In [21]:
```
# The bins have to be adjusted to see a better plot, the animation tends to be slow

import matplotlib.pyplot as plt
import numpy as np
import matplotlib.animation as animation
%matplotlib notebook

fig, ((ax1, ax2), (ax3, ax4)) = plt.subplots(2,2, sharey=True)
# fig.tight_layout()

axs = [ax1, ax2, ax3, ax4]

# Generate the different distrubutions
x1 = np.random.normal(-2.5, 1, 10000)
x2 = np.random.gamma(2, 1.5, 10000)
x3 = np.random.exponential(2, 10000)
x4 = np.random.uniform(14,20, 10000)
x = [x1, x2, x3, x4]

# Axis for all plots
a1 = [-7.5,2.5,0,0.6]
a2 = [-1,10,0,0.6]
a3 = [-1,17,0,0.6]
a4 = [13,21,0,0.6]
aa = [a1, a2, a3, a4]

# NUmber of bins
b1 = np.arange(-7.5,2.5,0.2)
b2 = np.arange(-1,10,0.2)
b3 = np.arange(-1,17,0.2)
b4 = np.arange(13,21,0.2)
b= [b1, b2, b3, b4]

#Generate the titles
titles = ['Normal Distribution','Gamma Distribution','Exponential Distribution','Uniform Distribution']

# Annotation positions
anno = [-1, 6.5, 11, 18]

# selecting colors
c = ['lightcoral', 'skyblue','violet','tan']

