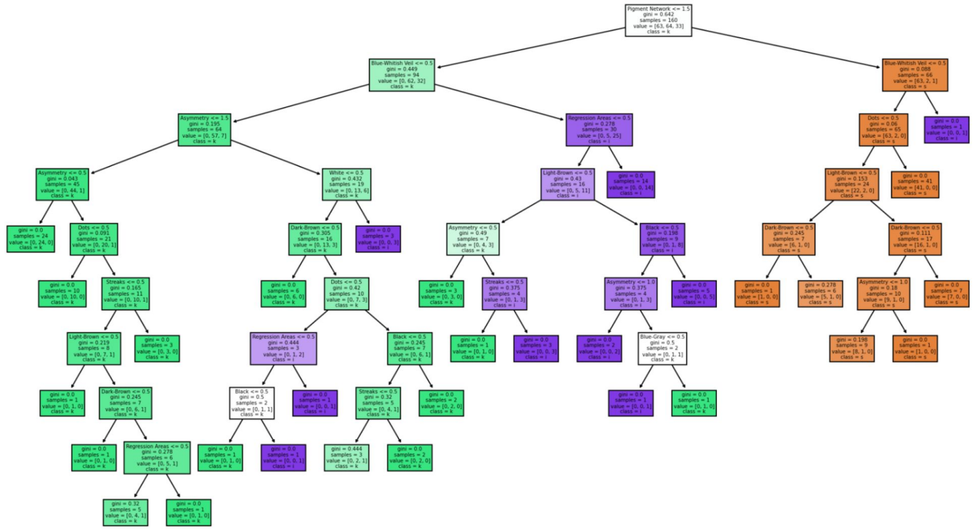
# Identifying Skin Cancer using Machine Learning

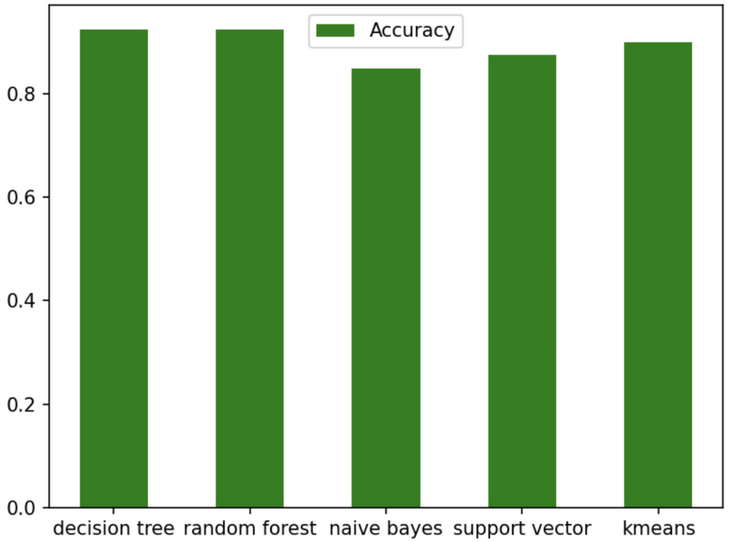
## Background

- Skin Cancer is one of the most common cancers in the United States
- One out of five americans get skin cancer in their lifetime
- It is important for early detection of skin cancer as this can increase the chances of successful treatment and survivability.
- Artificial Intelligence (AI) plays a vital role in diseases' diagnosis.

## Materials & Methods

- PH^2 Database contains 200 dermoscopic images. There are 3 types of images: common nevus, atypical nevus, and melanoma
- Common nevi are benign growths of melanocytes
- Atypical nevi are moles that have unusual features and can sometimes resemble melanomas.
- Melanomas are the most dangerous form of skin cancer
- Usage of machine learning models such as decision trees, random forests, support vectors, etc.
- Data was split into 80% training, 20% testing






## Discussion

- Out of the different machine learning models used, The decision tree and random forest performed the best with a 92.5% accuracy rate
- Using the machine learning models as well as the features used in the study, you can predict skin cancer with a relatively high accuracy.
- Future work involves tweaking machine models for higher accuracy rates
  - Hyperparameter tuning can be used in all models to increase performance, reduce overfitting, enhance generalizations, etc
- I could also test other machine learning models (more unsupervised models like neural networks)
- In the future, I also plan on using image segmentation in my project.

## Acknowledgements

A huge thank you to Dr. Joshua Levy, Aruesha Srivastava, and Suchir Paruchuri for their assistance in completing this project.