CNN Model for Classification of textures of Colorectal histology
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Project Summary

Work Environment: Jupyter Notebook
Programming language: Python
Project goal: Building and trying out various CNN models for detection of cancer in colorectal histology. Using best picked to display the result in various formats.
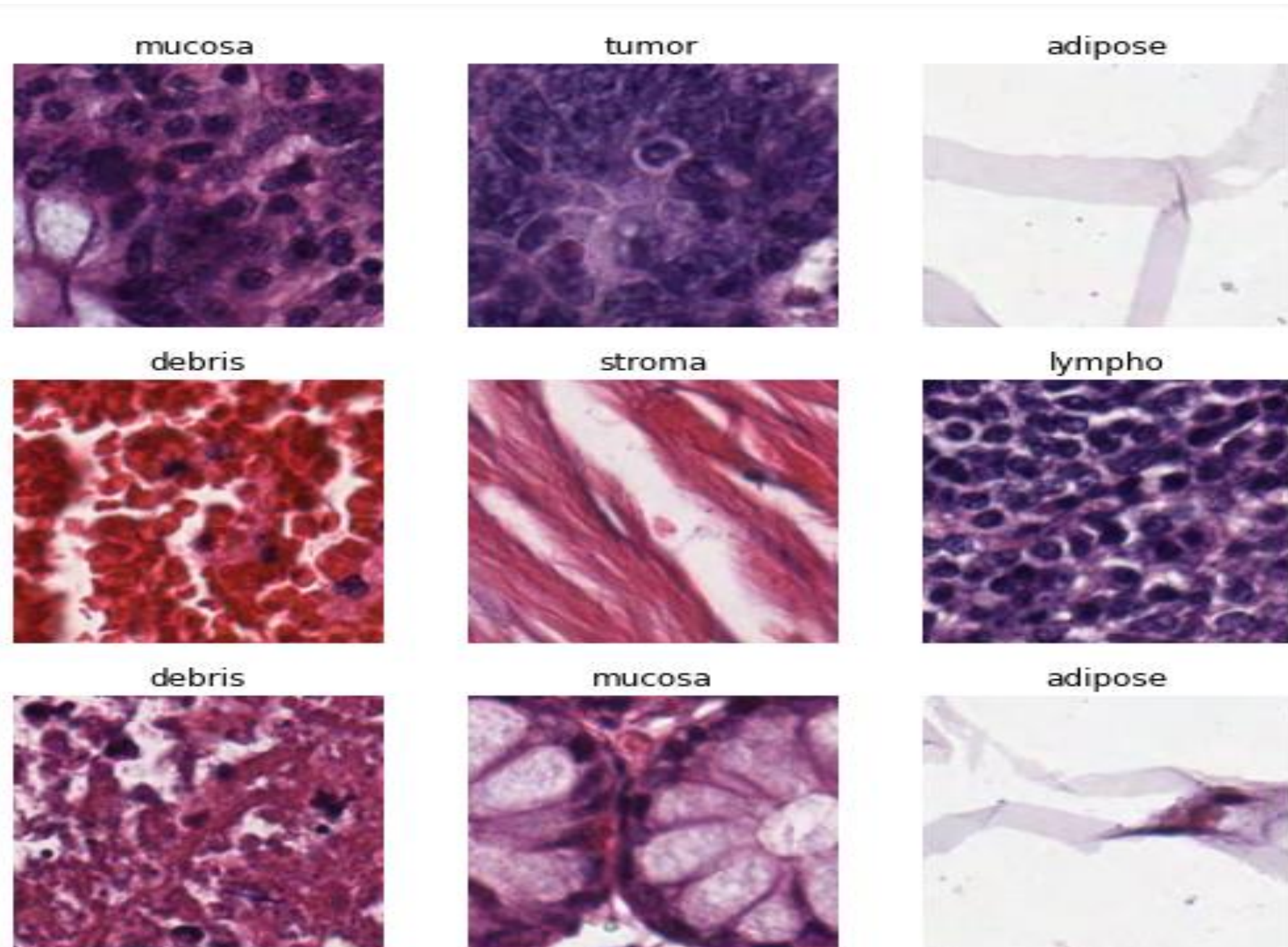
Introduction

- Automated recognition of different tissue types in histological images is an essential part of digital pathology. Texture analysis is a common solution to this problem.

