

## Find chosen significance threshold from double gaussian

Can represent a gaussian as:

```
def gaussian(x,A,u,sigma):  
    return A * scipy.stats.norm.pdf((x-u)/sigma) / sigma
```

Can get the cdf as:

```
def cdf_gaussian(x,A,u,sigma):  
    return A * scipy.stats.norm.cdf(x,loc=u,scale=sigma)
```

From this should be able to get the cdf of two gaussians together.

One could then solve numerically for the  $x$  value of the desired percentile.

$$\left(1 - \frac{p}{N}\right) = \frac{cdf(x, A_1, u_1, \sigma_1) + cdf(x, A_2, u_2, \sigma_2)}{A_1 + A_2}$$

Where  $p = 0.05$  is the probability threshold ( $\sim$  p-value) of mislabelling 1 background point as a galaxy,  $N$  is the number of pixels under consideration