# Creating the annimation function
n = 100
def update(curr):
    if curr == n:
        a.event_source.stop()

    # Plotting histograms
    for i in range(len(x)):
        axs[i].cla()
        axs[i].hist(x[i][:100*curr], normed = True, bins=b[i], color = c[i])
        axs[i].axis(aa[i])
        axs[i].set_title(titles[i], fontdict={'fontweight':'bold', 'fontsize':10})
        axs[i].set_ylabel('Normalized Frequency')
        axs[i].set_xlabel('Value')
        axs[i].annotate('n = {}'.format(100*curr), [anno[i], 0.5])
    plt.tight_layout()

a = animation.FuncAnimation(fig, update, interval=100)
# ani.save('sample.mp4', fps=60, dpi=200)
```

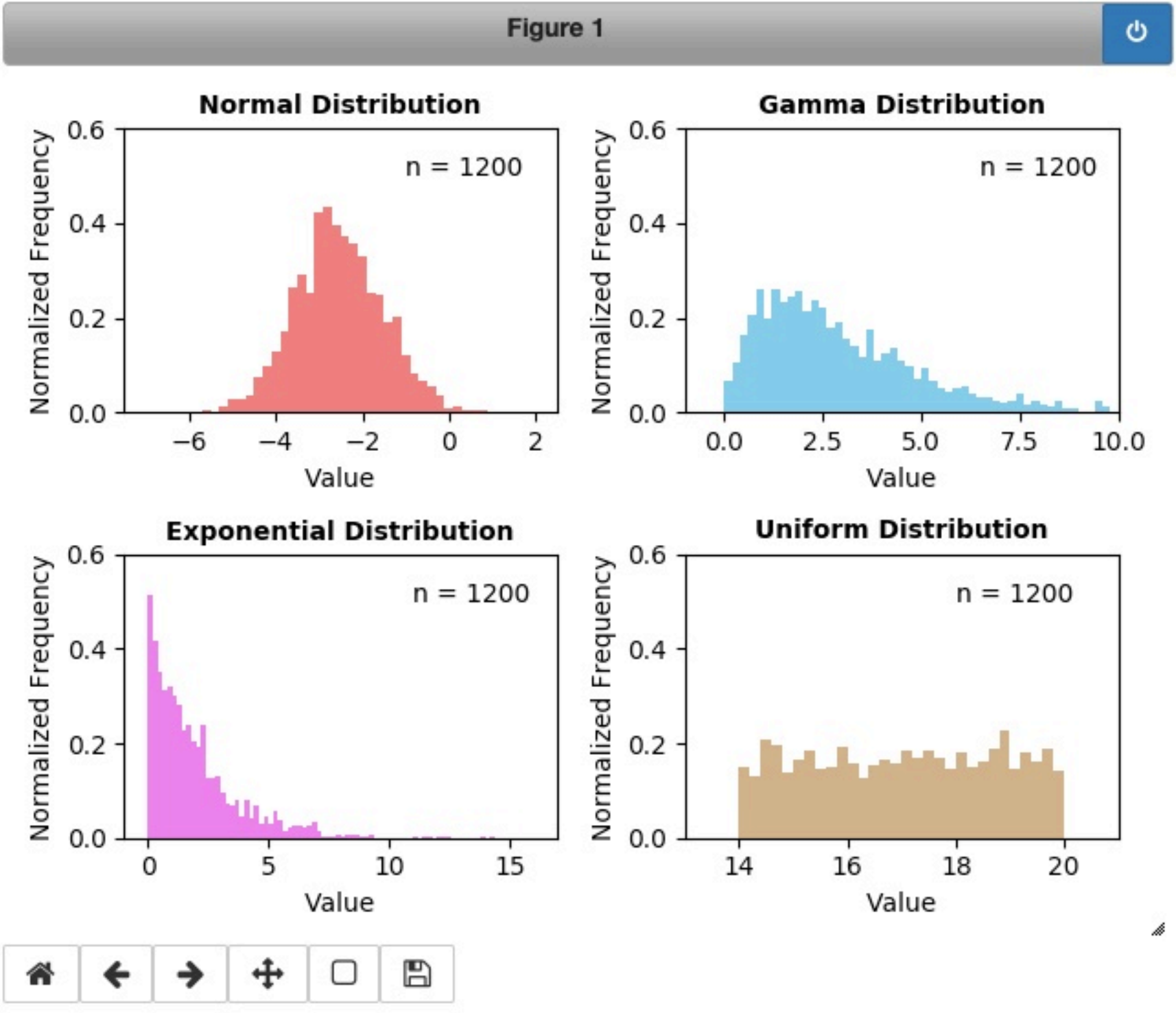


Figure 1
Normal Distribution
n = 1200
Normalized Frequency
Value
Gamma Distribution
n = 1200
Normalized Frequency
Value
Exponential Distribution
n = 1200
Normalized Frequency
Value
Uniform Distribution
n = 1200
Normalized Frequency
Value

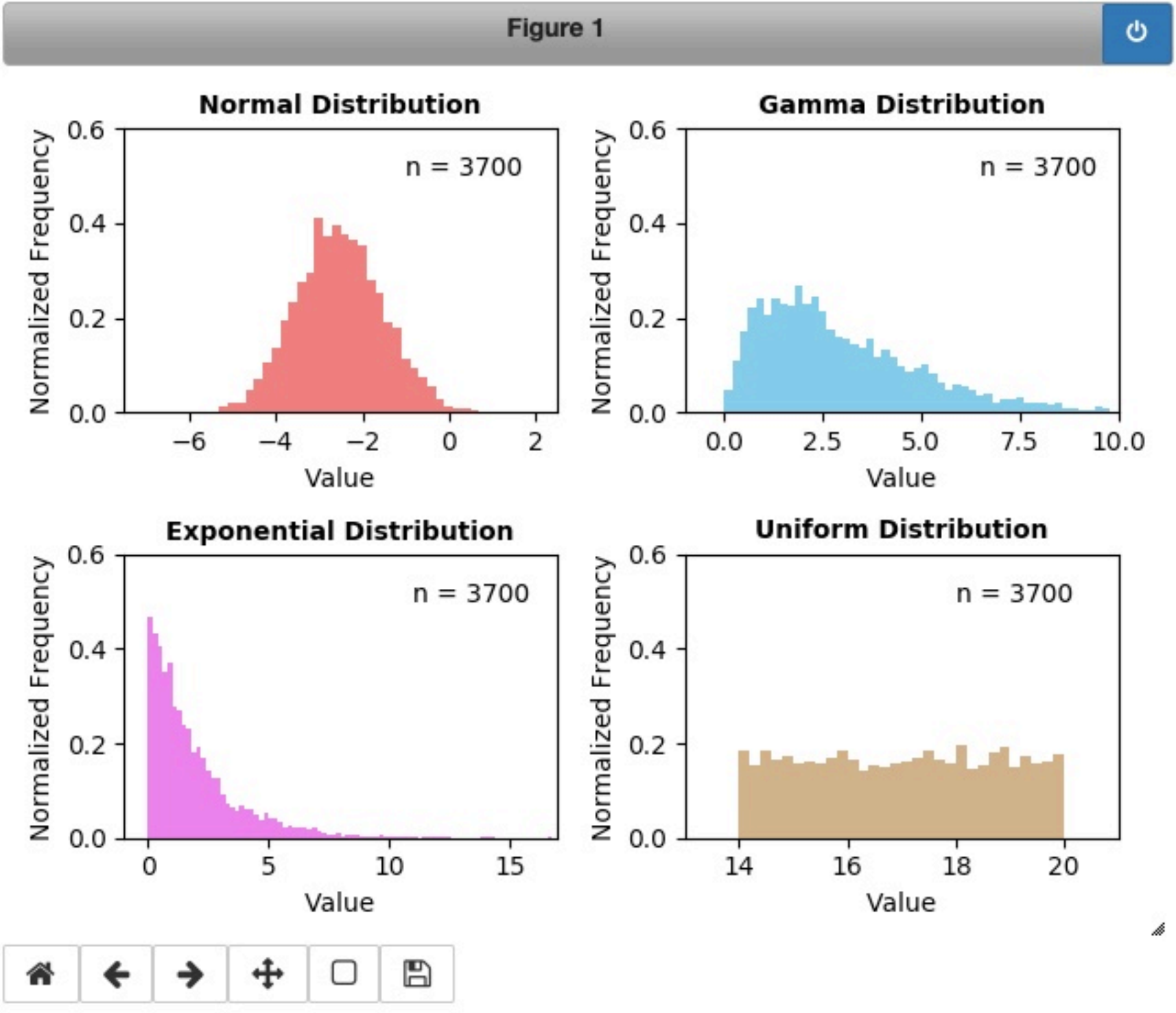


Figure 1
Normal Distribution
n = 3700
Normalized Frequency
Value
Gamma Distribution
n = 3700
Normalized Frequency
