Invasive Ductal Carcinoma Detection

# **Barbara Payne Summer 2021 https://github.com/bpayne915/DSC680-T302**

# Which Domain?

1. <https://pubmed.ncbi.nlm.nih.gov/27563488/>
   1. Pathology image analysis tutorial
2. <https://www.emedicinehealth.com/how_serious_is_invasive_ductal_carcinoma/article_em.htm>
   1. Information on severity of IDC
3. <https://www.breastcancer.org/symptoms/types/idc>
   1. Information on the cancer, diagnosis, and treatments
4. <https://www.cancer.org/cancer/breast-cancer/understanding-a-breast-cancer-diagnosis/types-of-breast-cancer/invasive-breast-cancer.html>
   1. Invasive breast cancer types
5. <https://www.nature.com/articles/s41598-020-60740-w>
   1. Classification models on IDC
6. <https://www.pennmedicine.org/cancer/types-of-cancer/breast-cancer/types-of-breast-cancer/invasive-ductal-carcinoma/invasive-ductal-carcinoma-diagnosis>
   1. Detection of IDC
7. <https://www.worldscientific.com/doi/10.1142/S2424922X20410028>
   1. IDC Deep Learning
8. <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/breast-cancer-facts-and-figures/breast-cancer-facts-and-figures-2019-2020.pdf>
   1. 2019-2020 facts and figures on breast cancer
9. <https://www.hopkinsmedicine.org/breast_center/breast_cancers_other_conditions/invasive_ductal_carcinoma.html>
   1. Symptoms, treatments, and prognosis of IDC
10. <https://www.cancer.net/cancer-types/breast-cancer/statistics>
    1. Breast cancer statistics

# Which Data?

<https://www.kaggle.com/paultimothymooney/breast-histopathology-images>

This dataset contains images of potential breast cancer patients. Some of the images contain Invasive Ductal Carcinoma (IDC) while others do not. IDC is a common subtype of breast cancer.

# Research Questions? Benefits? Why analyze these data?

Unfortunately, breast cancer is quite common and being able to detect breast cancer early can be very beneficial. The images that I have chosen are made up of cancerous and non-cancerous cells. Being able to detect early on can help save a life as when it is found and treated early. The model will have to be trained and tested. Hopefully a high accuracy score can be achieved.

# What Method?

For this specific project, I will be conducting Exploratory Data Analysis (EDA) and will train and create a model to be able to determine from an image if it contains Invasive Ductal Carcinoma (IDC).

# Potential Issues?

An issue that often occurs in any project is time. Balancing work, life, and school always seems to be an issue. Just like in school, there are deadlines that need to be met and sometimes those projects tend to take priority as it is part of the job. Home life can also be an issue when it comes to time as I am also in the middle of moving. Trying to set up my new place is exciting but is also daunting as it is more time taken in the day to get everything set up.

Another potential issue is that my computer is older and is starting to slow down from all the software that has been installed. I have been deleting what I can to make space.

# Concluding Remarks

Breast cancer is very serious and if caught early enough, it can be treated much easier than if it were caught later on. As a woman, screenings for breast cancer are important to our health. It is something that we all hope to never have, however it is common. Almost everyone knows someone who has or has had some form of cancer. Invasive Ductal Carcinoma (IDC) describes the most common tumor in breast cancer. The five-year survival rate is quite high, at almost 100% when it is caught early and treated early. The screenings and images that are taken are then examined to determine if the patient has IDC. By examining the images, we can use predictive measuring to determine which images contain IDC.