

# Skin Cancer Detection

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## Abstract

This project aims at building by detecting cancer at earlier stages. The survival rate for early detection of skin cancer is almost 98 percent, but it falls to 62 percent when the cancer reaches the lymph node, and 18 percent when it metastasizes to distant organs. Most skin cancers are caused by too much exposure to ultraviolet (UV) rays. To lower the risk of getting skin cancer, one can protect your skin from UV rays from the sun and from artificial sources like tanning beds and sunlamps. Skin cancer develops primarily on areas of sun-exposed skin, including the scalp, face, lips, ears, neck, chest, arms and hands, and on the legs in women. But it can also form on areas that rarely see the light of day like palms, beneath fingernails or toenails, and genital area. Skin cancer affects people of all skin tones.

The building block of this detector is deep learning which is used to process an image, then recognize it and show the output accordingly. The hardware implementation is done using Single Board Computer, Intel® Movidius™ Neural Compute Stick, SD card, Camera, USB cables etc. The picture will be received by the camera, and processing will be done inside the Raspberry Pi & the Intel® Movidius™ Neural Compute Stick will do the heavy lifting and the output will be displayed on the monitor.

This project requires training on the server as well as deploying on the edge. The goal is to build a machine learning algorithm that can detect cancer images and pair it with mentioned hardware. The project includes two parts. The first part is creating a machine learning algorithm (model), which processes images as matrices using a Neural Network, with its corresponding labels. The second part is deploying on the edge, using the same model we've trained and running it on an edge device which in this case, is the Intel® Movidius™ Neural Compute Stick.

Some of the Undergraduate Courses that are used in this project include: Machine Learning, Deep Learning, Image Processing.