Value
Exponential Distribution
n = 3700
Normalized Frequency
Value
Uniform Distribution
n = 3700
Normalized Frequency
Value

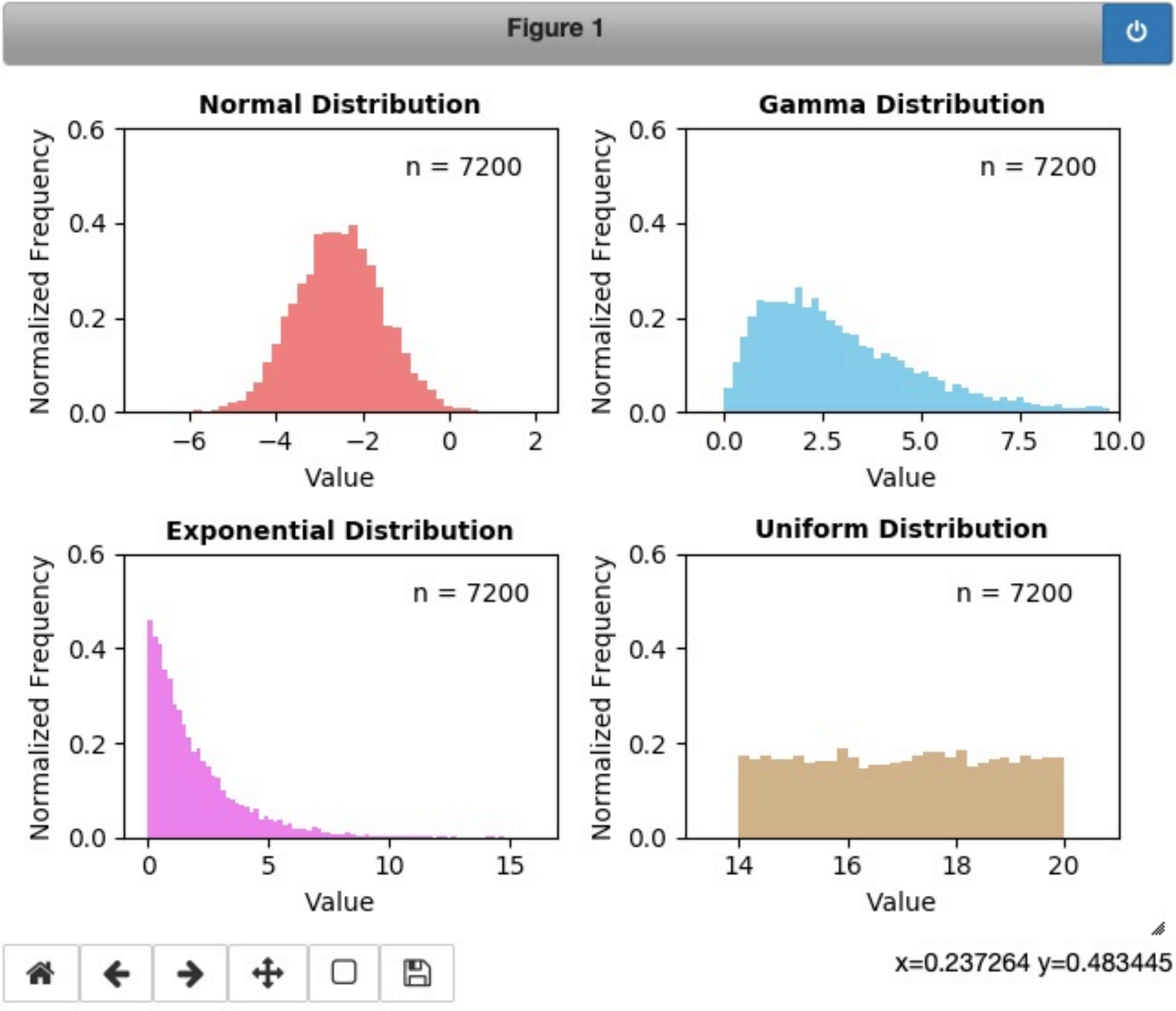


Figure 1
Normal Distribution
n = 7200
Normalized Frequency
Value
Gamma Distribution
n = 7200
Normalized Frequency
Value
Exponential Distribution
n = 7200
Normalized Frequency
Value
Uniform Distribution
n = 7200
Normalized Frequency
Value
x=0.237264 y=0.483445

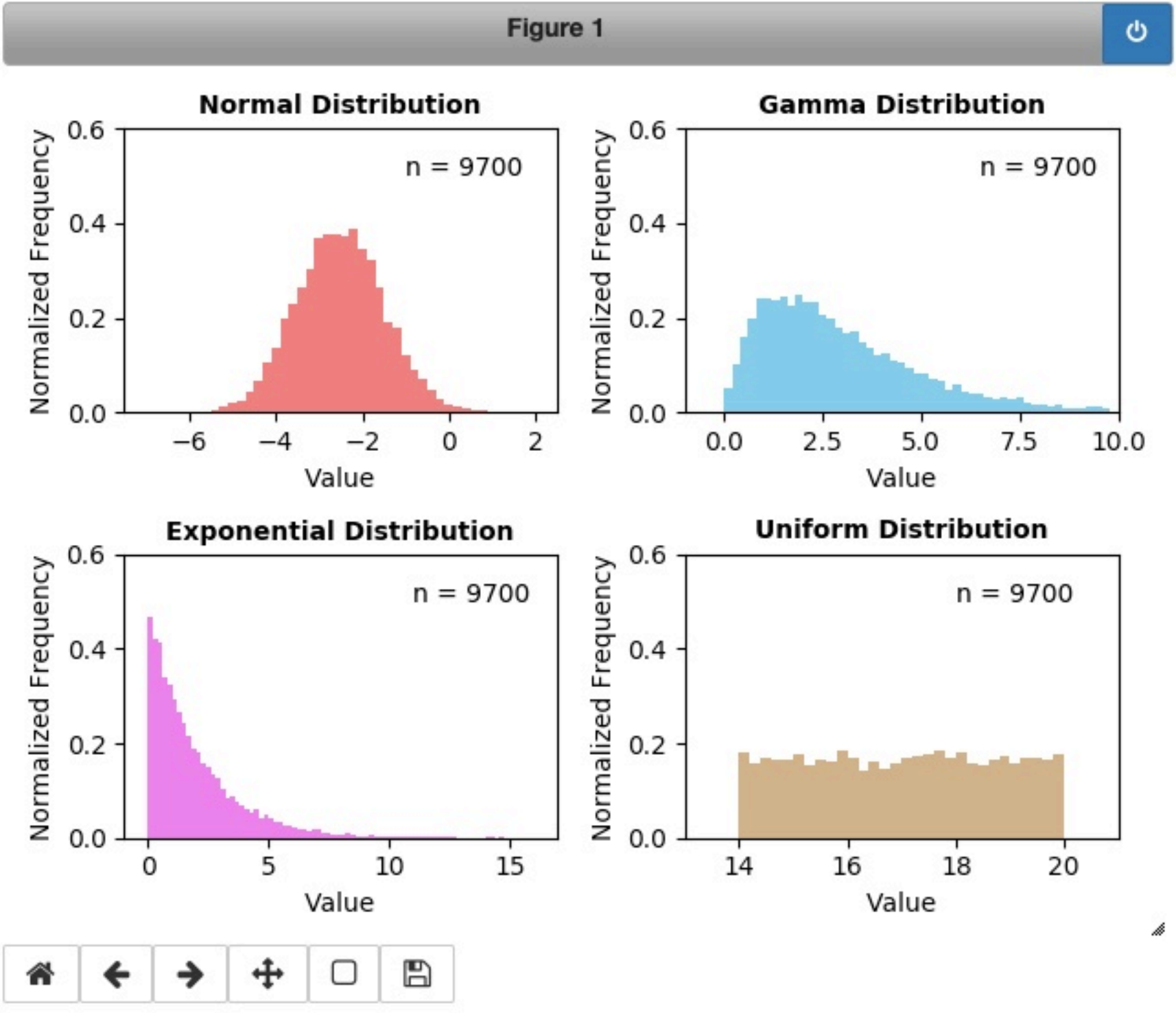
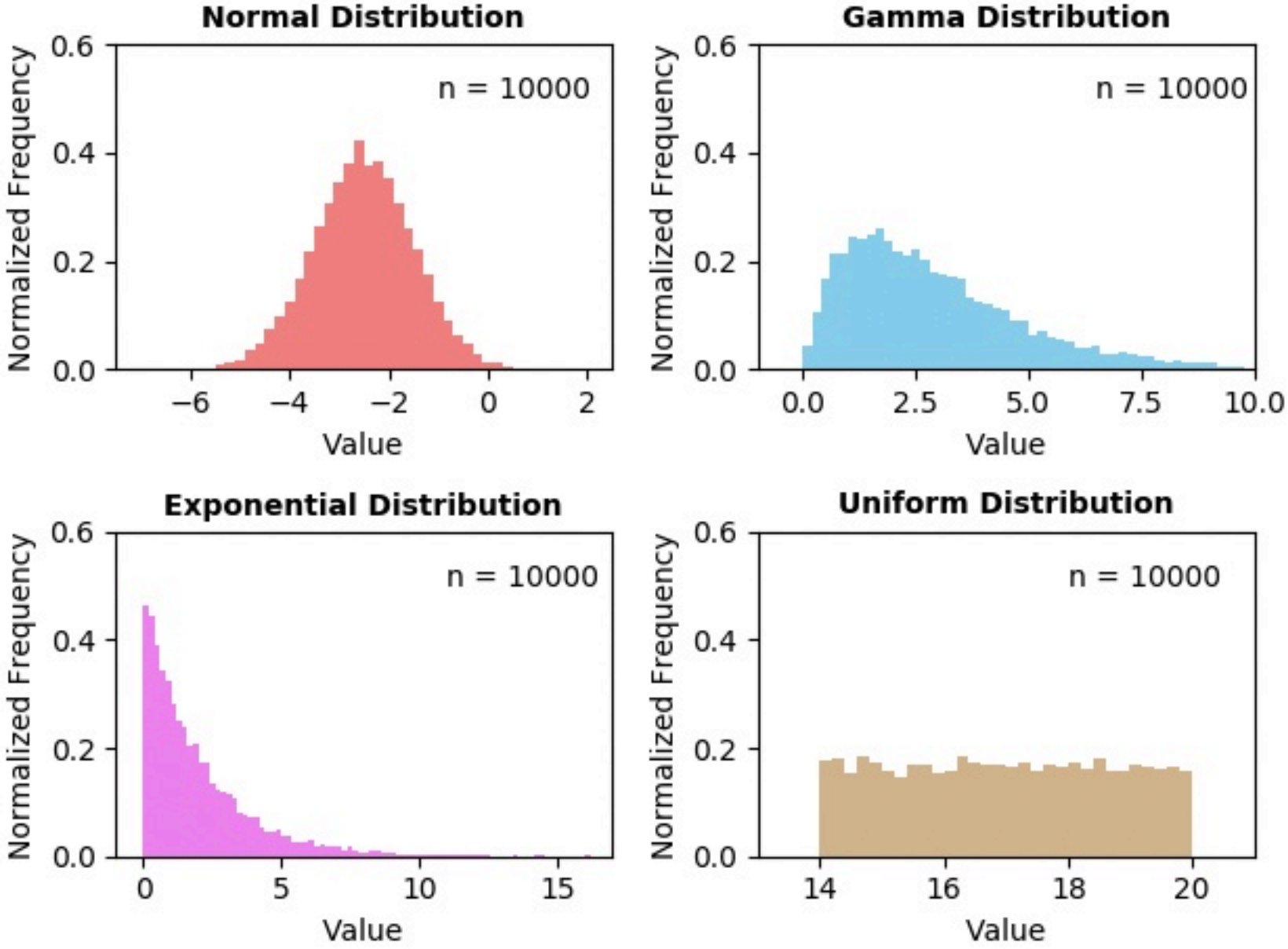


Figure 1
Normal Distribution
n = 9700
Normalized Frequency
Value
Gamma Distribution
n = 9700
Normalized Frequency
Value
Exponential Distribution
n = 9700
Normalized Frequency
Value
Uniform Distribution
n = 9700
Normalized Frequency
Value


Normal Distribution
n = 10000
Normalized Frequency
Value
0.0
0.2
0.4
0.6
−6
−4
−2
0
2
Gamma Distribution
n = 10000
Normalized Frequency
Value
0.0
2.5
5.0
7.5
10.0
Exponential Distribution
n = 10000
Normalized Frequency
Value
0
5
10
15
Uniform Distribution
n = 10000
Normalized Frequency
Value
14
16
18
20