

BAYESIAN PARTS

THE PRIOR

```
[1]: '''
Created on Sat Mar 9 10:21:10 2024

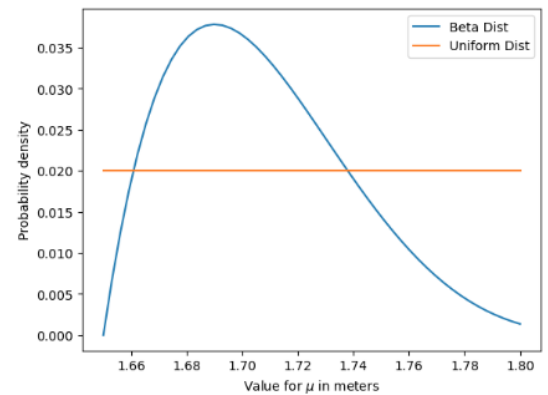
@author: EPeregrino
'''

import scipy.stats as sts
import numpy as np
import matplotlib.pyplot as plt

mu = np.linspace(1.65, 1.8, num = 50)
test = np.linspace(0, 2)
uniform_dist = sts.uniform.pdf(mu) + 1 #sneaky advanced note
#but we can also make
uniform_dist = uniform_dist/uniform_dist.sum() #Normalizing
beta_dist = sts.beta.pdf(mu, 2, 5, loc = 1.65, scale = 0.2)
beta_dist = beta_dist/beta_dist.sum()
plt.plot(mu, beta_dist, label = 'Beta Dist')
plt.plot(mu, uniform_dist, label = 'Uniform Dist')
plt.xlabel("Value for  $\mu$  in meters")
plt.ylabel("Probability density")
plt.legend()

[1]: <matplotlib.legend.Legend at 0x7f6d11f2ec90>
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THE LIKELIHOOD

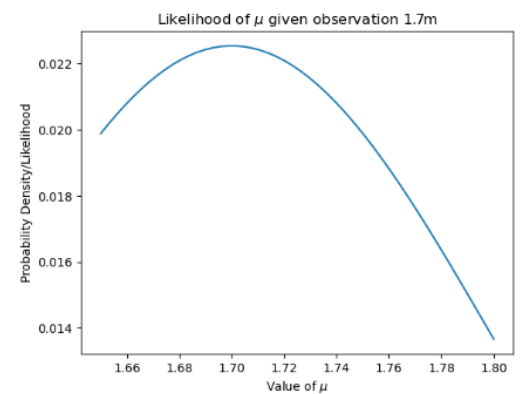
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[13]: '''
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'''

def likelihood_func(datum, mu):
    likelihood_out = sts.norm.pdf(datum, mu, scale = 0.1) #N
    return likelihood_out/likelihood_out.sum()

likelihood_out = likelihood_func(1.7, mu)

plt.plot(mu, likelihood_out)
plt.title("Likelihood of  $\mu$  given observation 1.7m")
plt.ylabel("Probability Density/Likelihood")
plt.xlabel("Value of  $\mu$ ")
plt.show()
```



THE POSTERIOR

```
[16]: '''  
Created on Sat Mar 9 10:21:10 2024  
  
@author: EPeregrino  
'''  
  
import scipy as sp  
  
unnormalized_posterior = likelihood_out * uniform_dist  
plt.plot(mu, unnormalized_posterior)  
plt.xlabel("$\mu$ in meters")  
plt.ylabel("Unnormalized Posterior")  
plt.show()
```

