A Deep Learning Approach to Flood Detection in Optical Imagery

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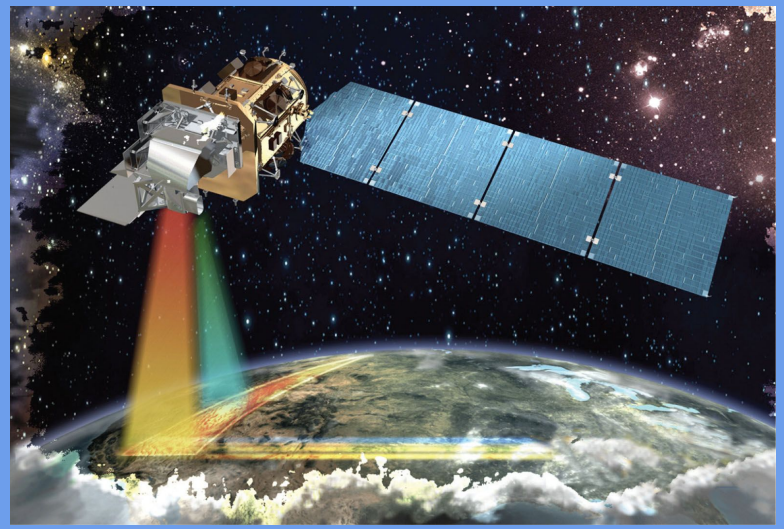
Motivation

- Climate change is increasing flooding events.

- More now than ever we have eyes in the sky to better map hazards on the ground



IMPACTS

- Automated detection of satellite images to use in flood mapping

- Reduce human suffering by aiding in mitigating future flood risk

Approach

MobileNetV2

MobileNetV2

Features #1

Features #2

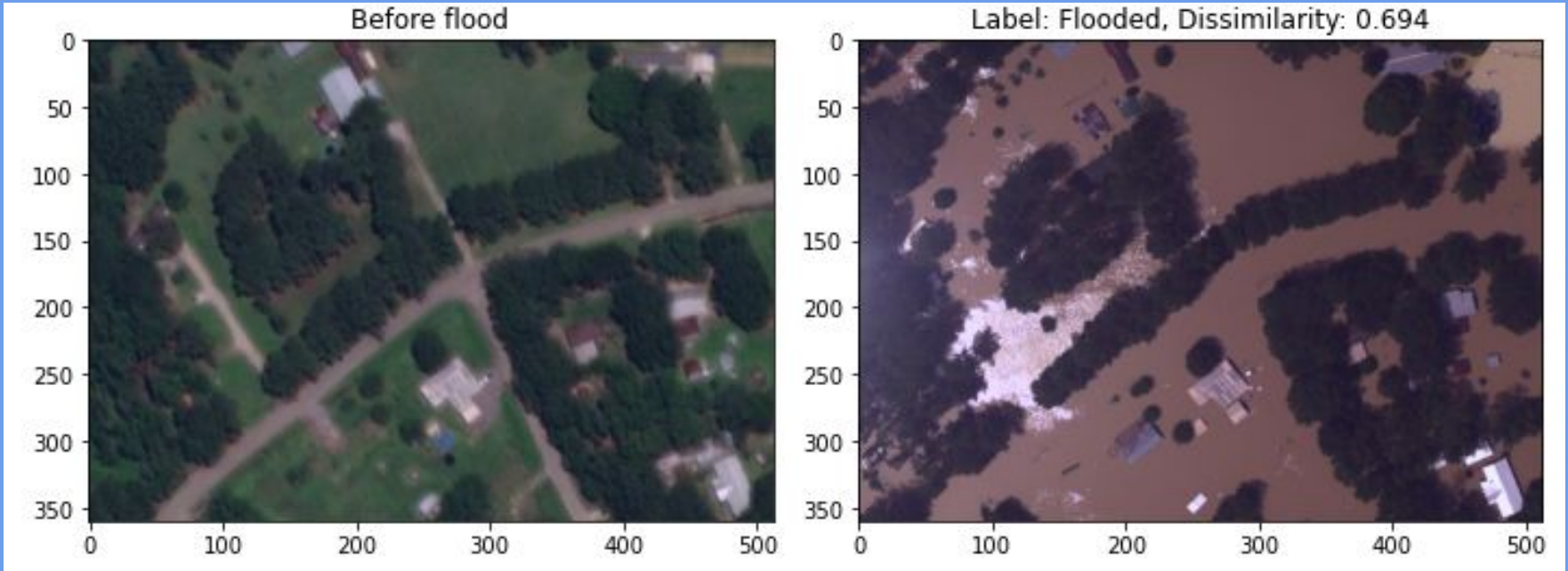
Pairwise Distance

Sigmoid

Dissimilarity threshold

Results:

