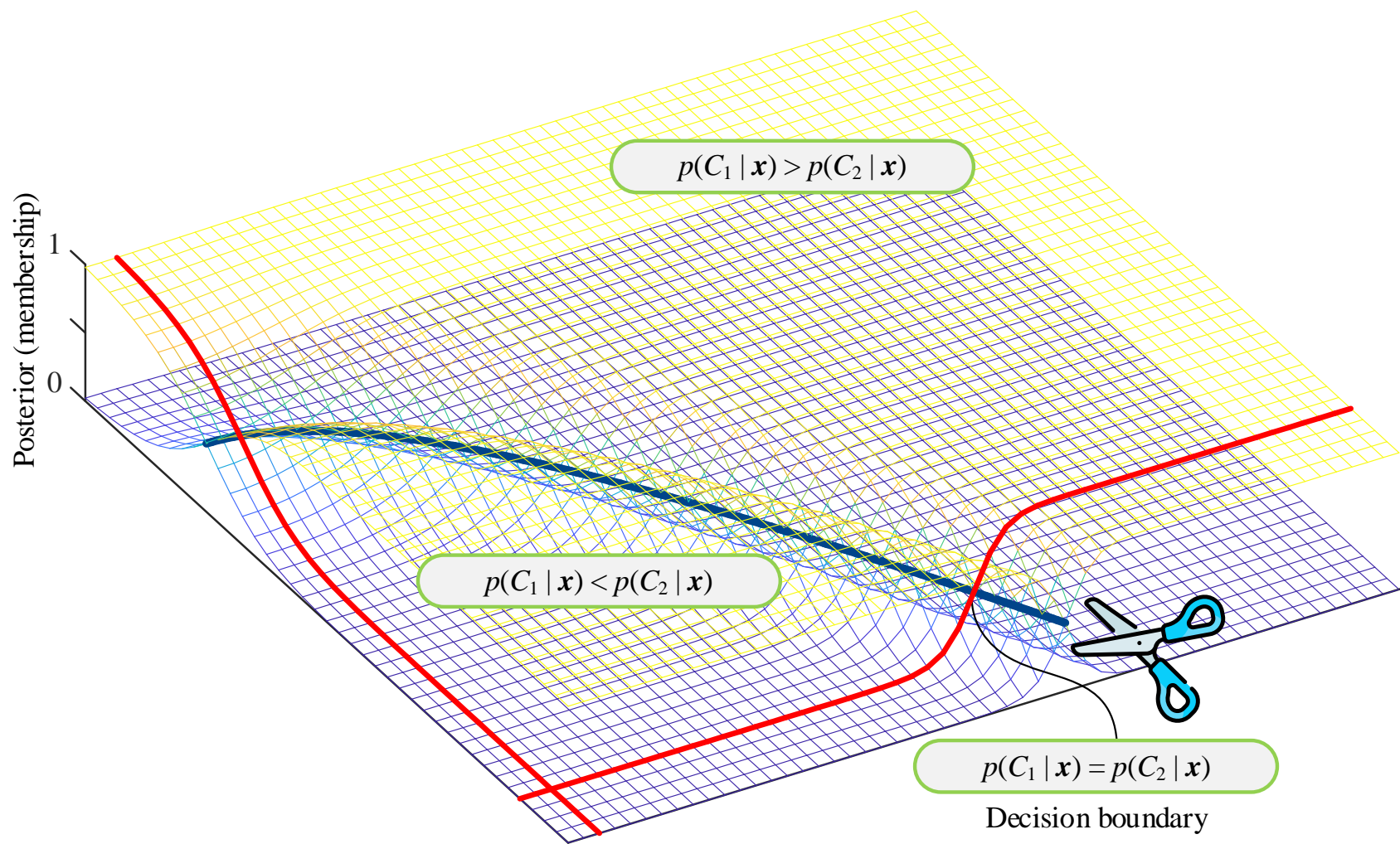


# 二分类，比较后验概率大小，基于高斯分布

1



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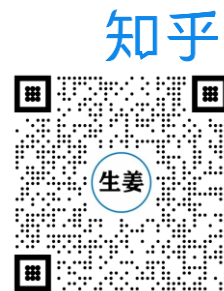
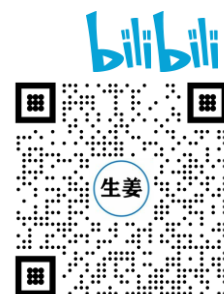
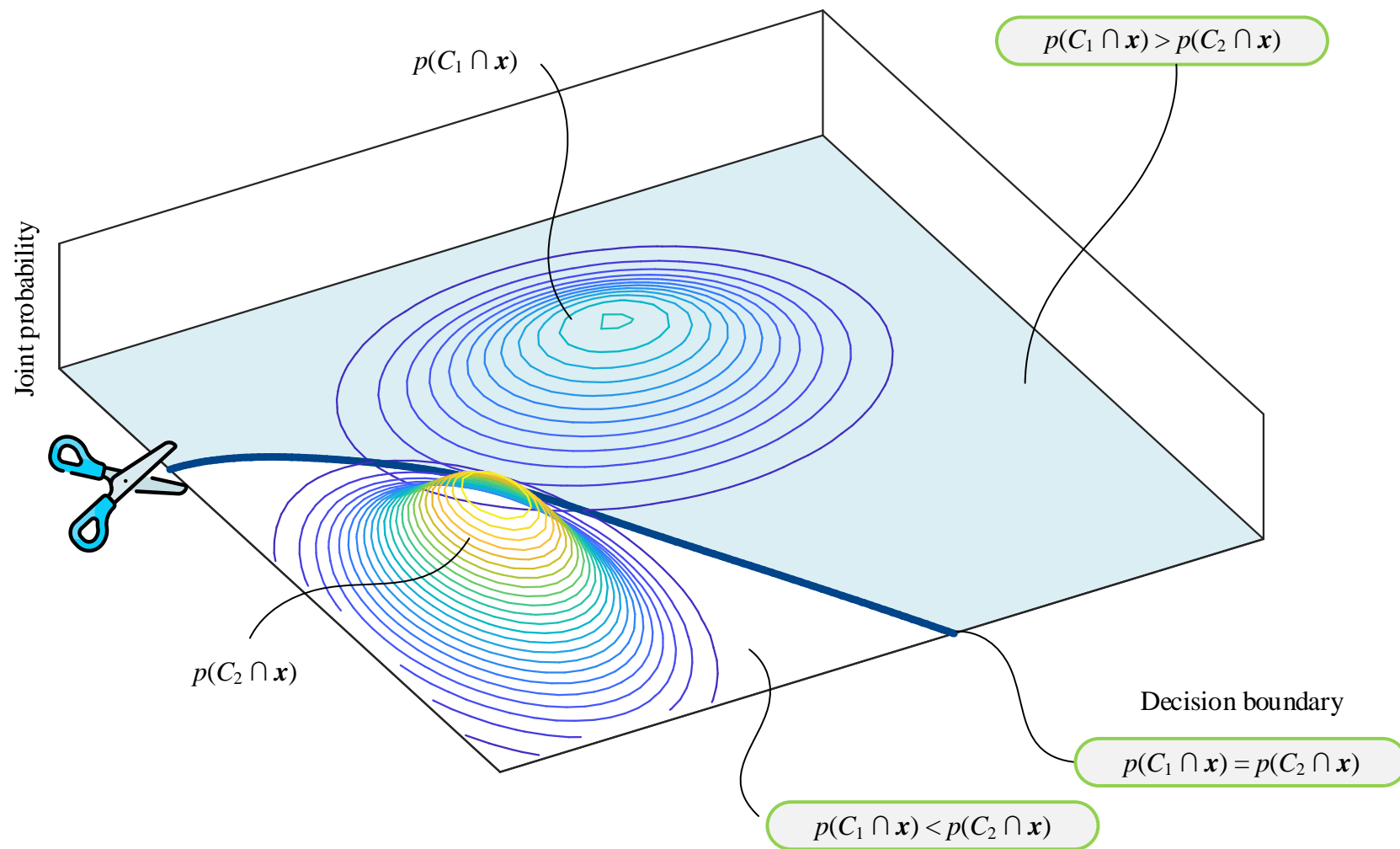


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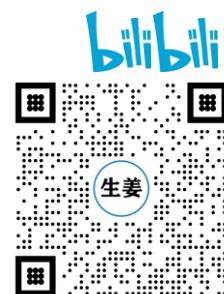
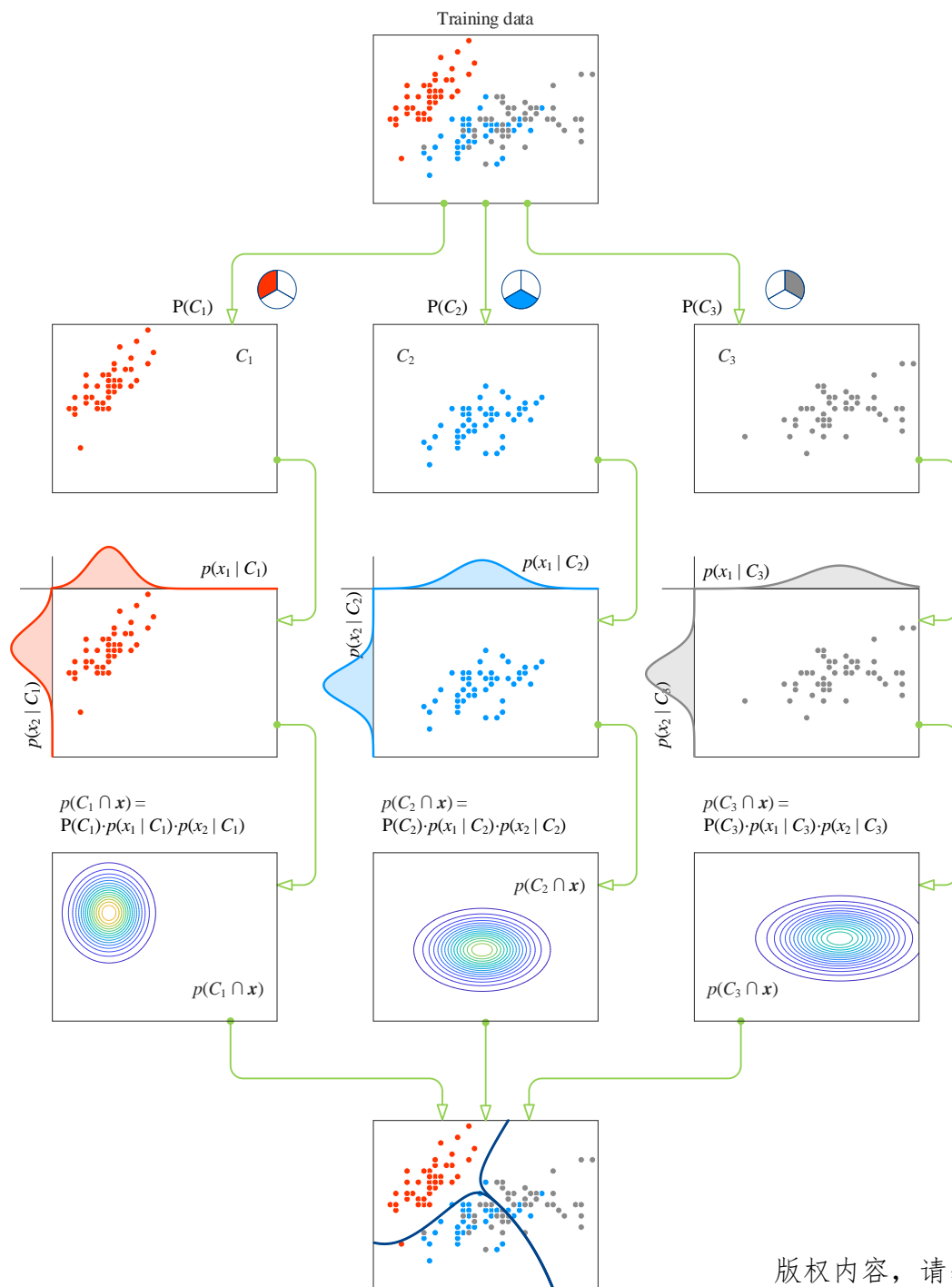
# 比较联合概率大小，基于高斯分布

