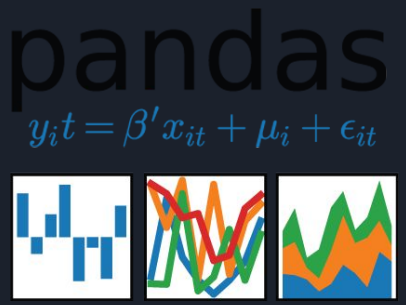
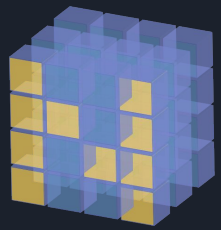
Histopathologic Cancer Detection

Introduction

- Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body.
- Symptoms:- Lump, abnormal bleeding, prolonged cough, unexplained weight loss.
- Histopathology refers to the examination of a biopsy or surgical specimen by a pathologist, after the specimen has been processed and histological sections have been placed onto glass slides.
- Reference : Classification of Breast Cancer Based on Histology Image Using Convolutional Neural Networks

Machine Learning



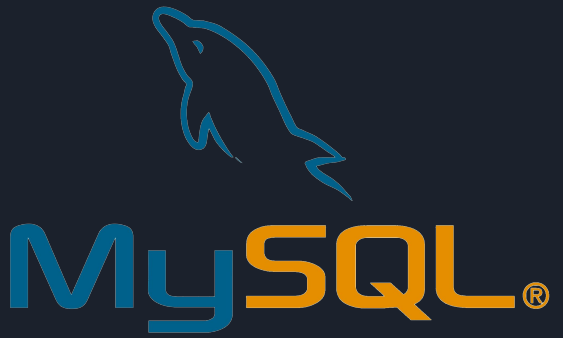


NumPy

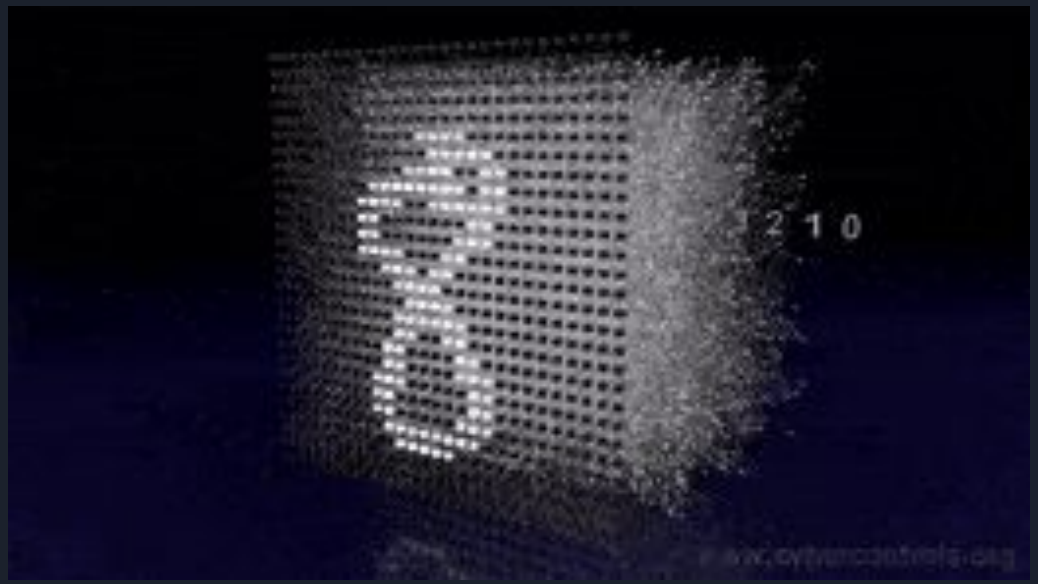
NVIDIA DGX

Front-end

Back-end

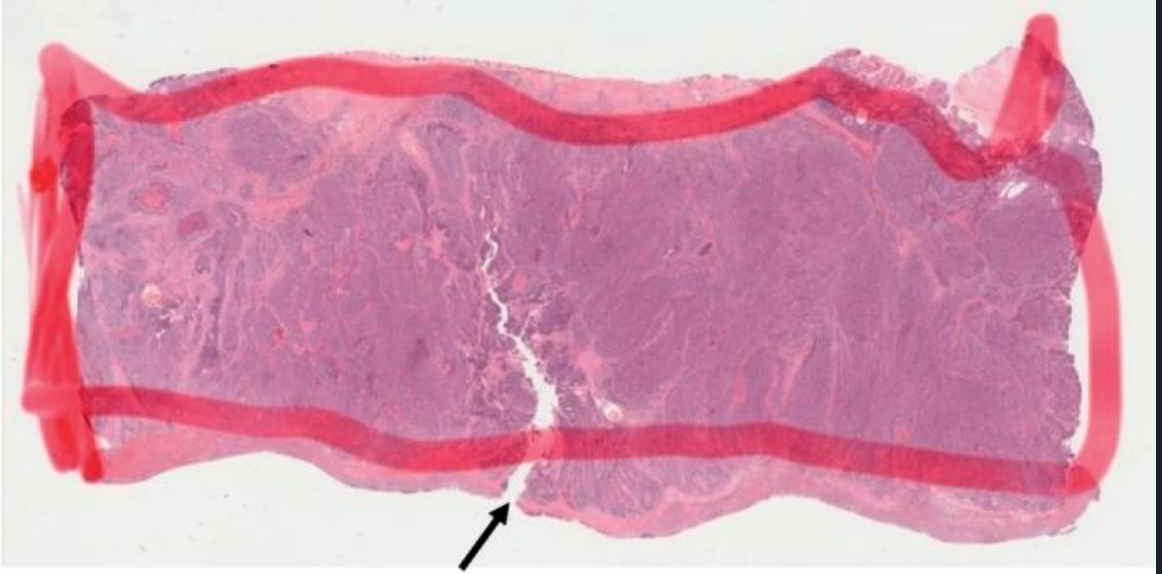


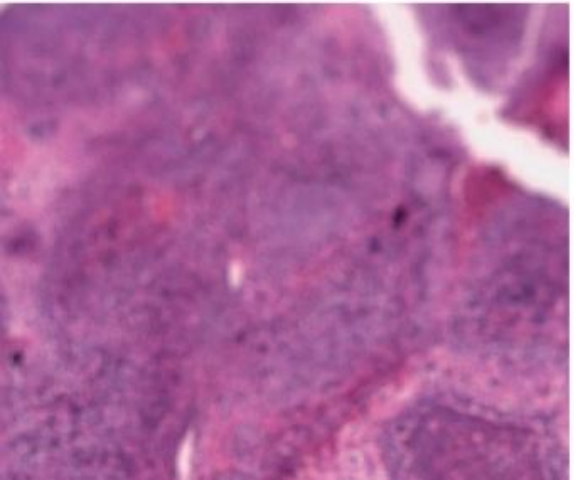
Convolutional Neural Network

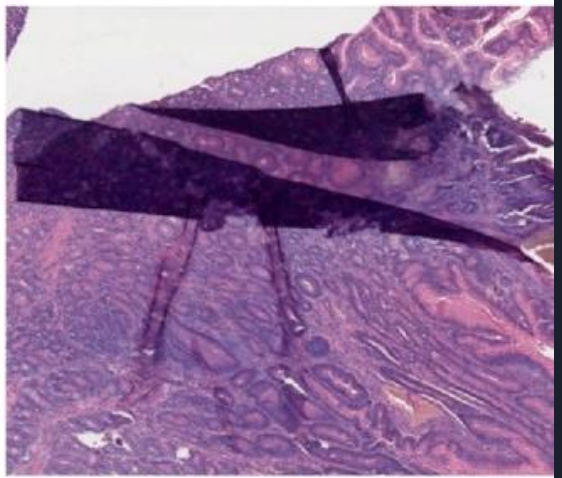


Dataset

- Small pathology images with labels
- 96x96 pixels
- Images 220,025
- Positive label indicates center 32x32px region has some cancer tissues







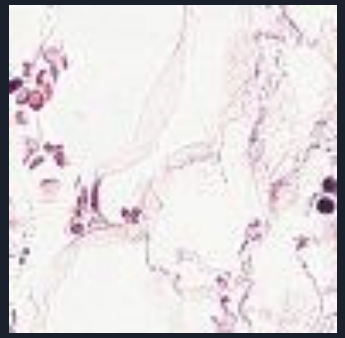
Tear formation and overlapping in tissue due to human error.

