Classifying Images Post Hurricane using Satellite Imagery

Prathyush P Rao, M.K. Vishal Rishi, Saili Myana, and Sai Sumanth Madicherla

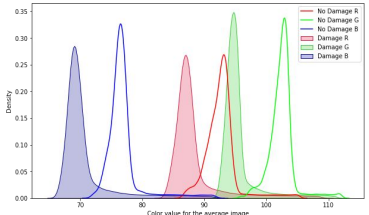
Motivation:

The latest hurricane - Hurricane Iota, had **61 total fatalities**, and 41 are still missing, affected majorly the **Central American regions** of Honduras and Nicaragua.

The manual way to quantify damage is **time-consuming and labour-intensive**. This paves the way for AI.

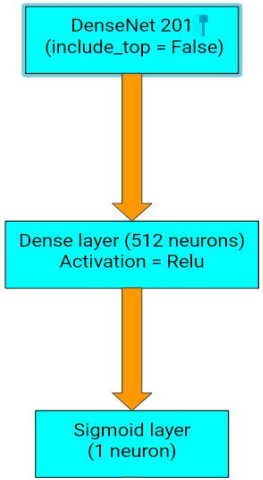
Data set:

Our dataset comprised satellite images from "Geo-satellite sensor" and "Geo Bigdata", consisting of top view satellite images of damaged and undamaged houses.



The average distribution of various colors in the dataset is an important aspect helping the model classify.

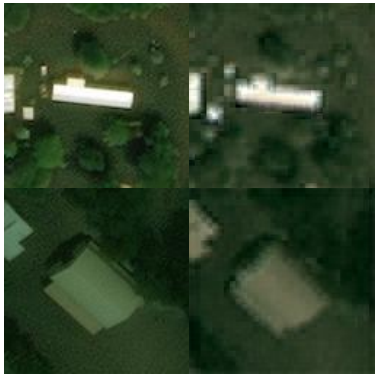
Model:



Results:

Category	Accuracy	AUROC
test_1	96.2%	94.6%
test_2	93.4%	93.9%
validation	93.5%	-

Conclusion:



Reconstructed images using deconvolution layers gives us an idea of the effectiveness of Transfer learning in learning compact features

Future work:

- Building localization
- A system that interacts with local support and expert analysts
- Accurately assess damage around the globe

References:

1.Google AI Blog: Machine Learning-based Damage Assessment for Disaster Relief (googleblog.com)
2.Machine Learning For Natural Disaster Relief: How Can ML Aid Humanitarian Efforts? | 365 Data Science