2

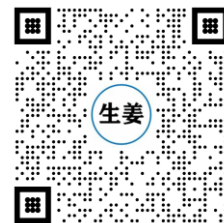


# 高斯朴素贝叶斯分类过程

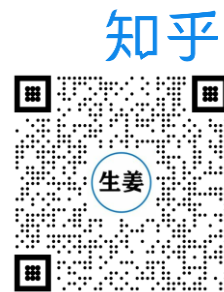
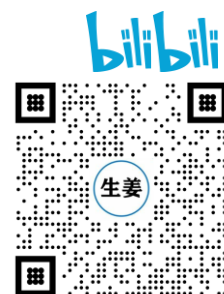
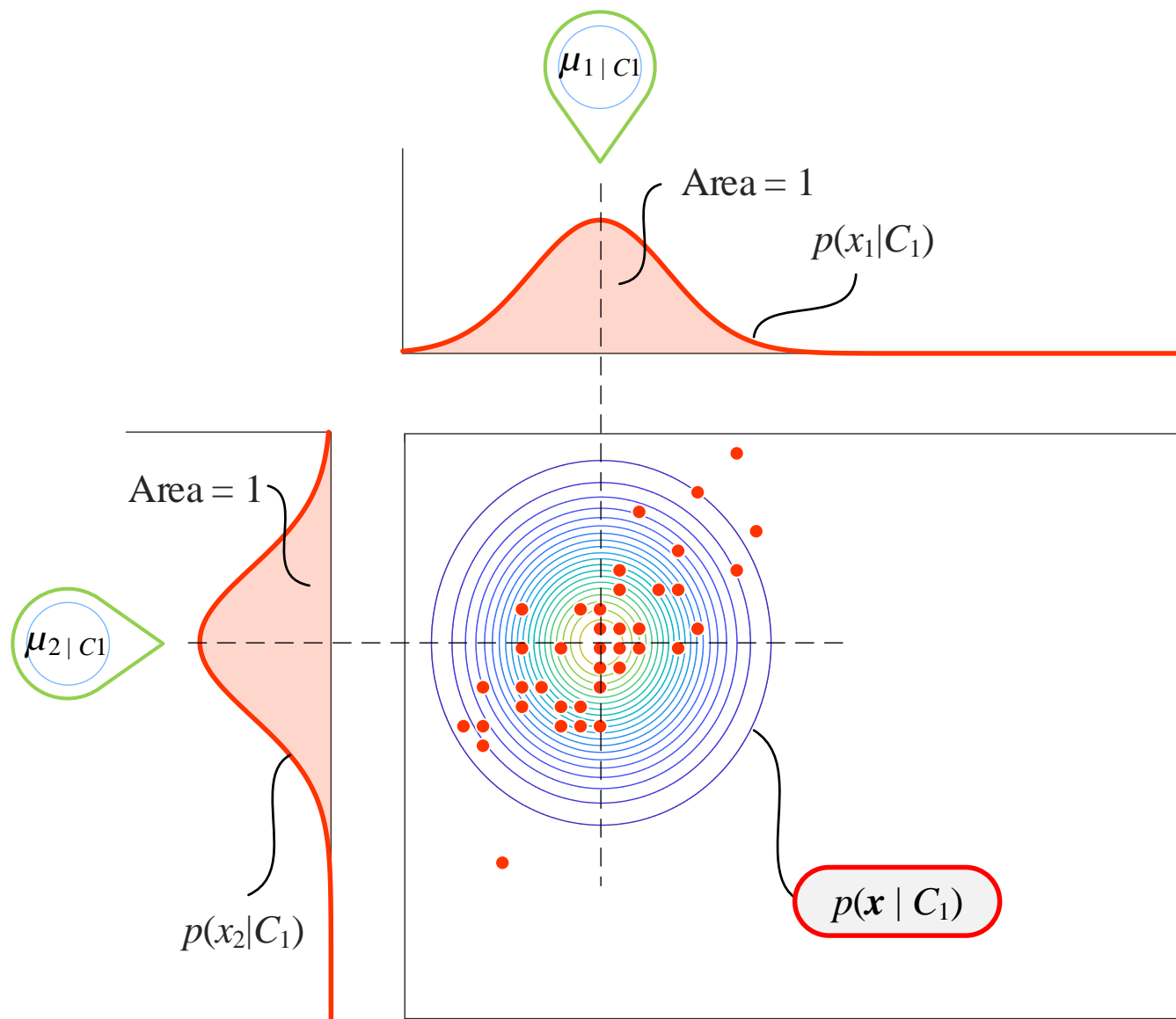
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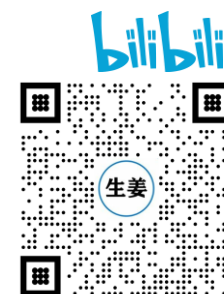
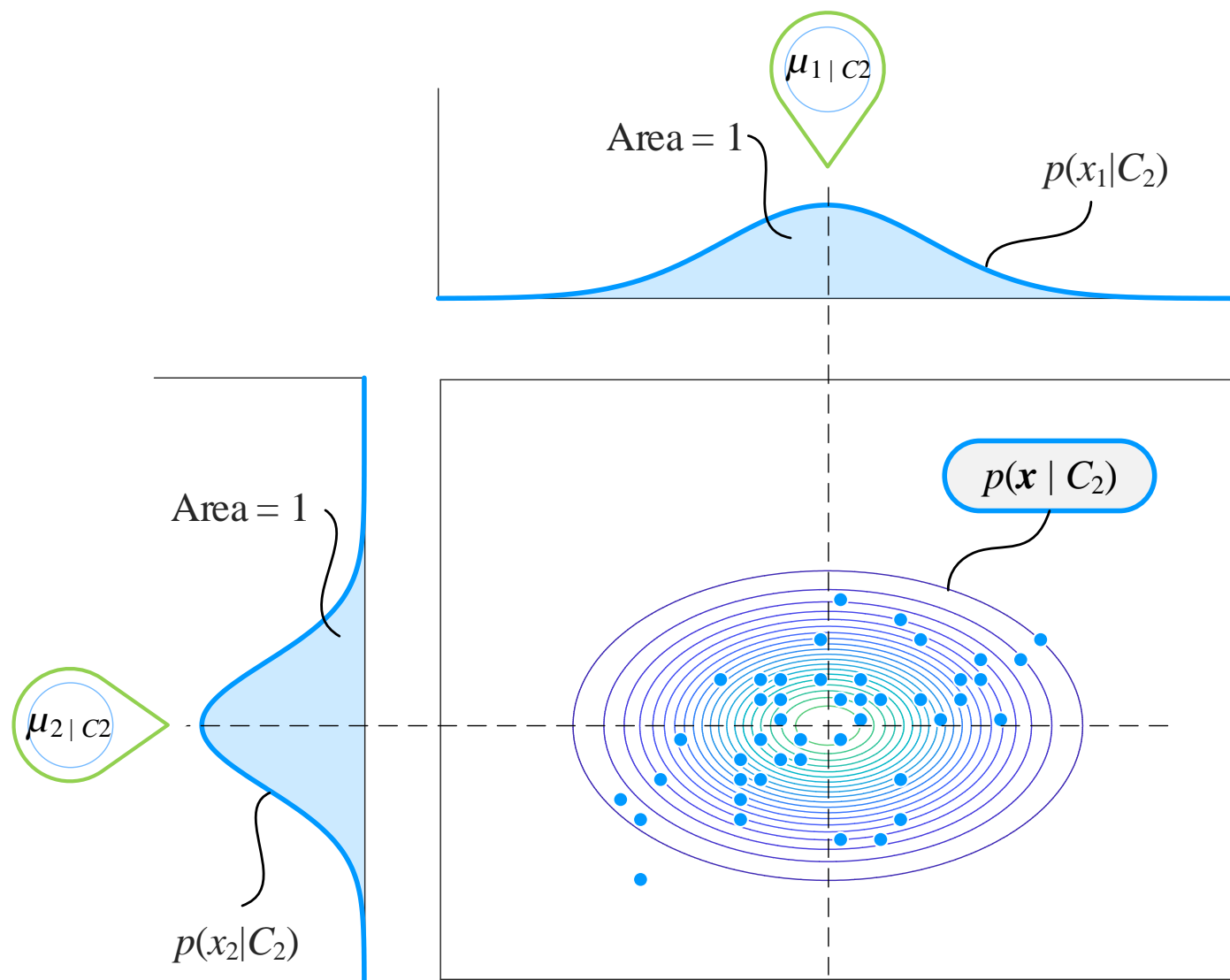