Dissimilarity threshold: 0.402



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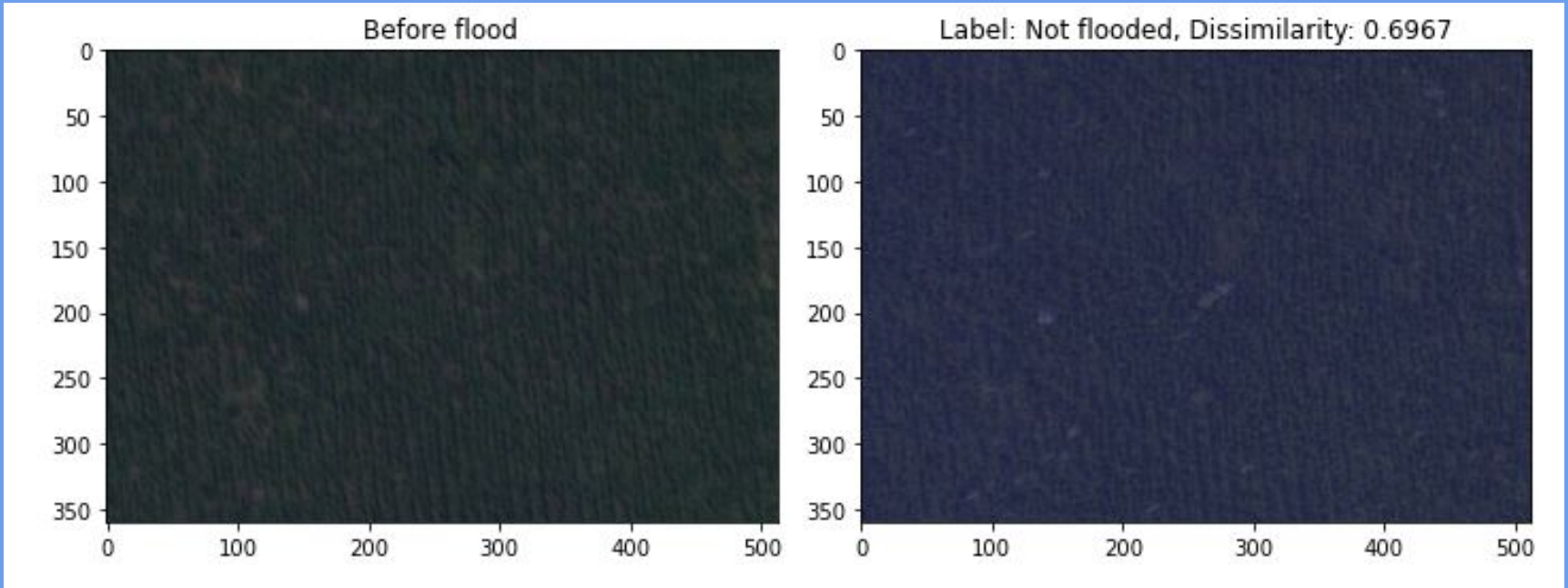
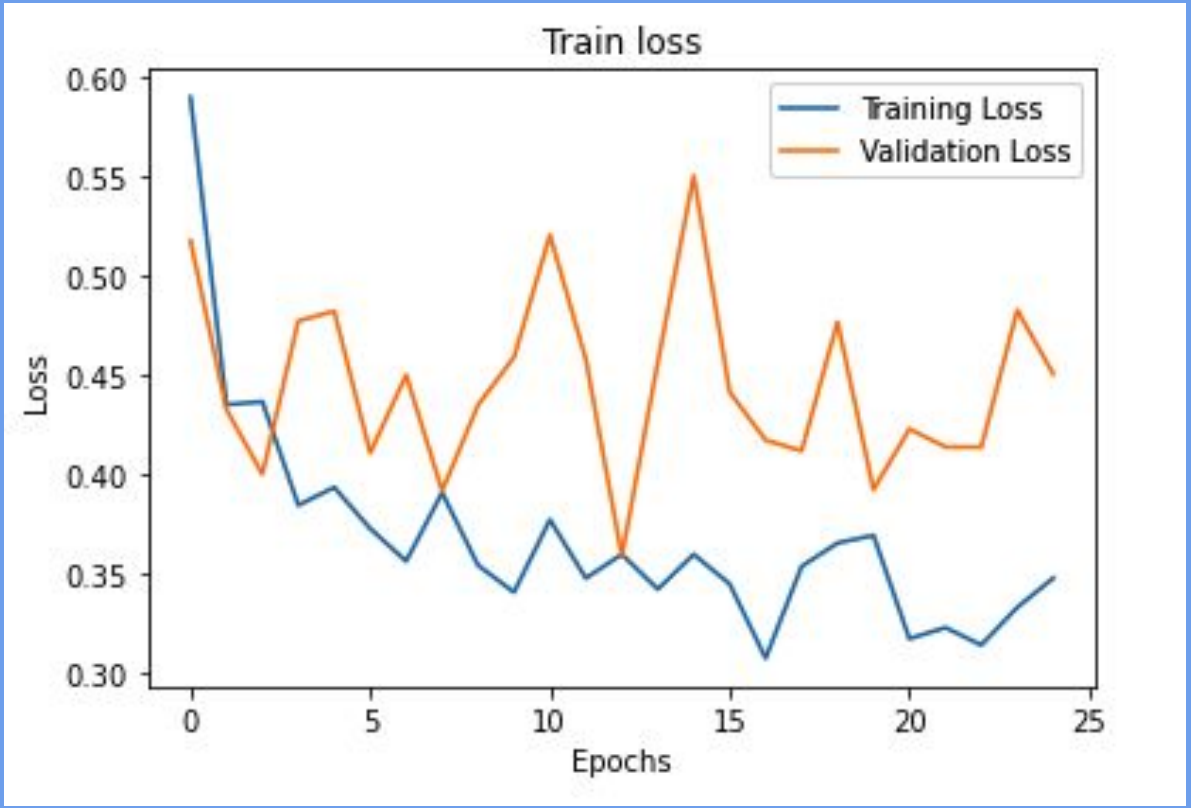


Results


Train loss
Training Loss
Validation Loss
Loss
Epochs
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0
5
10
15
20
25

Insights

- Siamese Neural Network Limited in the larger scope of flood modelling but useful for rapid detection of flooding from space

- May not be good for “light” flooding

Thank you.