Preprocessing

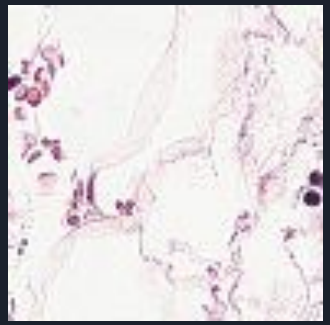
- Rescale
- Scale-up
- Rotation
- Color change
- Horizontal & Vertical flip

Preprocessing images

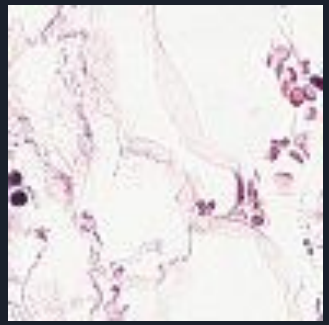
Original



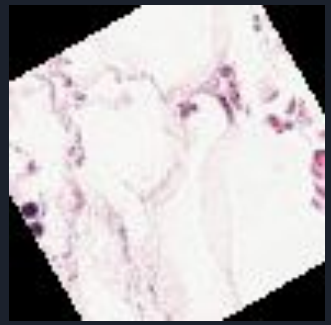
Brightness



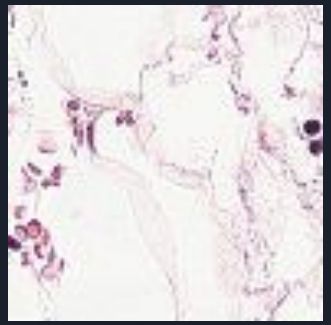
Horizontal Flip



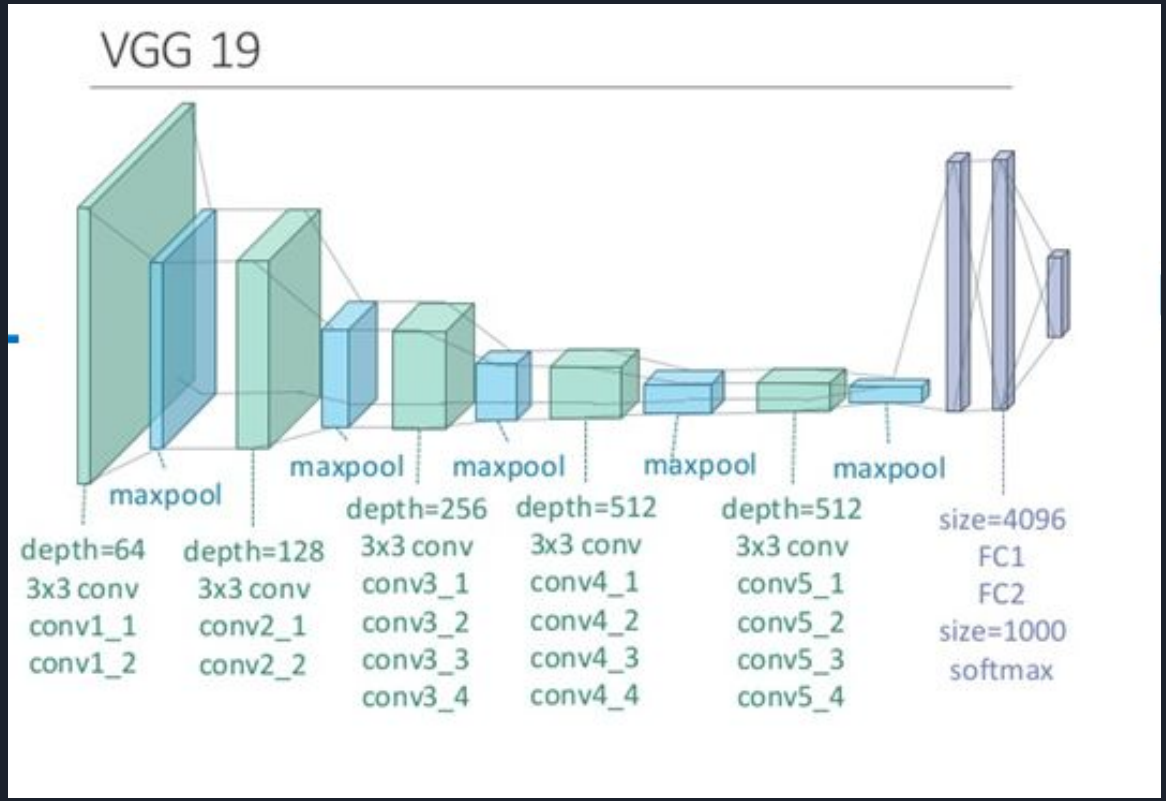
Rotation



Vertical Flip

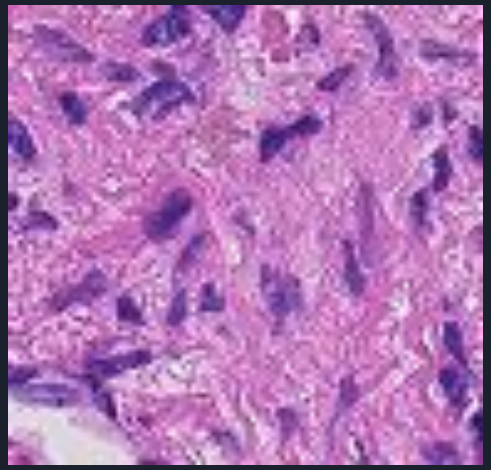


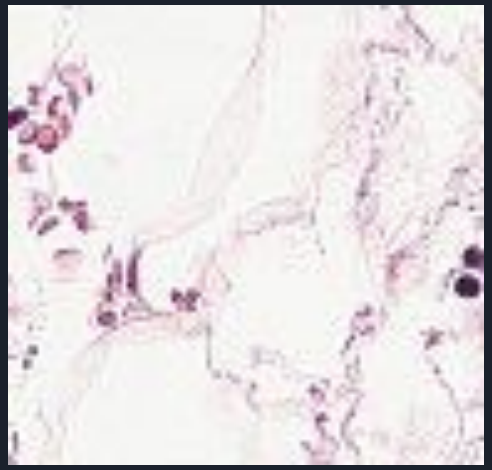
