For this project to work, first I will have to obtain data/images from a previous study conducted in our lab (~2+ years ago). This will require me to contact a former student to locate the data on a shared drive or have them send it to me if not stored there. After obtaining the images, I will need to train a neural network (NN) to identify whether or not a patient has cancer based on certain features in an image. These images will be plots with the y-axis being how much light was absorbed by a particular chromophore (section of a molecule that absorbs and reflects light) and the x-axis being the wavelength of light shone. I will need to feed the neural network a large set of images to train it (~100 images per patient). Reviewing the images, I will need to identify key features that would be extracted from the NN. From my brief understanding of convolutional NNs, I know that there will be a system of weights that will be assigned to particular features/aspects of the image in order to note which items are of the highest and lowest importance put in place. However, I’m unfamiliar with how this will work exactly. Features I believe that will be valuable are the different peaks and valleys associated with each image. Additionally, I would need to know which data/images represent whether there is a tumor or not. Next, a separate set of images will be used to validate that the NN is working. Finally, a testing dataset will be required. These images will be reviewed or evaluated prior to the study so as to determine whether or not the project is a success. If the number of images from the study mentioned is not sufficient, then additional data/images may come from a study that our lab completed in the last 6 months.