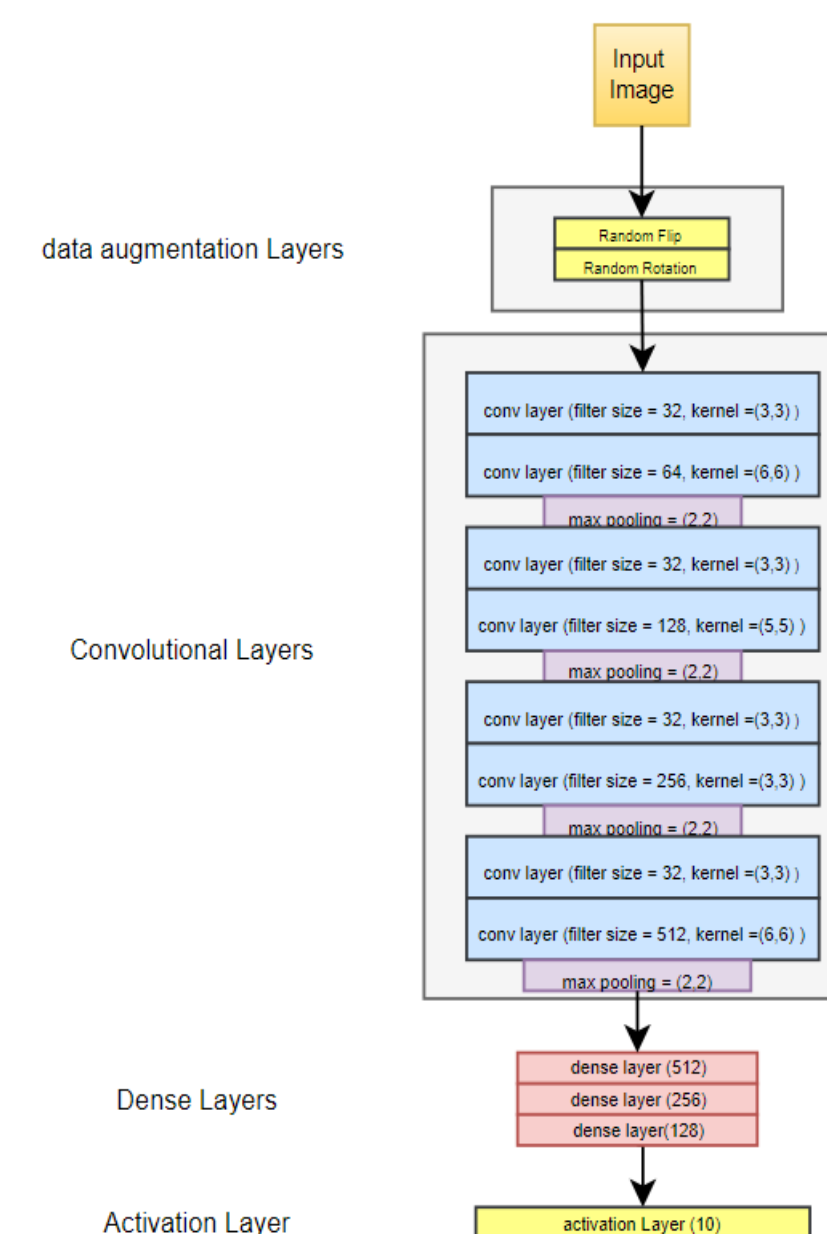 **Our aim in this project is two-fold:**

- Using a CNN model to more accurately classify tumor tissue in histological imagery.

- Building a model that can not only detect cancerous tumor tissue but also classify cancerous tissues by their types.