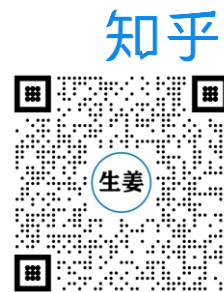
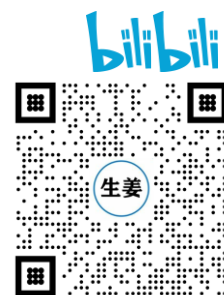
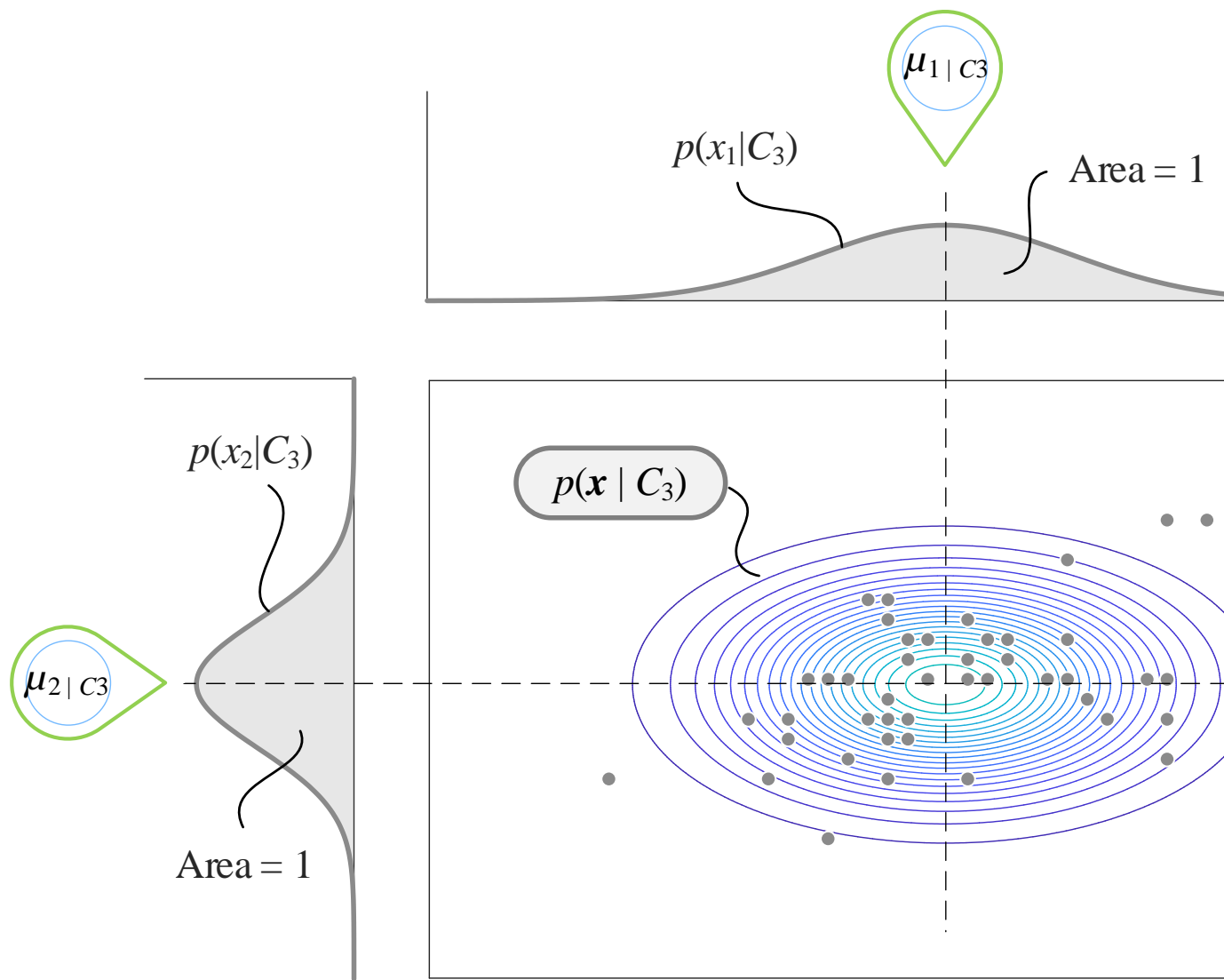
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# 条件独立，似然概率，基于高斯分布



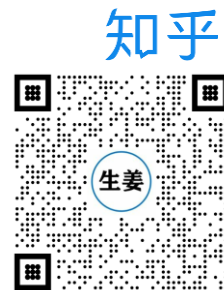
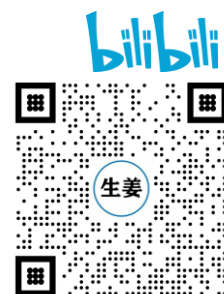
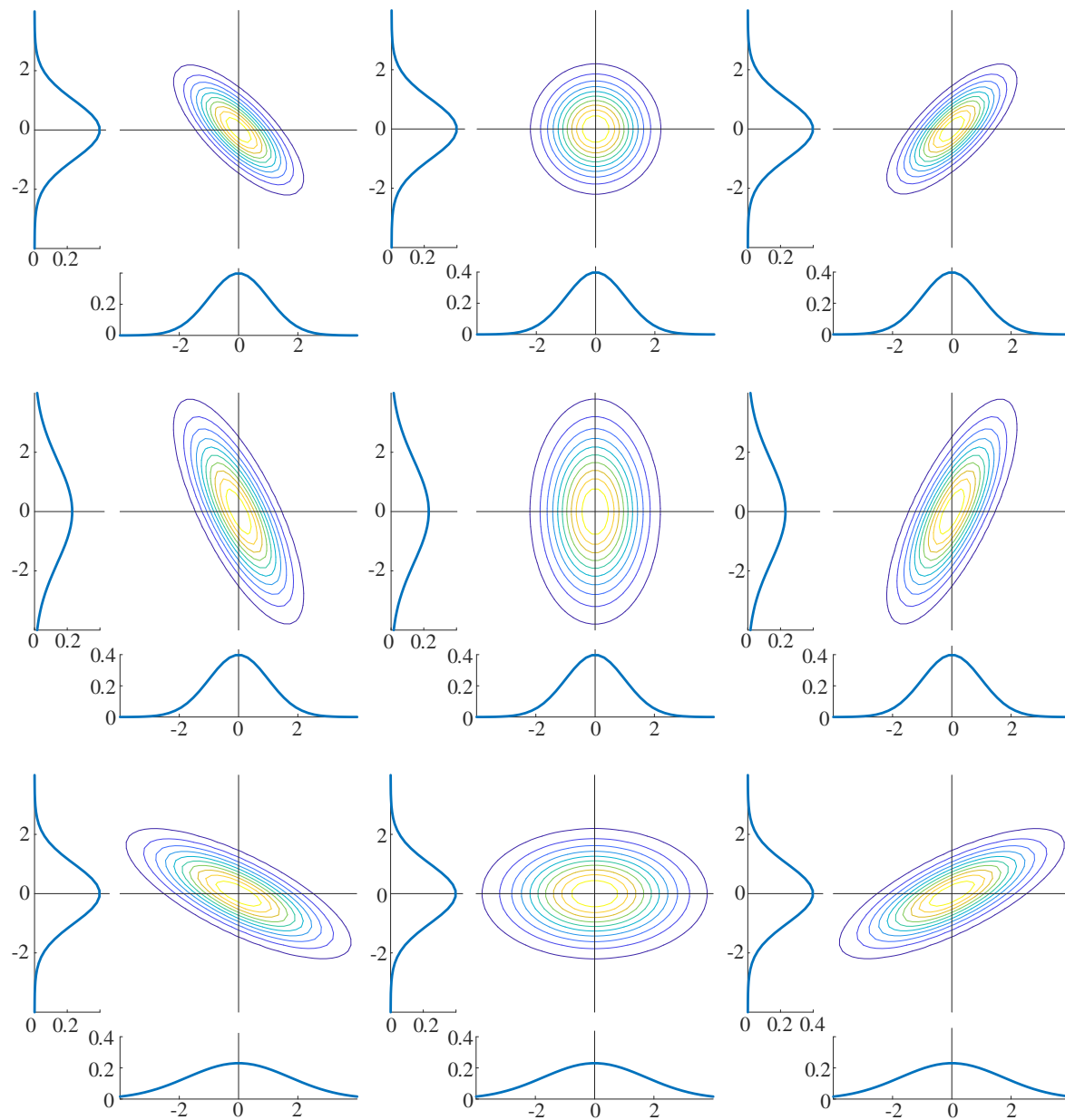


