**Anas Hamed - ahamed@buffalo.edu - Person #: 50295901**
**Instructors: Sargur Srihari - Mohammad Shaikh - Marissa Dominijanni**
**21 October 2019**

# Testing Various Architectures and Techniques for Medical Image Classification

## Problem Statement

Image classification is the task of determining the class to which an image belongs to for a given set of known classes. In healthcare, medical images are one of the most effective tools that are used to make a diagnosis. The difficulty involved in accomplishing this task is dependent both on the task itself (as some classification tasks are easier than others), and the choice of architecture.

Finding the best fit for the classification task may involve experimenting with different architectures and normalization techniques. Moreover, the performance of existing architectures could possibly be enhanced by introducing new architectural features. The aim of this project is to explore the suitability of various popular architectures, training stabilization and data normalization techniques for a specific task involving medical image classification.

## Dataset

The task that will be considered for the experiment is the classification of a skin lesion. The objective is to predict whether a given skin lesion contains a melanoma, and if so, to assign the lesion to a class of known diseases.

- International Skin Imaging Collaboration Skin Lesion Dataset[1]

## Evaluation Metrics

Being a classification task, a good set of metrics for performance includes, but is not limited to, the following:

- Accuracy
- Precision, Recall
- F-Score

[1] https://www.isic-archive.com/#!/topWithHeader/wideContentTop/main