The Training/test Dataset

- For our Training and test data we used a dataset consisting of 8 different types of texture of colorectal histology
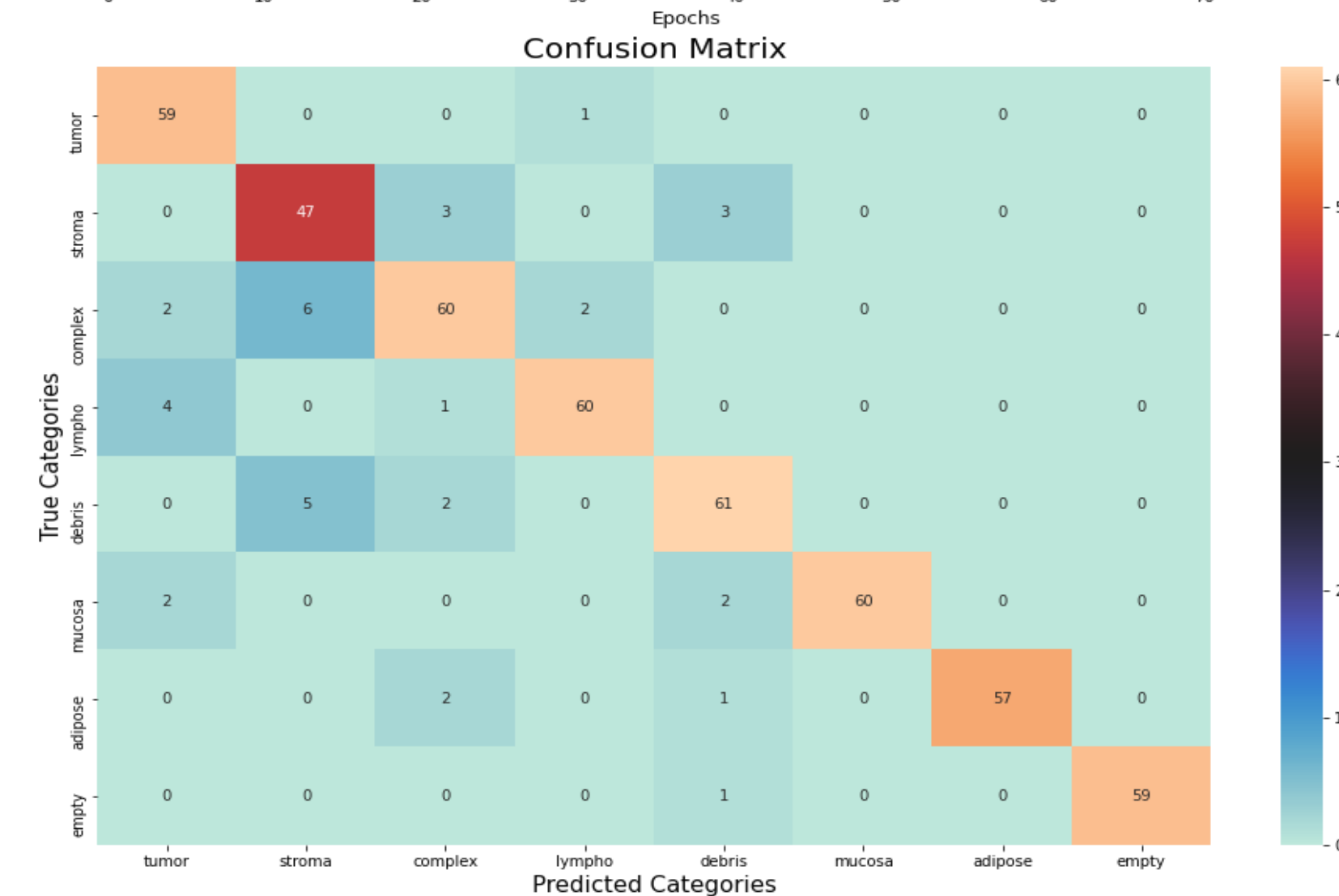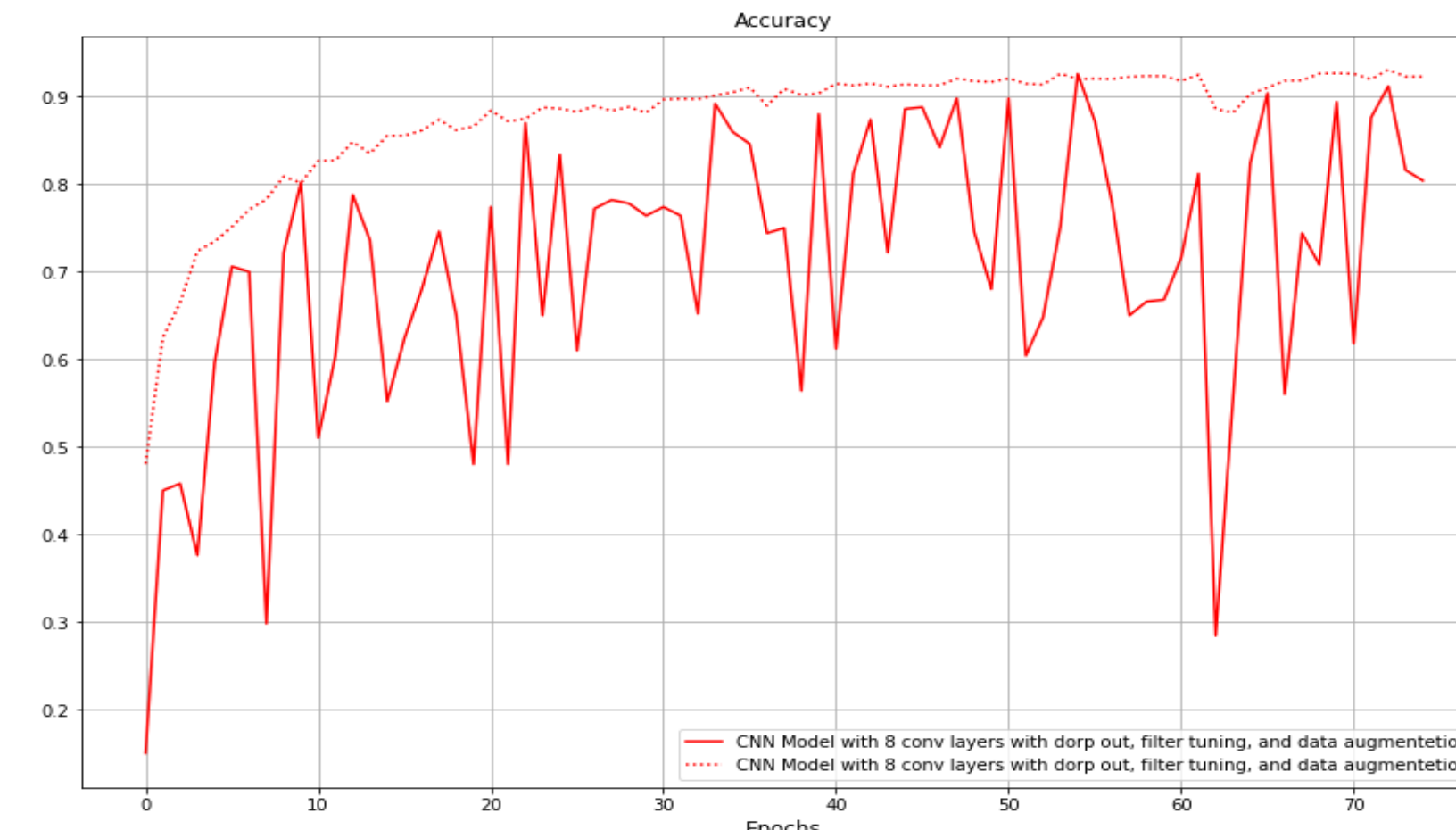
- Each example was a 150x150x3 RGB image.
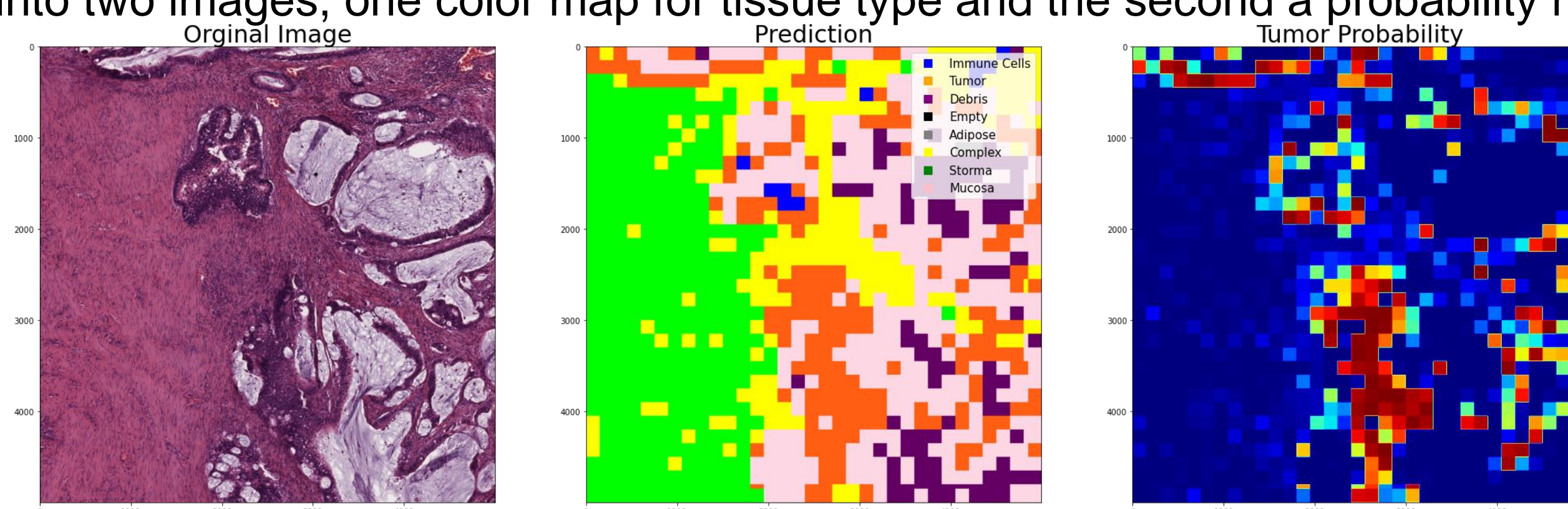

The Model We Used

Results

- We were able to reach an accuracy of 92% on the test data

- Most of the misclassifications were between one cancerous tissue and another, there was almost no healthy tissue classified as cancerous or vice versa.

Predictions on Full Images

- After we finished training our model we loaded a dataset containing full 5000x5000x3 histology images

- We separated our prediction into two images, one color map for tissue type and the second a probability heat map that a given tissue is a cancerous tumor

Discussions

- How well will this type of CNN model perform with other types of histology

- Which additional improvements we can make to our current model even more accurate