

FIRE IN THE AMAZON

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BACKGROUND



DATASET

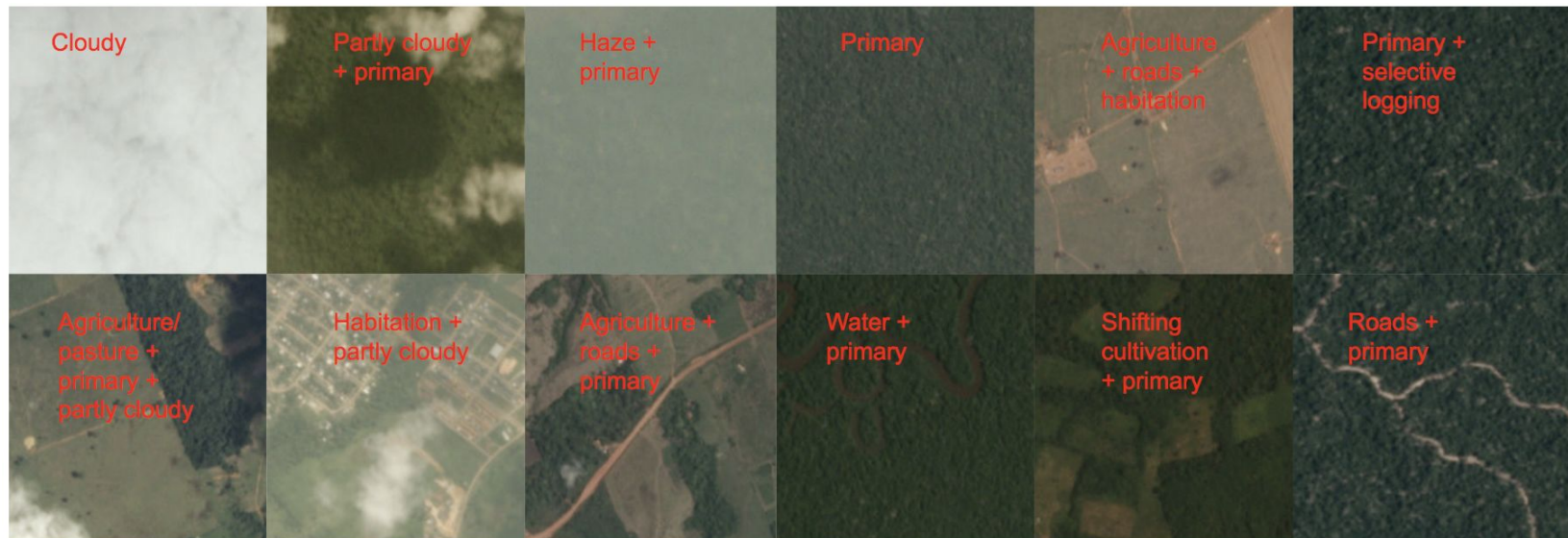
40,479 .jpg files (256 x 256), 4 channels (RGBA)

Train set (76%): 30,763

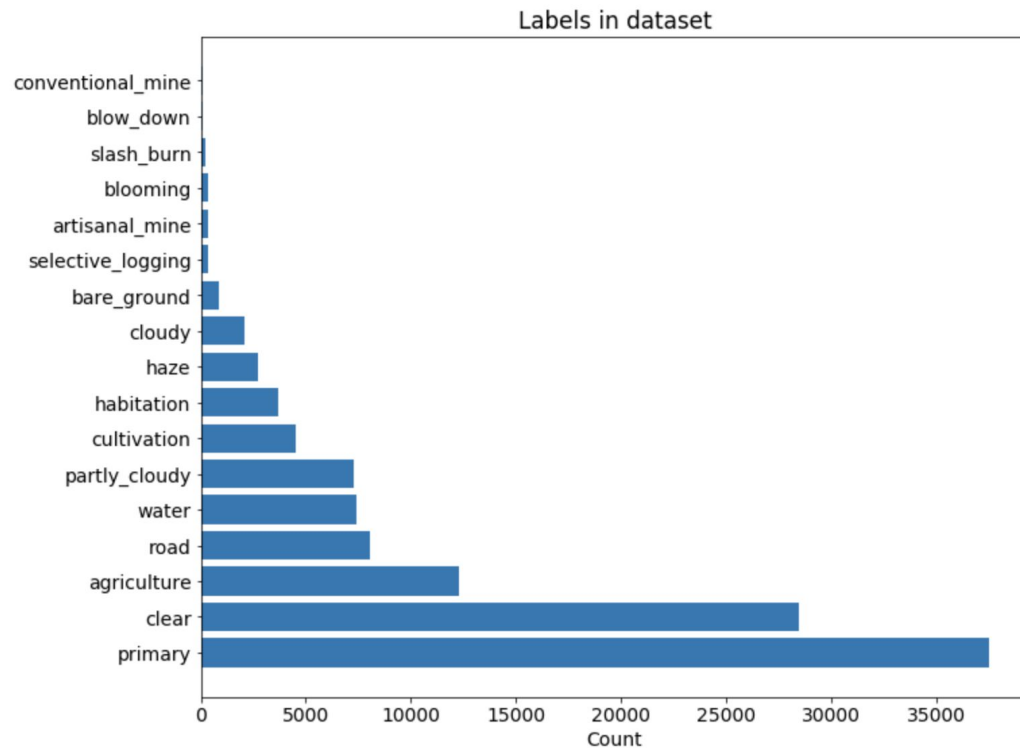
Test set (20%): 8,096

Validation set (4%): 1,620

DATASET



DATASET



NETWORKS

CNN from scratch - Kernel, Pooling, Stride, BN and Layers

VGG19 - 19 Layers

VGG19_BN - 19 Layers with Batch Normalization

ResNet50 - 50 Layers

OPTIMIZER & F-BETA

SDG: More stable than Adam

F-BETA SCORE: Compare with the models in the Kaggle competition.

RESULTS

CNN from scratch # 6 runs

VGG19 # 3 runs

VGG19_BN # 3 runs

ResNet50 # 3 runs

Preprocessing

Learning rate

Number of epochs

Dropout

Batch size

RESULTS

Run #	LR	Epochs	Batch Size	Dropout	Architecture	Time (min)	Fbeta
1	0.1	10	500	0.25	CNN	0	0.650
2	0.01	10	500	0.25	CNN	19	0.610
3	0.1	10	506	0.2	CNN	19	0.680
4	0.1	10	506	0.1	CNN	17	0.650
5	0.1	10	506	0.1	CNN	19	0.643
6	0.1	25	506	0.1	CNN	43	0.650
8	0.1	2	90	0.1	VGG19	120	0.752
9	0.03	3	90	0.1	ResNet50	90	0.739
10	0.03	3	90	0.1	ResNet50	150	0.781
11	0.1	2 1/2	90	0.1	VGG19	150	0.798
12	0.01	4	90	0.1	VGG19	> 180	0.759
13	0.1	1	70	0.1	VGG19_bn	42	0.804
14	0.03	2	90	0.1	ResNet50	45	0.767
15	0.1	2	70	0.1	VGG19_bn	200	0.836
16	0.1	5	70	0.1	VGG19_bn	510	0.840

RESULTS

Best-performing models:

#1. VGG-19_bn

#2. ResNet50 & VGG-19

#3. CNN built from scratch

CONCLUSION

#1. Time restriction: too many options to test, but limited time

#2. Memory restriction: too many options to test, but limited memory

#3. Limited information (implementation)

#4. Pretrained models throw more accurate results