Risk Analysis of Skin Cancer using Deep Learning

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Motivation

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- Skin cancer is the most common form of cancer, accounting for 40% of cases globally. More than 8,500 people in the US are diagnosed with skin cancer everyday.

- The cure rate is very high with early prognosis. The curability is as high as 92% if the cancer is detected early.

- Unfortunate fact of the healthcare system that it spends more in research on expensive treatments for late-stage diseased individuals than developing scalable and cost-effective early screening methods.

Problem Statement

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- To build a platform where dermatologists can easily scan through the cancer prone patients. The system uses deep learning techniques in the background to learn from thousands of images and associates a risk score with each uploaded image. The value of the score can be used to differentiate between malign and benign cases. We also aim to train a model for multi-class classification among the 23 classes of skin cancer.

Design and Approach

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- Experiment with state of the art image classification models like Google Net, ResNet, Net2Net for classification.
- Build an intuitive web application where patients can upload images of their lesions over time
- The application provides an interface to dermatologists to monitor patients outside clinical settings.
- The application also provides insights from knowledge learnt through thousands of images to suggest high risk patients and similar lesions.
- The dermatologist can call in the patient if it's a high risk case.