- Skin cancer is the most prevalent form of human malignancy, and its diagnosis primarily relies on visual examination.
- The diagnostic process involves initial clinical screening, potential dermoscopic analysis, and subsequent biopsy and histopathological examination.
- Automated classification of skin lesions using image analysis is a complex task due to the intricate variations in the appearance of such lesions.
- The HAM10000 dataset, which stands for "Human Against Machine with 10000 training images," comprises 10,015 dermatoscopic images.
- This dataset has been made publicly available through the ISIC archive and serves as a training set for academic machine learning purposes.
- The HAM10000 dataset serves as a benchmark for evaluating machine learning models and comparing their performance with human experts.

The dataset encompasses seven distinct classes of skin cancer, which are as follows:

  - Melanocytic nevi
  - Melanoma
  - Benign keratosis-like lesions
  - Basal cell carcinoma
  - Actinic keratoses
  - Vascular lesions
  - Dermatofibroma

- The goal of this kernel is to utilize Convolutional Neural Networks (CNN) implemented with Keras and TensorFlow as the backend to detect and classify these seven classes of skin cancer.
- By leveraging the power of CNNs, we aim to develop a model capable of accurately identifying and differentiating between different types of skin cancer.
- Once the classification model is trained, we will proceed to analyze its results and evaluate its practical utility in real-world scenarios.
- The step-by-process will involve data preprocessing, model construction and training, model evaluation, and subsequent analysis of the model's performance and potential applications.

1. Importing Essential Libraries
2. Creating a Dictionary of Images and Labels
3. Reading and Processing Data
4. Data Cleaning
5. Loading and Resizing Images
6. Train-Test Split
7. Normalization
8. Label Encoding
9. Train-Validation Split
10. Model Building using Convolutional Neural Networks (CNN)
11. Setting Optimizer and Annealing
12. Fitting the Model
13. Model Evaluation, including Testing and Validation Accuracy