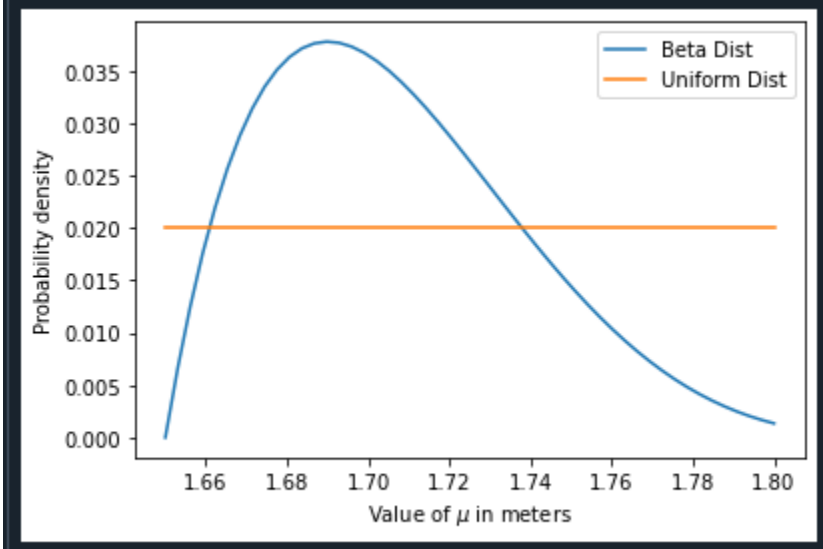
King David Concepcion

THE PRIOR

```
# -*- coding: utf-8 -*-
"""
Created on Sat Mar  9 19:51:13 2024

@author: (Kida)_KingDavidConcepcion
"""

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

uniform_dist =
uniform_dist/uniform_dist.sum()
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 of $\mu$ in meters")
plt.ylabel("Probability density")
plt.legend()
```

```
In [2]: runcell(0, 'C:/Users/Kida/untitled2.py')
```




```
In [3]:
```

```
# -*- coding: utf-8 -*-
"""
Created on Sat Mar  9 19:51:13 2024

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"""

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

uniform_dist = uniform_dist/uniform_dist.sum()
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 of $\mu$ in meters")
plt.ylabel("Probability density")
plt.legend()
```
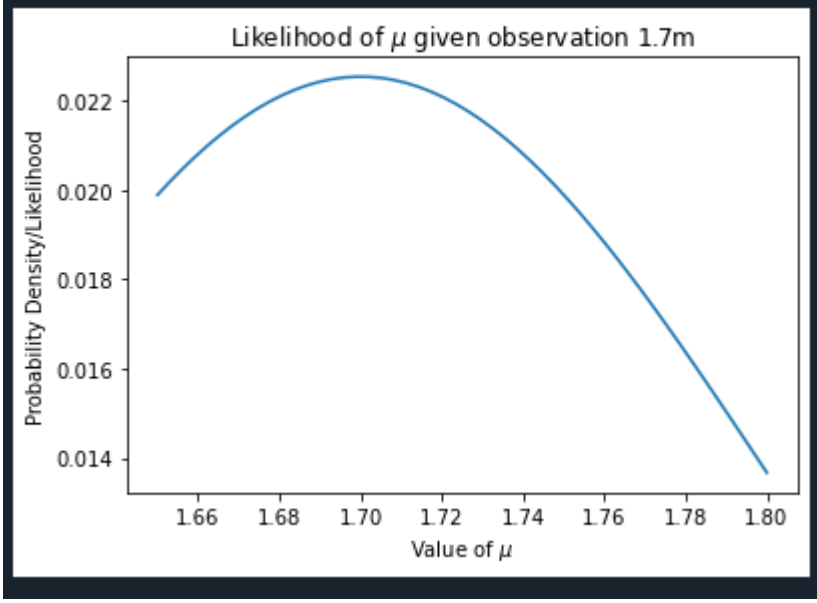

THE LIKELIHOOD

```
# -*- coding: utf-8 -*-
"""
Created on Sat Mar  9 20:03:49 2024

@author: (Kida)_KingDavidConcepcion
"""

def likelihood_func(datum, mu):
   likelihood_out = sts.norm.pdf(datum, mu, scale = 0.1)
   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()
```

```
In [3]: runcell(0, 'C:/Users/Kida/untitled3.py')
```



THE POSTERIOR

```
# -*- coding: utf-8 -*-
"""
Created on Sat Mar  9 20:12:38 2024

@author: (Kida)_KingDavidConcepcion
"""

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()
```

```
In [4]: runcell(0, 'C:/Users/Kida/untitled4.py')
```