Pretrained Model

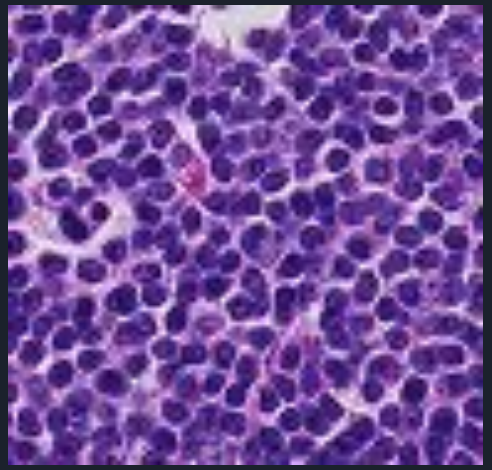


Sample Images

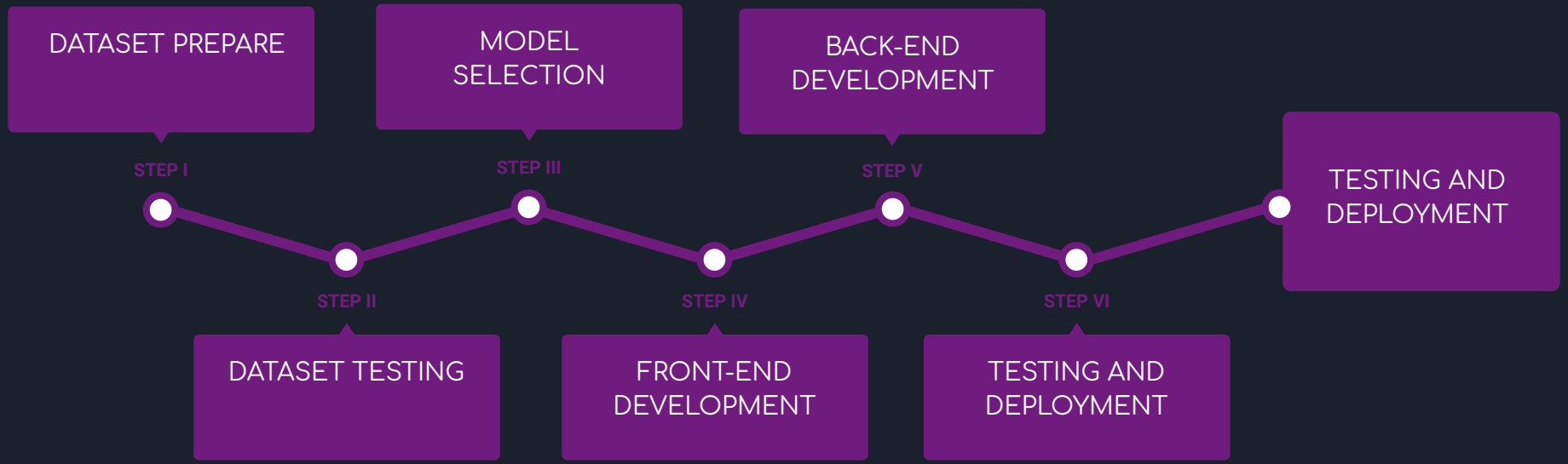
Given below are some examples taken from our dataset







Timeline of the Project



Scope for this Semester

- Preprocessing Dataset with various techniques
- Preparing a dataset for best performance on any given deep learning model
- Testing the dataset on pretrained models to cross-check the acceptability

Thank You!