17 April 2020:

**Path Names For 10000 images:**

Negative DES: DES/DES\_Processed/0\_DES0434-1915/

*DES/DES\_Processed/num\_source/*

Positive: PositiveWithDESSky/0/

*PositiveWithDESSky/num/*

**Path Names for Unseen Images:**

Negative (Unknown): KnownLenses/Unknown\_Processed/91953\_DES0329-1707/

*KnownLenses/Unknown\_Processed/num\_source/*

Positive (Known): KnownLenses/DES2017/0\_DES0005-0041/

*KnownLenses/DES2017/num\_source/*

KnownLenses/Jacobs\_KnownLenses/ 0\_DES0039-2915/

*KnownLenses/Jacobs\_KnownLenses/num\_source/*

**Using \_norm.fits:**

DataPos.std() = 0.999999…

DataNeg.std() = 1.00051857…

AllData.std() = 1.0002593…

DES2017.mean(): 0.0001755996137209865

DES2017.std(): 1.0002863525717804

DataUnknown.mean(47): 0.0004543304632322105

DataUnknown.std(47): 1.00114454489…

Jacobs.mean(84): 0.0000081416

Jacobs.std(84): 1.000035

DataKnown.mean() {DES2017+Jacobs}: 2.310732…

DataKnown.std(): 77.58045271…

DataUnknown.mean(256): 4.191108885…

DataUnknown.std(256) : 89.314137716…

**Using Gaussian Normalization (block 14):**

Accuracy on Test: 98.25

Where #1 = Lenses

#0 = Non-Lenses

Unseen:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **DATA** | **#1** | **#0** | **Fraction** | **Fraction (%)** |
| DES2017 | 9 | 38 | 9/47 | 19.1489 |
| Unknown\_Processed (47) | 0 | 47 | 47/47 | 100 |
| Jacobs\_KnownLenses | 3 | 81 | 3/84 | 3.5714 |
| Unknown\_Processed(84) | 1 | 83 | 83/84 | 98.8095 |
| DES2017+Jacobs | 21 | 110 | 21/131 | 16.0305 |
| Unknown\_Processed(256) | 15 | 241 | 241/256 | 94.1406 |

**Not Using Gaussian Normalization (block 14):**

Accuracy on Test: 98.225

Unseen:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **DATA** | **#1** | **#0** | **Fraction** | **Fraction (%)** |
| DES2017 | 10 | 37 | 10/47 | 21.2766 |
| Unknown\_Processed (47) | 0 | 47 | 47/47 | 100 |
| Jacobs\_KnownLenses | 3 | 81 | 3/84 | 3.7037 |
| Unknown\_Processed(84) | 2 | 82 | 82/84 | 97.6190 |
| DES2017+Jacobs | 9 | 122 | 9/131 | 6.87023 |
| Unknown\_Processed(256) | 11 | 245 | 245/256 | 95.7031 |

**Using \_WCSClipped.fits:**

DataPos.std() = 132.90667..…

DataNeg.std() = 110.3791976…

AllData.std() = 122.16621…

DataKnown.mean() = 6.440405…

DataKnown.std() = 129.411035…

DataUnknown.mean(47): 0.0004543304632322105

DataUnknown.std(47): 1.00114454489…

Jacobs.mean(84): 3.3475957…

Jacobs.std(84): 82.07225323…

DataKnown.mean() {DES2017+Jacobs}: 4.4572299…

DataKnown.std() {DES2017+Jacobs}: 101.636203105…

DataUnknown.mean(256): 4.191108885….

DataUnknown.std(256): 89.3141377…

**Using Gaussian Normalization (block 14):**

Accuracy on Test: 98.35

Where #1 = Lenses

#0 = Non-Lenses

Unseen:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **DATA** | **#1** | **#0** | **Fraction** | **Fraction (%)** |
| DES2017 | 19 | 28 | 19/47 | 40.4255 |
| Unknown\_Processed (47) | 0 | 47 | 47/47 | 100 |
| Jacobs\_KnownLenses | 4 | 80 | 4/84 | 4.7619 |
| Unknown\_Processed(84) | 2 | 82 | 82/84 | 97.6190 |
| DES2017+Jacobs | 24 | 107 | 24/107 | 22.4299 |
| Unknown\_Processed(256) | 21 | 235 | 235/256 | 91.7969 |

**Not Using Gaussian Normalization (block 14):**

Accuracy on Test: 50.025

Unseen:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **DATA** | **#1** | **#0** | **Fraction** | **Fraction (%)** |
| DES2017 | 0 | 47 | 0/47 | 0 |
| Unknown\_Processed (47) | 0 | 47 | 47/47 | 100 |
| Jacobs\_KnownLenses | 0 | 84 | 0/84 | 0 |
| Unknown\_Processed(84) | 0 | 84 | 84/84 | 100 |
| DES2017+Jacobs | 0 | 131 | 0/131 | 0 |
| Unknown\_Processed(256) | 0 | 256 | 256/256 | 100 |

|  |  |  |
| --- | --- | --- |
| X = Images  (Positive + Negative) | Accuracy Rate | clf\_image = MLPClassifier(activation = 'relu', |
| Y = Labels | 0.965 | hidden\_layer\_sizes = (100, 100, 100), |
|  |  | solver='adam', |
|  |  | verbose=True, |
|  |  | max\_iter=100) |