

	<p><b>Tutorial 2: Applying Deep Learning to Medical Image Analysis Problems: Keras and Beyond</b></p> <p><b>Organizers</b> Yaniv Gur, IBM Almaden Research Center, USA Alexandros Karargyris, IBM Almaden Research Center, USA</p>
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### **Overview**

Anatomy segmentation is a fundamental step in medical image analysis, since it provides information on organ morphology, and enables organ shape measurements, which can help with disease detection. In recent years, it has been shown that anatomy segmentation using deep learning can achieve state-of-the-art results with a relatively small amount of annotated data, and it is currently one of the most active research areas in medical imaging.

This tutorial will walk the audience step by step from creating a deep learning development environment to building an anatomy segmentation solution using Keras, a popular deep learning framework. We will demonstrate how to perform anatomy segmentation (lung and cardiac silhouette) of frontal Chest X-Rays (CXRs) using UNet architecture.

### **Topics**

1. Virtual environment setup (Yaniv and Alex)
2. Data preparation (Alex)
3. Network architecture and Experiments (Yaniv and Alex)
4. Segmentation as a web service (Yaniv)

### **Audience**

This tutorial targets researchers in medical image analysis with interests and experience in deep learning and machine learning in general. Basic Python programming skills, and some experience with one or more deep learning frameworks are recommended.