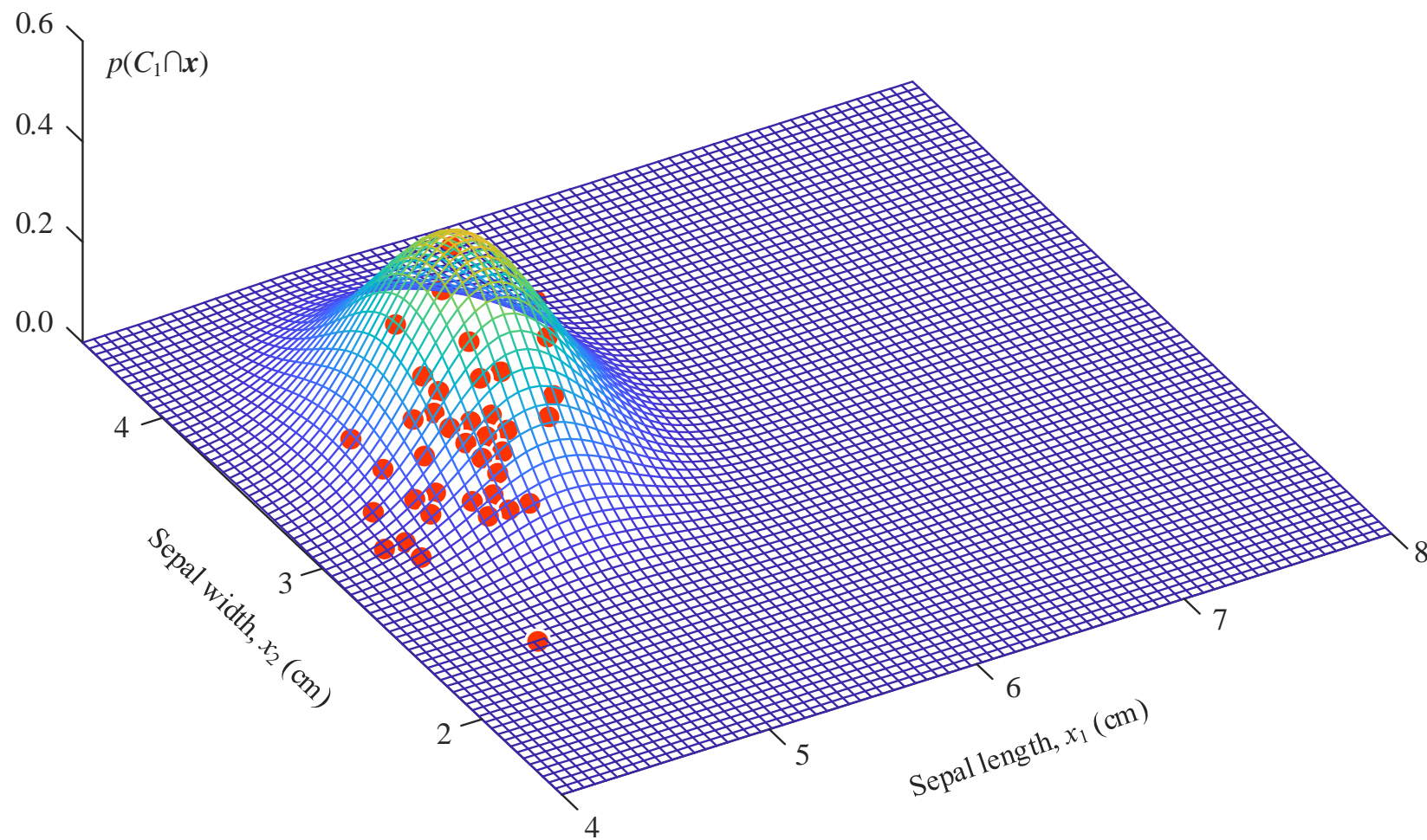




# 标准差和相关性系数，二元正态分布PDF

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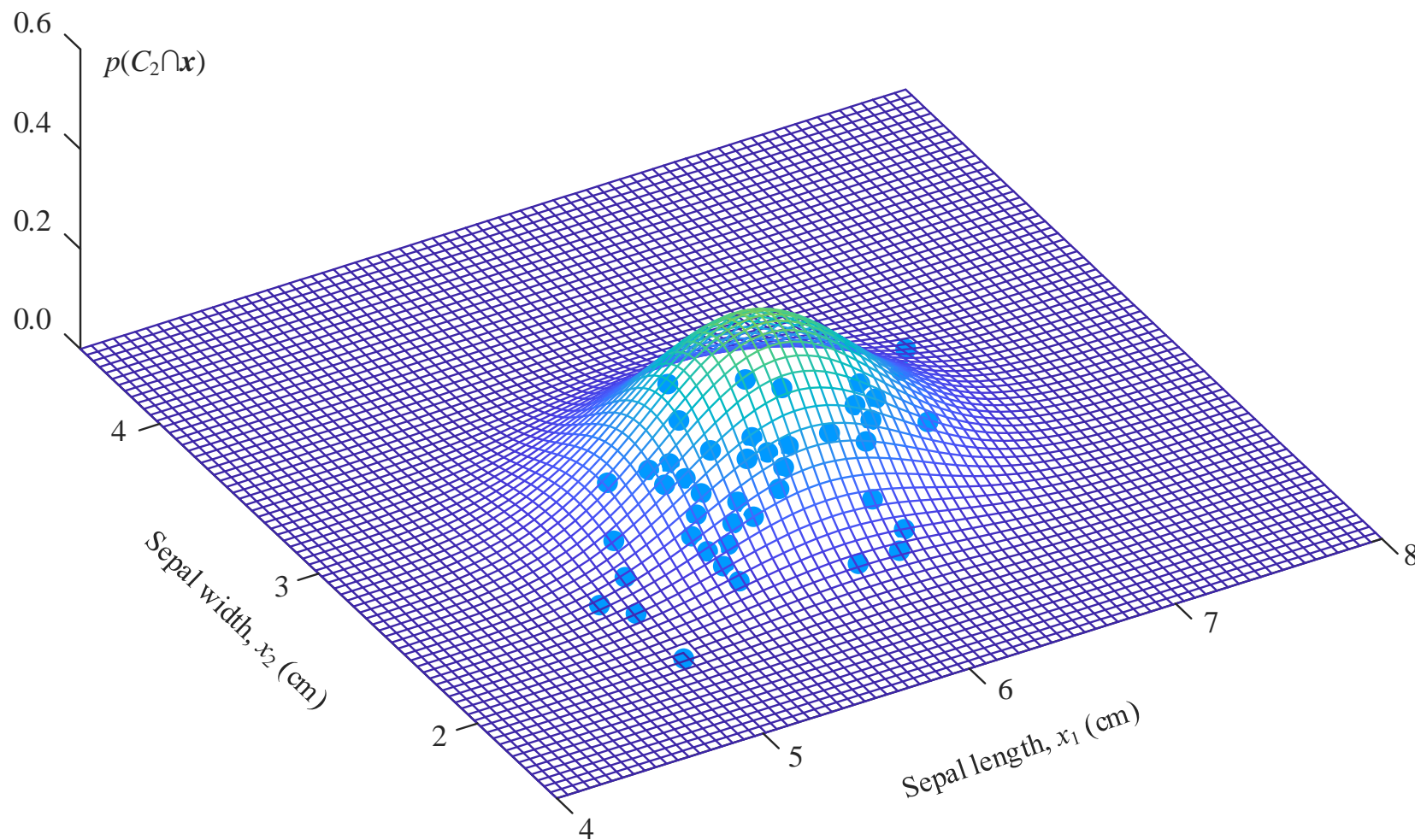
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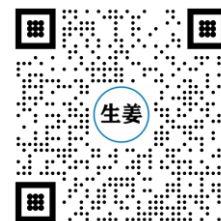
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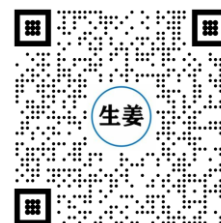


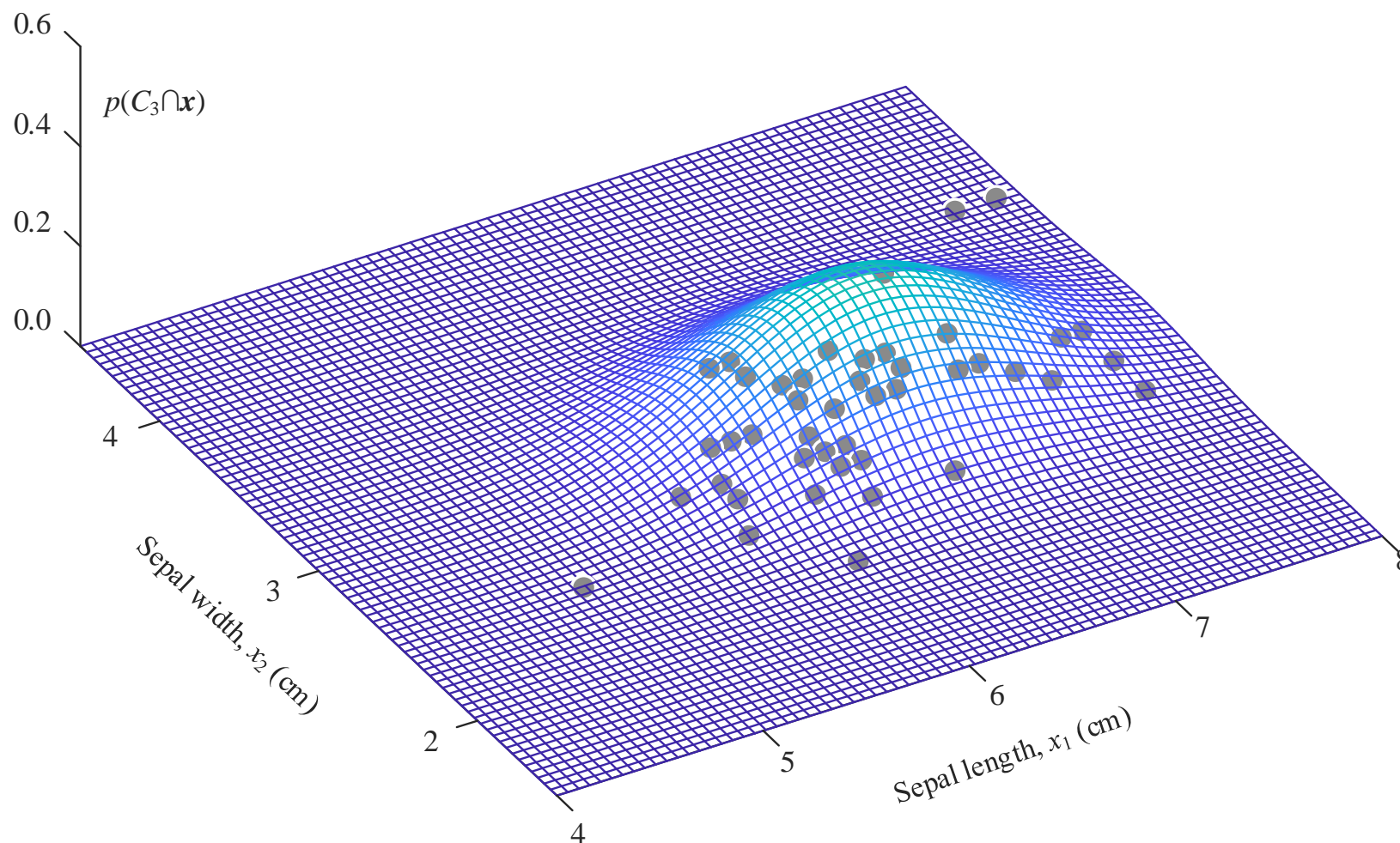


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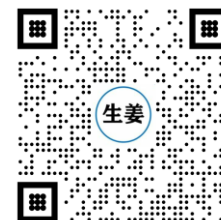


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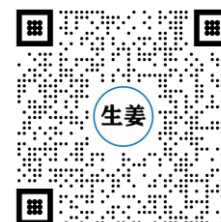




