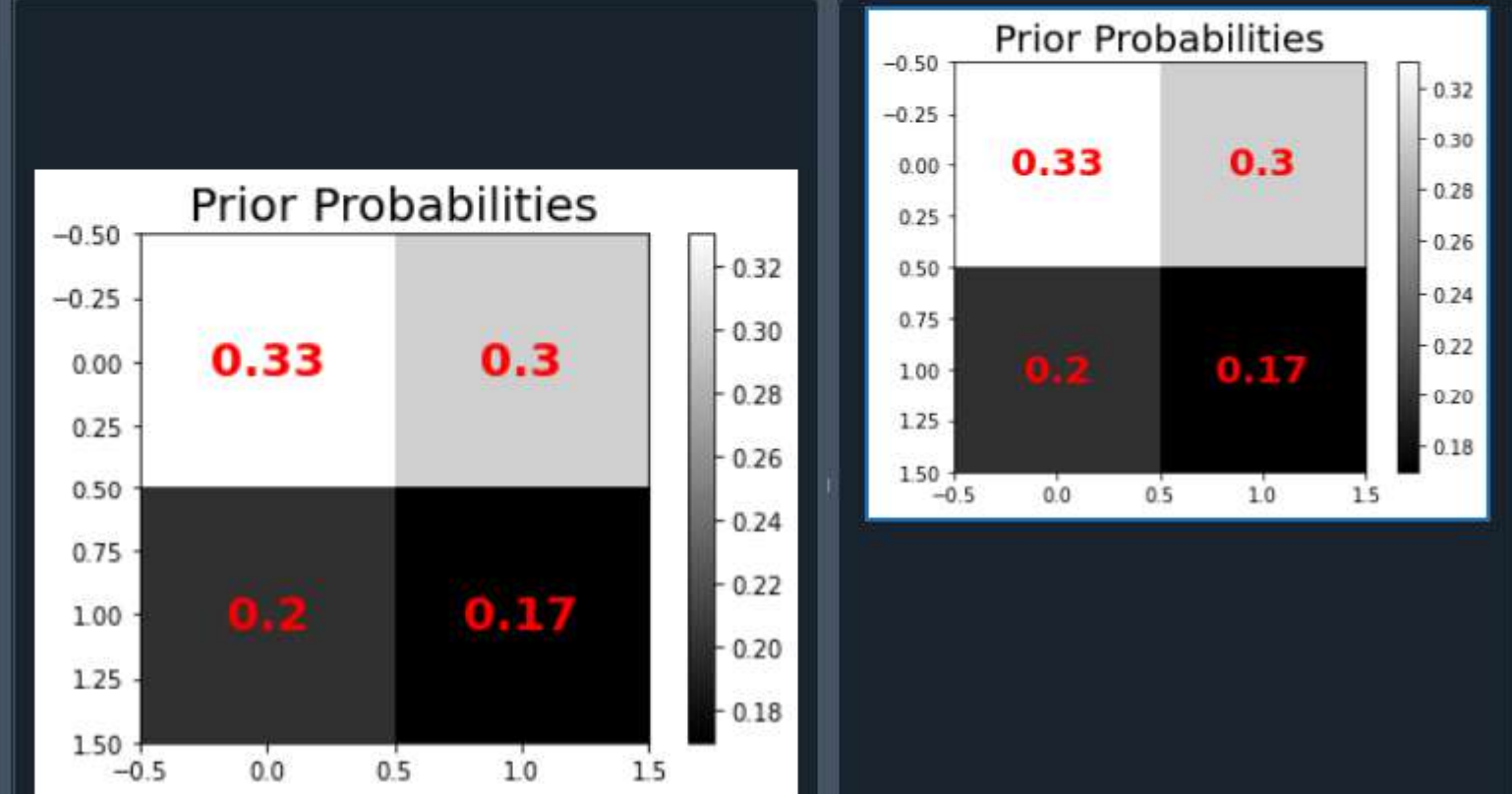


```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Sat Feb 17 11:14:09 2024
4
5  @author: user
6  """
7
8  import numpy as np
9  import matplotlib.pyplot as plt
10
11  prior_probs = np.array([[0.33,0.3], [0.2,0.17]])
12
13  plt.imshow(prior_probs, cmap='gray')
14  plt.colorbar()
15
16  for i in range(2):
17      for j in range(2):
18          plt.annotate(prior_probs[i,j], (j,i), color="red", fontsize=20, fontweight='bold', ha='center', va='center')
19
20  plt.title('Prior Probabilities', fontsize=20)
```



Warning

Figures now render in the Plots pane by default. To make them also appear inline in the Console, uncheck "Mute Inline Plotting" under the Plots pane options menu.

In [5]:

Spyder (Python 3.9)

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...

C:\Users\user\Desktop\Files\CHRISLENE\BS STATS 3RD YEAR\2ND SEM\Bayesian Statistics

...

...:\Users\user\Desktop\Files\CHRISLENE\BS STATS 3RD YEAR\2ND SEM\Bayesian Statistics\sample problem.py

sample problem.py

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Sat Feb 17 10:59:13 2024
4
5  @author: user
6  """
7
8  # calculate the probability of cancer patient and diagnostic test
9
10 # calculate P(A|B) given P(A), P(B|A), P(B|not A)
11
12 def bayes_theorem(p_a, p_b_given_a, p_b_given_not_a):
13     # calculate P(not A)
14     not_a = 1 - p_a
15     # calculate P(B)
16     p_b = p_b_given_a * p_a + p_b_given_not_a * not_a
17     # calculate P(A|B)
18     p_a_given_b = (p_b_given_a * p_a) / p_b
19     return p_a_given_b
20
21 #P(A)
22 p_a = 0.0002
23 #P(B|A)
24 p_b_given_a = 0.85
25 #P(B|not A)
26 p_b_given_not_a = 0.05
27 #calculate P(A|B)
28 result = bayes_theorem(p_a, p_b_given_a, p_b_given_not_a)
29 #summarize
30 print('P(A/B) = %.3f%%' % (result * 100))
```

Name	Type	Size	Value
p_a	float	1	0.0002
p_b_given_a	float	1	0.85
p_b_given_not_a	float	1	0.05
result	float	1	0.0033891547049441782

Variable Explorer Plots Files

Console 1/A

P(A|B) = 0.339%

In [2]:

IPython Console History

LSP Python: ready conda: base (Python 3.9.13) Line 30, Col 42 UTF-8 CRLF RW Mem 73%