accurately identify the area of the left ventricle in cardiac MRIs using DIGITS open source software suite
- DIGITS (the Deep Learning GPU Training System) is a webapp for training deep learning models. The currently supported frameworks are: Caffe, Torch, and Tensorflow.

2.1 computer vision tasks

- classification
- classification and localization
- object detection
- image segmentation
- see cs231n from Stanford

2.2 Problem

- semantic segmentation: each pixel is classified.
- Sunnybrook cardiac images dataset
- AlexNet architecture is reused.
- utilize transfer learning (trained network is trained further)
- image dicom 256 x 256 grayscale

2.3 Lab

- done on the pre-configured platform <https://nvlabs.qwiklab.com/>. Not reproducible locally.

3 Medical Image Analysis with R and MXNet

- automate heart disease diagnosis using R and MXNet
- Introduction to MXNet, aims to develop familiarity
- MRI images from more than 1000 patients
- MRI images in dicom 30 images across the cardiac cycle for each patient.
- compare after systole and diastole
- MXnet open source deep learning framework