Patch-based CNN for Breast Cancer Image Classification

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**ABSTRACT**

With the development of AI, scientists have been putting on efforts to solve problems in the medical field by using machine learning models. As we know, breast cancer is considered as one of the most common cancers in women. The Convolutional Neural Network (CNN) is a particular deep learning model as a solution that deals with image recognition problems.

Keywords: CNN; breast cancer; discriminative patches; Gaussian Smoothing;

# INTRODUCTION

Convolutional Neural Networks (CNNs) are state-of-the-art classifiers that have been widely used for image recognitions. However, CNNs have limitations on high resolution images because of high computational cost. Solutions need to be proposed and implemented in order to deal with such limitations. In this project, we are given x-ray images of women’s breast. Each image has very high resolution than normal images. For the purpose of avoiding risks of losing any important details, dividing the image into several patches is proposed rather than just down-sampling the original image. By applying CNNs models, we consider each patch as an instance and perform multi-instance deep learning with image-level labels.