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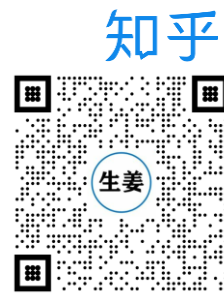
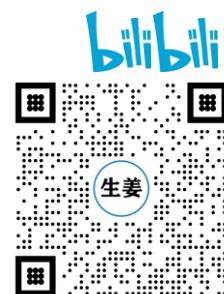
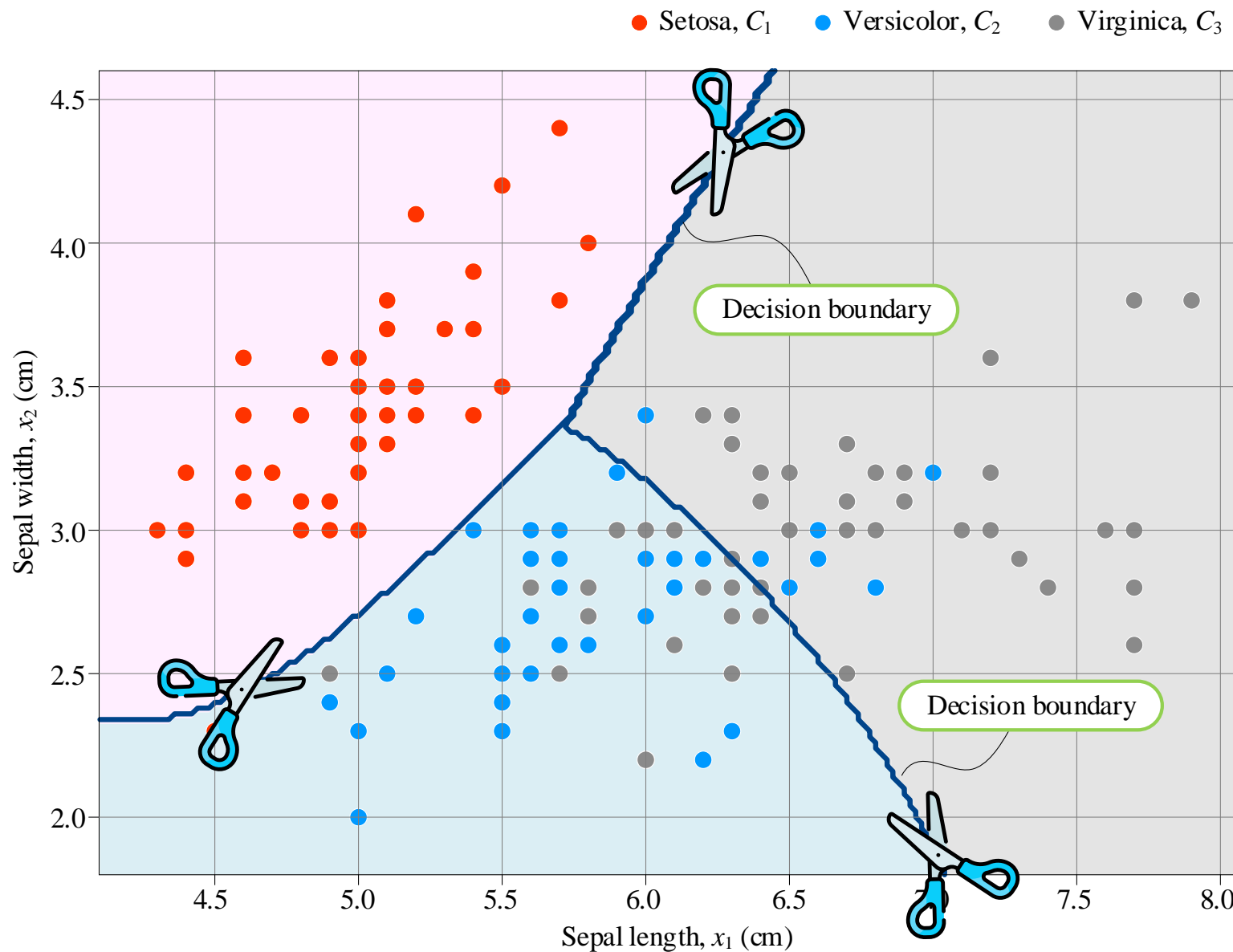


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# 鸢尾花分类预测，朴素贝叶斯决策边界，基于高斯分布

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$$p(\mathbf{x}) = \sum_{k=1}^K \left[ P(C_k) \prod_{j=1}^D p(x_j | C_k) \right]$$

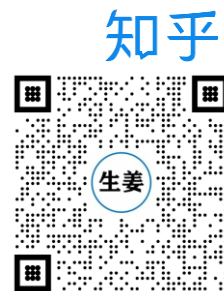
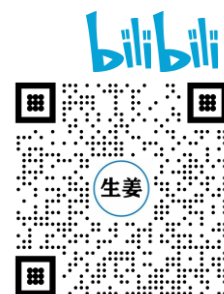
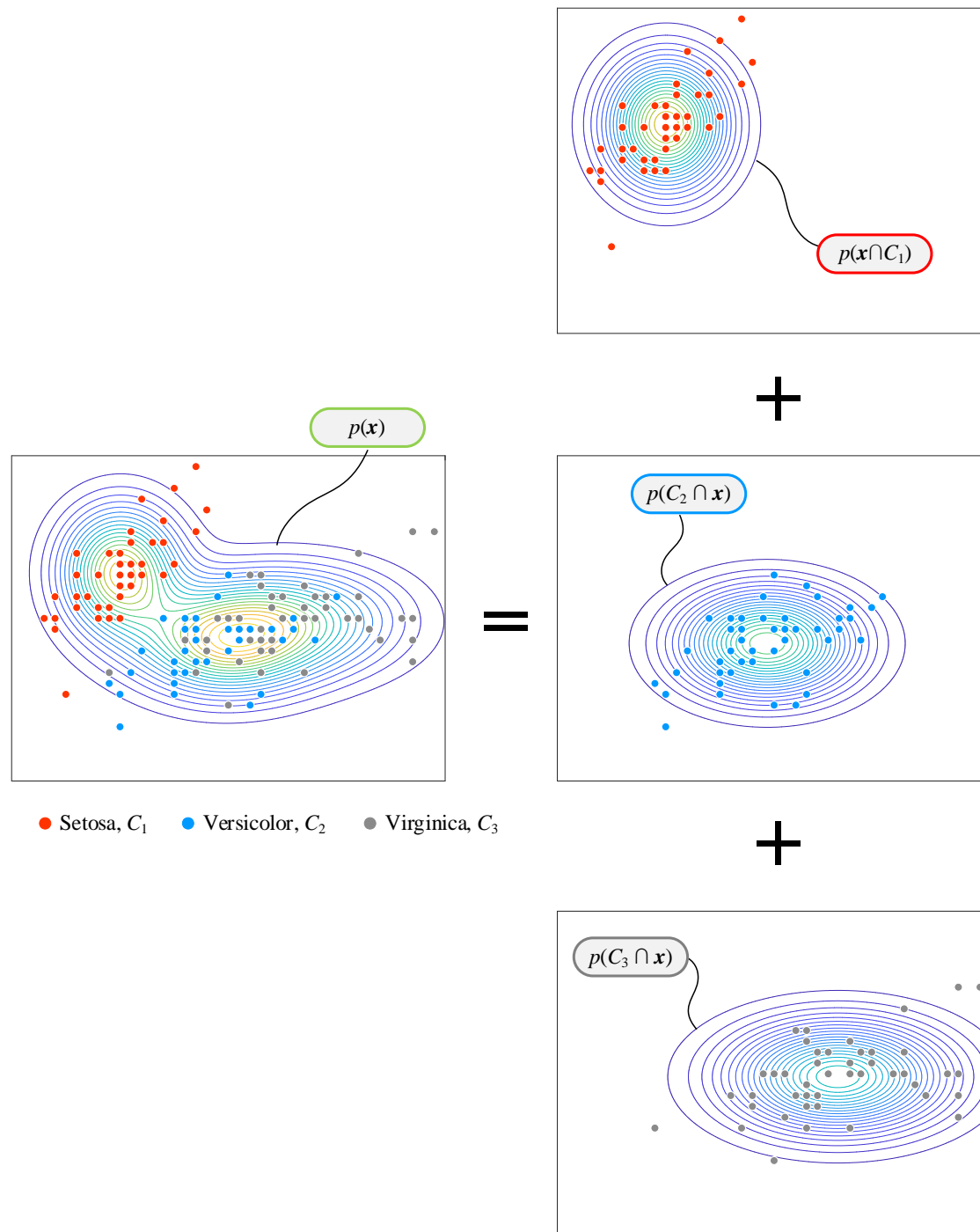
$$\begin{aligned} p(\mathbf{x}) &= p(C_1 \cap \mathbf{x}) + p(C_2 \cap \mathbf{x}) + p(C_3 \cap \mathbf{x}) \\ &= p(x_1 | C_1) \cdot p(x_2 | C_1) P(C_1) + p(x_1 | C_2) \cdot p(x_2 | C_2) P(C_2) + p(x_1 | C_3) \cdot p(x_2 | C_3) P(C_3) \end{aligned}$$

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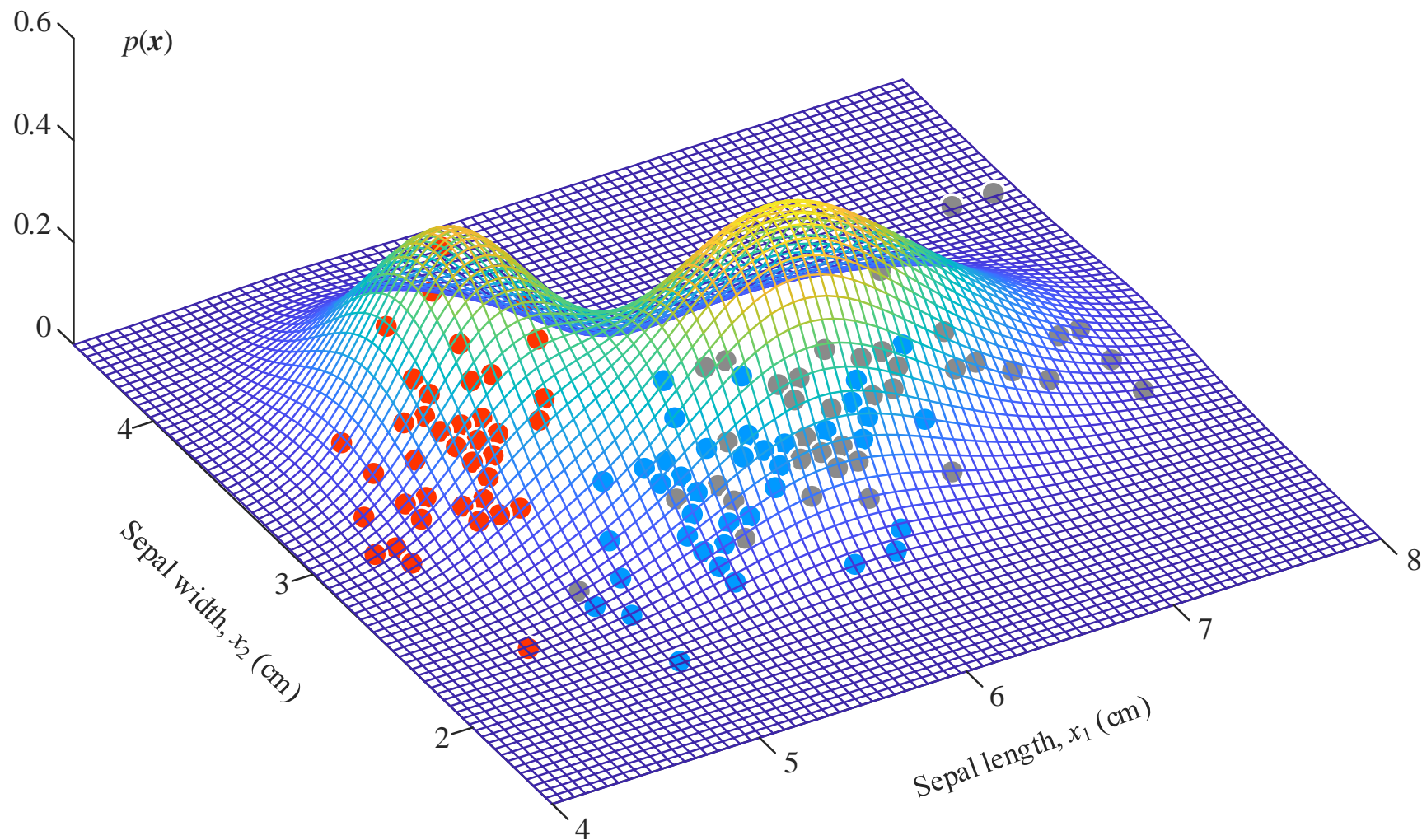






