```
import numpy as np
import matplotlib.pyplot as plt
from scipy.stats import norm, uniform, beta

# Observed data
observed_height = 1.7

# Define the range for the mean height (μ)
mu_values = np.linspace(1.65, 1.8, 50)

# Define the Prior
# Uniform prior: All values between 1.65 and 1.8 are equally likely
prior_uniform = uniform.pdf(mu_values, 1.65, 1.8 - 1.65)

# Beta prior: More weight towards shorter heights
alpha, beta_param = 2, 5
prior_beta = beta.pdf((mu_values - 1.65) / (1.8 - 1.65), alpha, beta_param)

#  Define the Likelihood
# Assuming a standard deviation (σ) of 0.1m for the normal distribution
sigma = 0.1
likelihood = norm.pdf(observed_height, mu_values, sigma)

# Calculate the Posterior (unnormalized)
unnormalized_posterior_uniform = prior_uniform * likelihood
unnormalized_posterior_beta = prior_beta * likelihood

# Normalize the posterior
posterior_uniform = unnormalized_posterior_uniform / np.sum(unnormalized_posterior_uniform)
posterior_beta = unnormalized_posterior_beta / np.sum(unnormalized_posterior_beta)

# Visualization
plt.figure(figsize=(10, 6))
plt.plot(mu_values, prior_uniform, label='Uniform Prior', linestyle='--')
plt.plot(mu_values, prior_beta, label='Beta Prior', linestyle='--')
plt.plot(mu_values, likelihood, label='Likelihood', linestyle='-.')
plt.plot(mu_values, posterior_uniform, label='Posterior (Uniform Prior)', linewidth=2)
plt.plot(mu_values, posterior_beta, label='Posterior (Beta Prior)', linewidth=2)
plt.xlabel('Mean Height (μ)')
plt.ylabel('Probability Density')
plt.title('Bayesian Analysis: Prior, Likelihood, and Posterior')
plt.legend()
plt.grid(True)
plt.show()
```