Skin Rash Diagnosis

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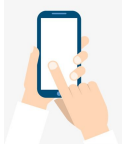Jaskirti Ghataure   Joey Pak

Motivation

- Skin rashes can be a common causes of anxiety for patients.

- There exists a need to help users quickly classify skin conditions.

Objective

Develop an app that accepts a rash image as an input and provides the likelihood whether the rash evinces a skin disease.

- Based on prevalence, the app will be able to predict the following conditions.
  - Skin tumor/mole
  - Psoriasis
  - Atopic Dermatitis
  - Contact Dermatitis
  - Christmas Tree Rash
  - Fungal Infections

Methodology - Overview

PRE PROCESSING	TRAINING	TESTING
• Filter images to eliminate noise caused by lights or shadows • Manually segment the area of interest for every image to create a "Ground Truth" of the segmentation. • Determine the best automatic method to segment the images. • Divide the data in train/test groups	• Use Convolutional Neural Networks (CNN). • Add the the classifier the features of Asymmetry, Borders, Color, Texture (ABCT), etc.	• Compare the model using only CNN and CNN + ABCT features. • Development of ROC curves for comparison.

Data Sources

- Medical image data is available from the following sources:

    - https://medicine.uiowa.edu/dermatology/education/clinical-skin-disease-images
    - http://www.dermnet.com/dermatology-pictures-skin-disease-pictures/
    - http://www.dermatlas.net/atlas/index.cfm
    - https://www.dermnetnz.org/topics/amelanotic-melanoma-images/

Challenges

- Images will not be standardized (size, lighting, image quality)

  - Size

  - Color

- ROI segmentation

  - Asymmetry calculation

  - Convexity (borders)