# 二元概率密度曲面，特征条件独立，基于高斯分布

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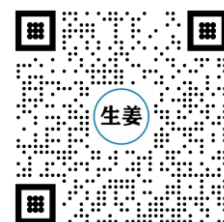




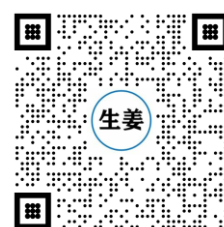
$$\underbrace{p(C_k | \mathbf{x})}_{\text{Posterior}} = \frac{\overbrace{p(\mathbf{x} \cap C_k)}^{\text{Joint}}}{p(\mathbf{x})} = \frac{\overbrace{p(\mathbf{x} | C_k)}^{\text{Likelihood}} \overbrace{P(C_k)}^{\text{Prior}}}{\underbrace{p(\mathbf{x})}_{\text{Evidence}}}$$

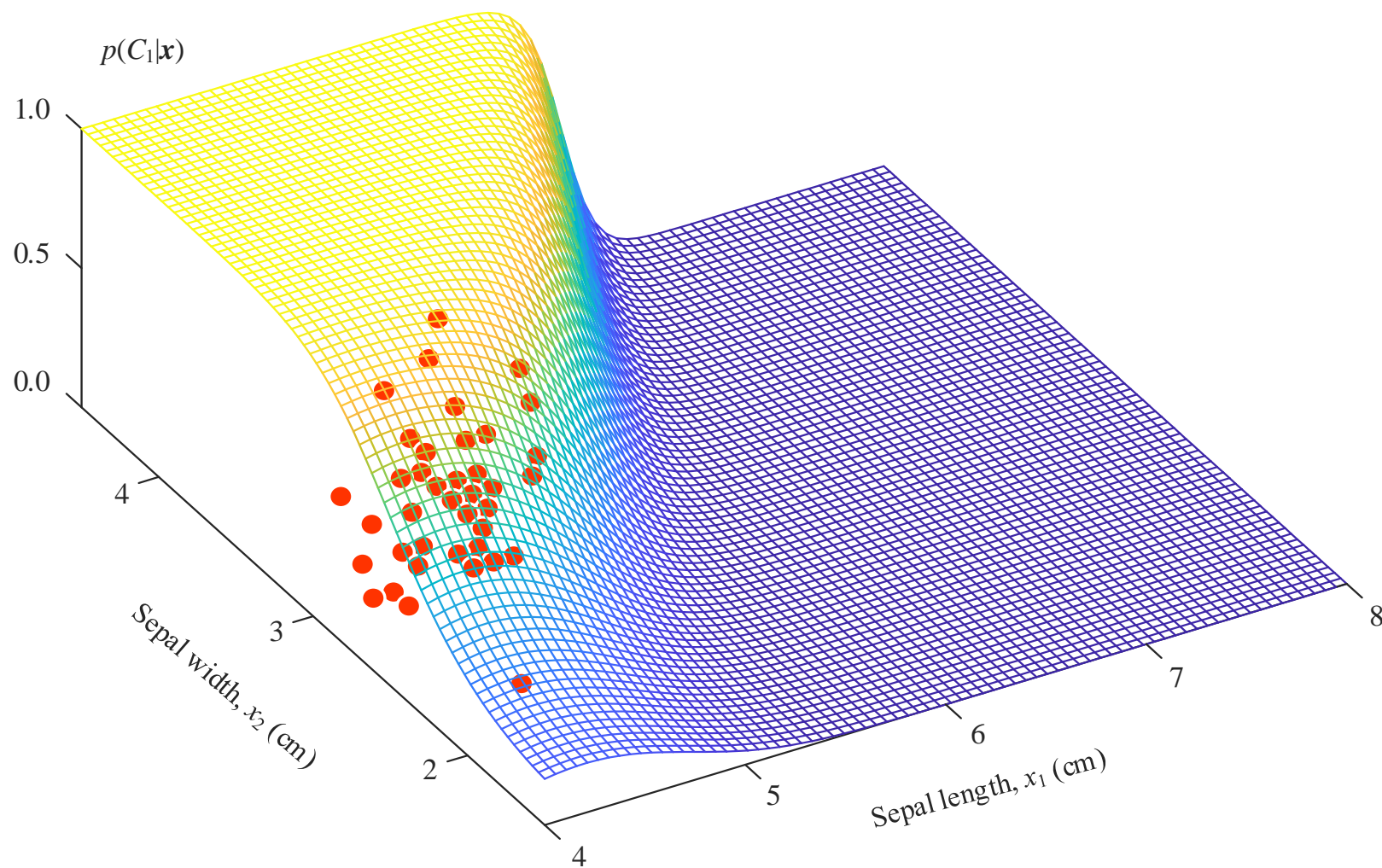
$$\hat{y} = \arg \max_{C_k} p(C_k | \mathbf{x})$$

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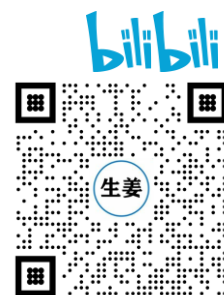
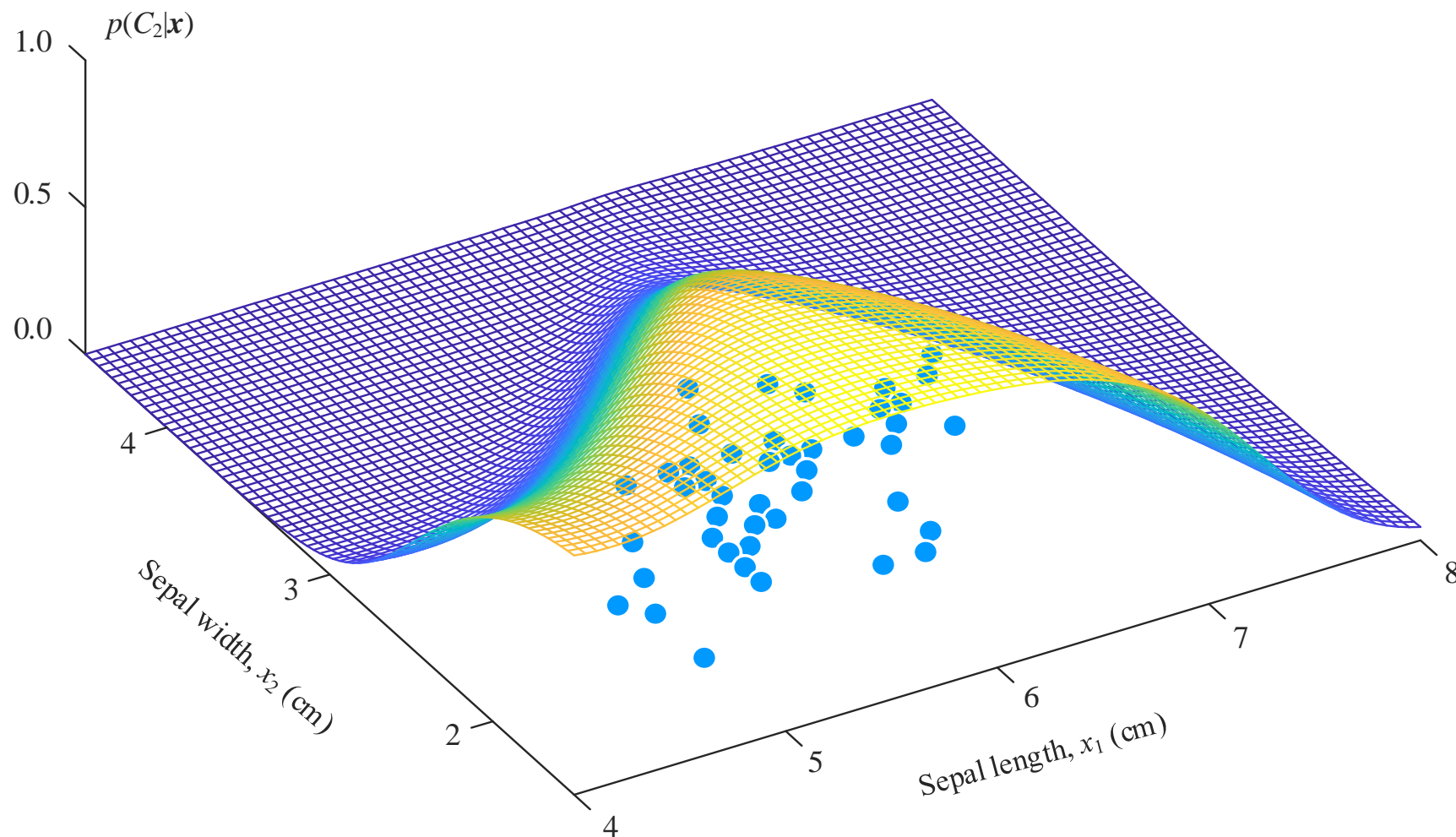


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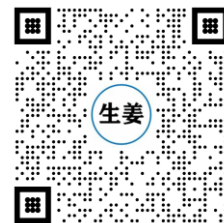


