

Final Project

The problem I aimed to solve with deep learning will use this dataset to solve is training a model to successfully classify skin cancers, which is important for diagnosis. To solve this problem, I used the dataset [Skin Cancer MNIST: HAM10000](#). It contains It contains ten thousand training images of skin cancers which have been labelled with the kind of cancer it is. The cancers it has data for are actinic keratoses and intraepithelial carcinoma / bowen's disease (akiec), basal cell carcinoma (bcc), benign keratosis-like lesions (solar lentigines / seborrheic keratoses and lichen-planus like keratosis, bkl), dermatofibroma (df), melanoma (mel), melanocytic nevi (nv) and vascular lesions (angiomas, angiokeratomas, pyogenic granulomas and hemorrhage, vasc). It is a kaggle dataset, and can be downloaded in csv format.

To solve this problem, I used a convolutional neural network they work well with image data. Also, I would want the last layer to have a softmax activation function and a categorical cross-entropy loss function because it is a multiclass, single classification problem. I had some trouble with the size and shape of my data, but I was able to fix it by reshaping it. I also saw that my model had a low accuracy of about 3% the first time I trained it. However, after troubleshooting, I realized that when I divided all of my image data by 255 so they would be between 0 and 1, I had also divided my classes by 255, which was causing the low accuracy. After testing my model again, it got a training accuracy of about 77% and a validation accuracy of about 68%. However, I was able to increase the success of my model by increasing the number of epochs from 20 to 80. This change made my model score a training accuracy of about 99.90%, and a validation accuracy of about 76%.

Currently, due to the accuracy, this model will not be suitable to be used for patients without improvement. Possible ways I could increase my model's accuracy is by modifying my architecture into a more complex one and increasing the batch size. Through these changes, my architecture could help people around the world.