**[CS-8395 Spring 2020]**

**Deep Learning in Medical Image Computing**

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**Paper Title: U-Net: Convolutional Networks for Biomedical Image Segmentation**

**Please summarize the paper using your own words: (<100 words)**

U-Net is an architecture designed for image segmentation with a heavy application in the areas where annotated data is scarce. The architecture has a fully convolutional encoder that encodes the image to a low dimensional feature space and then constructs the segmentation mask through a sequence of upsampling convolutional layer. There are shortcut connections between different stages of the encoder to the decoder that helps the network to incorporate features from the original feature space in the decoder. The architecture performs well on a number of different dataset with very simple augmentation techniques.

**Question1 for the paper:**

It is claimed that U-Net is suitable for small datasets. Why does it work well compared to other networks (theoretical or logical justification)? Will other networks outperform it in larger dataset?

**Question 2 for the paper:**

The shortcut connections seem to be very simple. What if we design a mini neural net to decide which activations should be propagated forward?