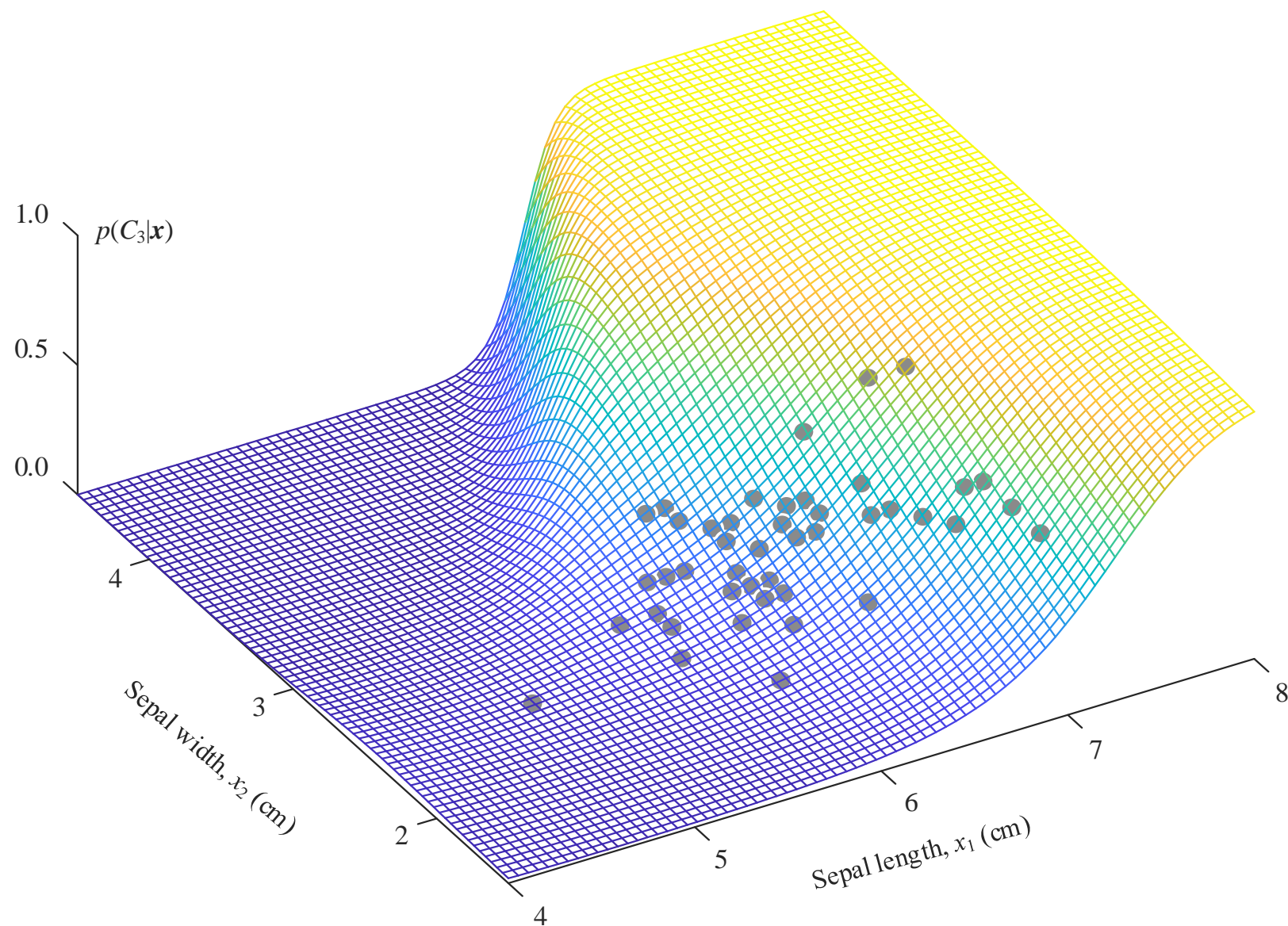
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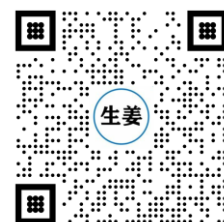


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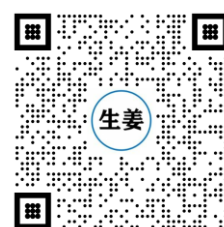




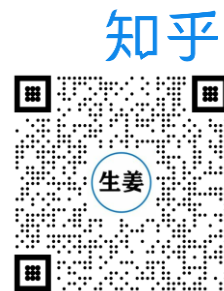
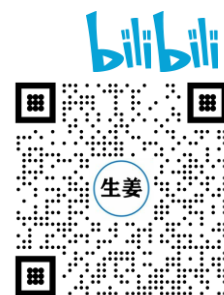
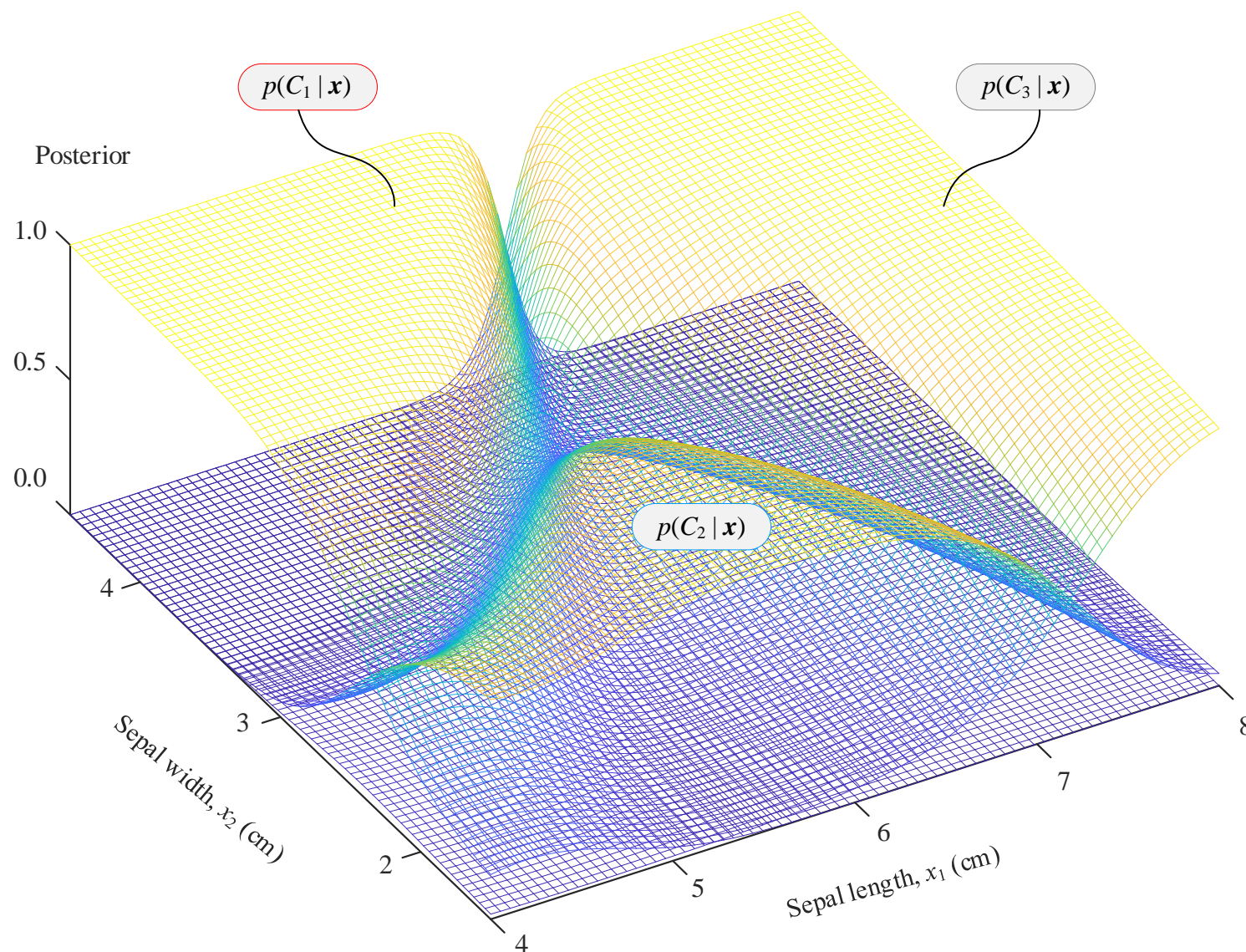
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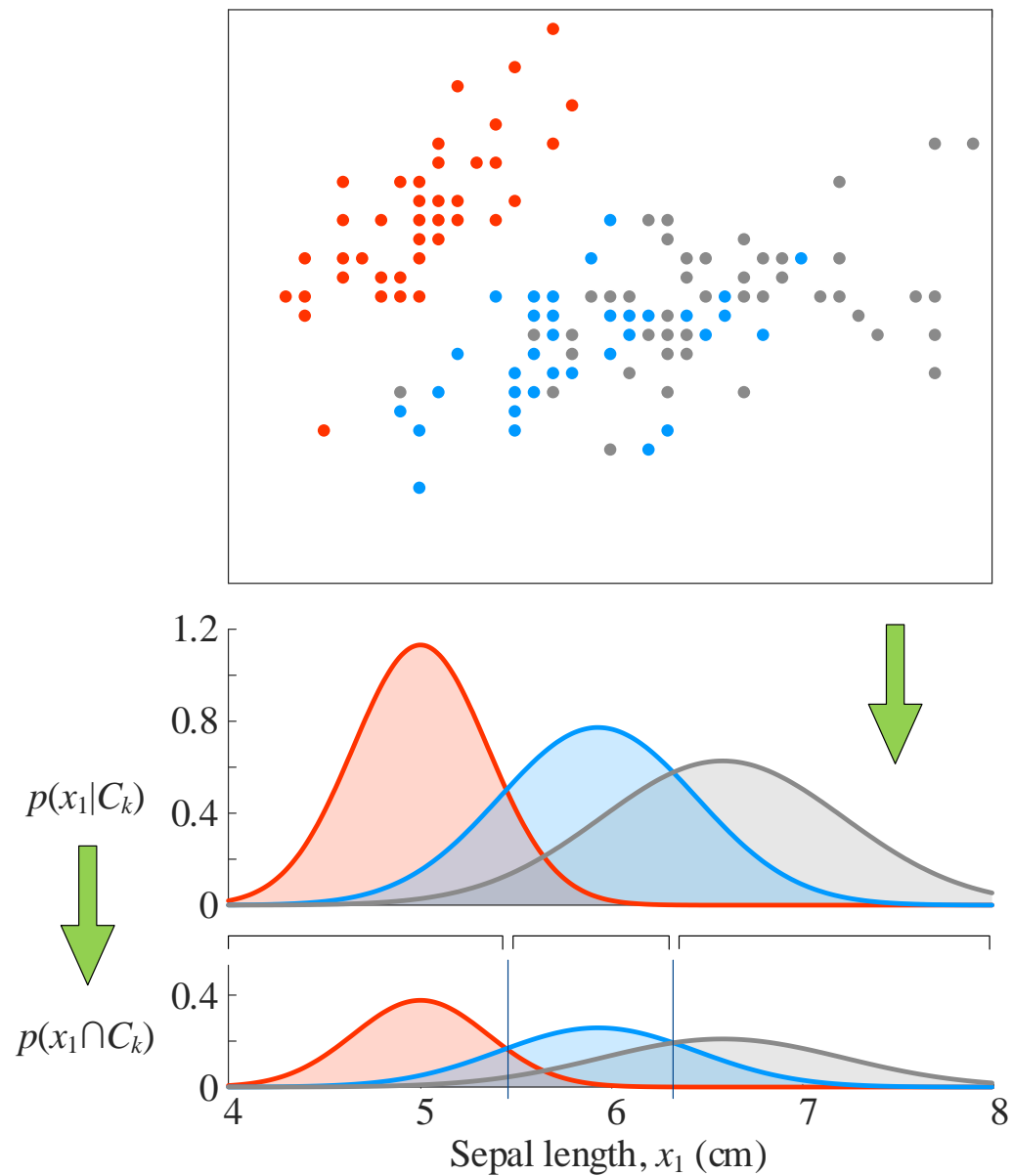




