# Copy of TF\_cropSEg.ipynb (Parking\_Lots\_v2.ipynb)

### GEE Code:

* Sentinel 1 and 2 (masked, filtered over 07/01/2017 - 07/01/2018)
  + Bands: B2, B3, B4, B8, B11, B12, VV, VH
* Centroids: if area of parking lot is greater than 2 (unit??), exclude 20 meter edge and create centroid
* 1: 734 parking lot points within Long Island counties (514 training, 220 testing)
* 0: 100 randomly generated non parking lot points within Long Island counties (69 training, 31 testing)
* Neighborhood: 25x25
* Training scale: 10m
* Export Tensorflow records

### Model Code (CNN):

* Batch size: 100
* Input\_fn shuffle: true (30 times)
* Convolutional layers:
  + Padding: yes
  + Return relu
* Reduce band stack size by 2 pixel border
* NHWC (images in batch, vertical pixels, horizontal pixels, channels)
* Conv layer 1: 4 filters, kernel size: 2
* Pool layer 1: max\_pooling, pool size: 2, strides: 2
* Conv layer 2: 8 filters, kernel size: 3
* Pool layer 2: max\_pooling, pool size: 2, strides: 2
* Conv layer 3: 16 filters, kernel size: 3
* Dense layer: 16 filters
  + Kernel size: 1
  + Dropout rate = 0.4
* Dense layer 2: ????
* Squeeze probs, squeeze labels
* Probability: greater than 50%??
* Learning rate: 0.001

### Results:

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| --- | --- |
| **Runs** | **Accuracy** |
| 61,250 | 0.898039 |
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# TFDNNSampling

### GEE Code:

* Sentinel 1 and 2 (masked, filtered ascending: 07/01/2016 - 08/31/2017 // descending: 07/01/2017 – 08/31/2017. S2: today -1 year)
  + Bands: [B2, B3, B4, B8, B11, B12] x3, VV, VH
* Centroids: if area of parking lot is greater than 10 (unit??), create centroid
* All clipped to “geometry”
* 0: parking lots (1131 training, 1186 validation)
* 1: bldgs (1650 training, 1614 validation)
* 2: forest (1481 training, 1537 validation)
* 3: ag (300 training, 312 validation)
* Add bands from three time periods
* Training scale: 30
* Tile scale: 16
* Random forest: 20 trees
* Holdout: error matrix of validation data
* Kappa: error matrix of validation data

## Results:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **TFDNN** | **Runs** | **Holdout** | **Kappa** | **Rank** |
| 34 Inputs | 11 | 0.906748 | 0.866659 | 1 |
| W/O S1 | 10 | 0.895596 | 0.850297 | 3 |
| W/O Temp | 13 | 0.899213 | 0.855524 | 2 |