SIIM – ISIC – Melanoma Classification

Skin cancer is the most prevalent type of cancer. It develops due to abnormal cells that invades or spreads in other parts of the body. There are three main types of skin cancers: Basal-cell skin cancer (BCC), Squamous-cell skin cancer (SCC) and Melanoma. In our project we are focusing on melanoma as it is specifically responsible for 75% of skin cancer deaths, despite being the least common skin cancer. Melanoma is a deadly disease, but if caught early, most melanomas can be cured with minor surgery. The **objective** of this project is to **identify melanoma** in images of skin lesions. In particular, we are using images within the same patient and determine which are likely to represent a melanoma. Using patient-level contextual information may help the development of image analysis tools, which could better support clinical dermatologists. For each image in the dataset, we are predicting the probability of the sample is **malignant or not.**

We have used Transfer Learning, CNN, Logistic regression and XGBoost for our analysis and prediction. We used dataset from a Kaggle contest where we entered the competition as well. We were able to achieve pretty good accuracy with our models. As of now we used VGG16 and Xception model in transfer learning, but we have also added code for DenseNet model in order to further improve our model for ensemble learning. These models have the potential to be used as a decision support tool in primary care, by providing dermatologist-grade recommendation on the likelihood of malignant melanoma.