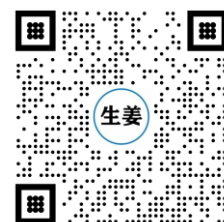


# 似然概率到联合概率，花萼长度特征，基于高斯分布

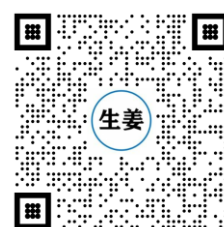
20



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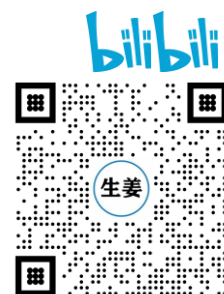
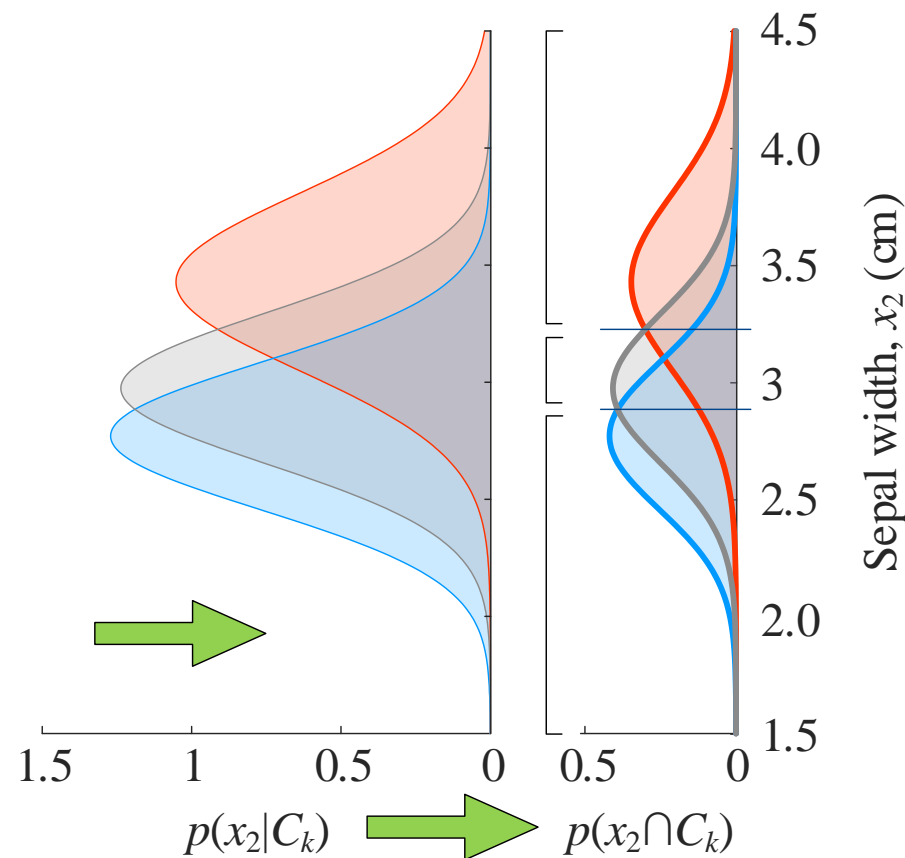
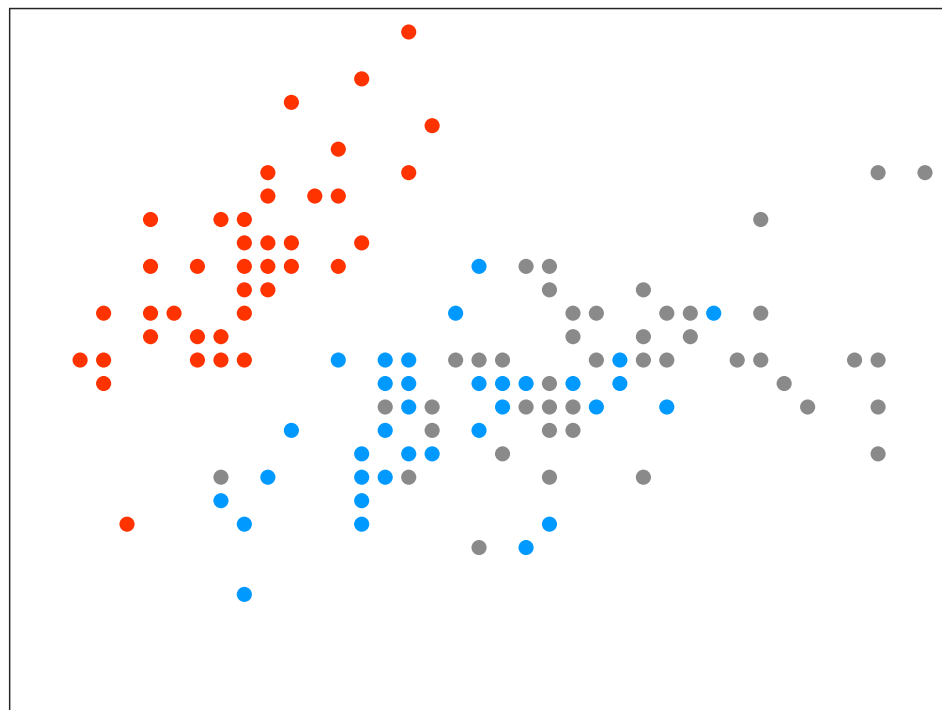
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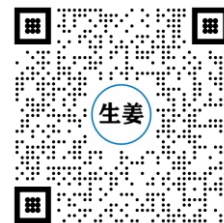


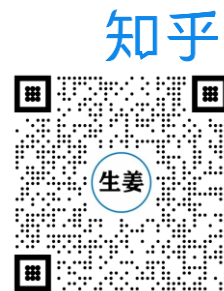
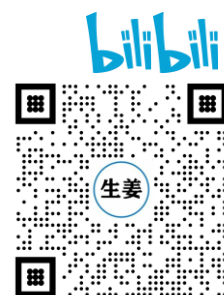
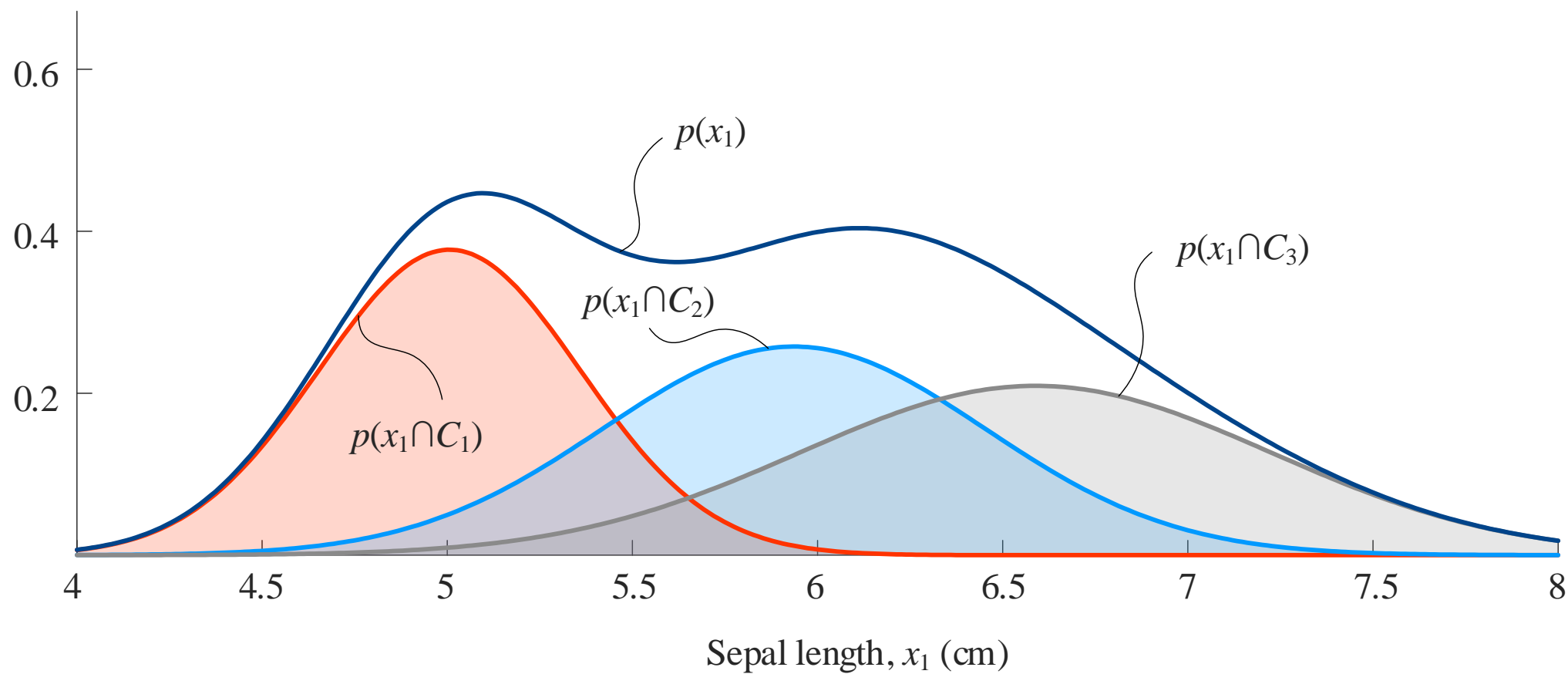
# 似然概率到联合概率，花萼宽度特征，基于高斯分布

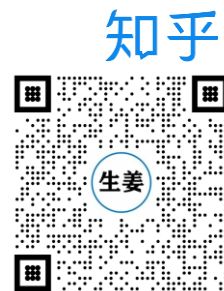
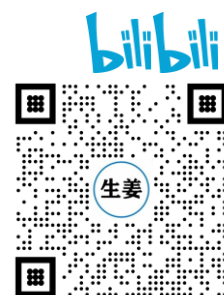
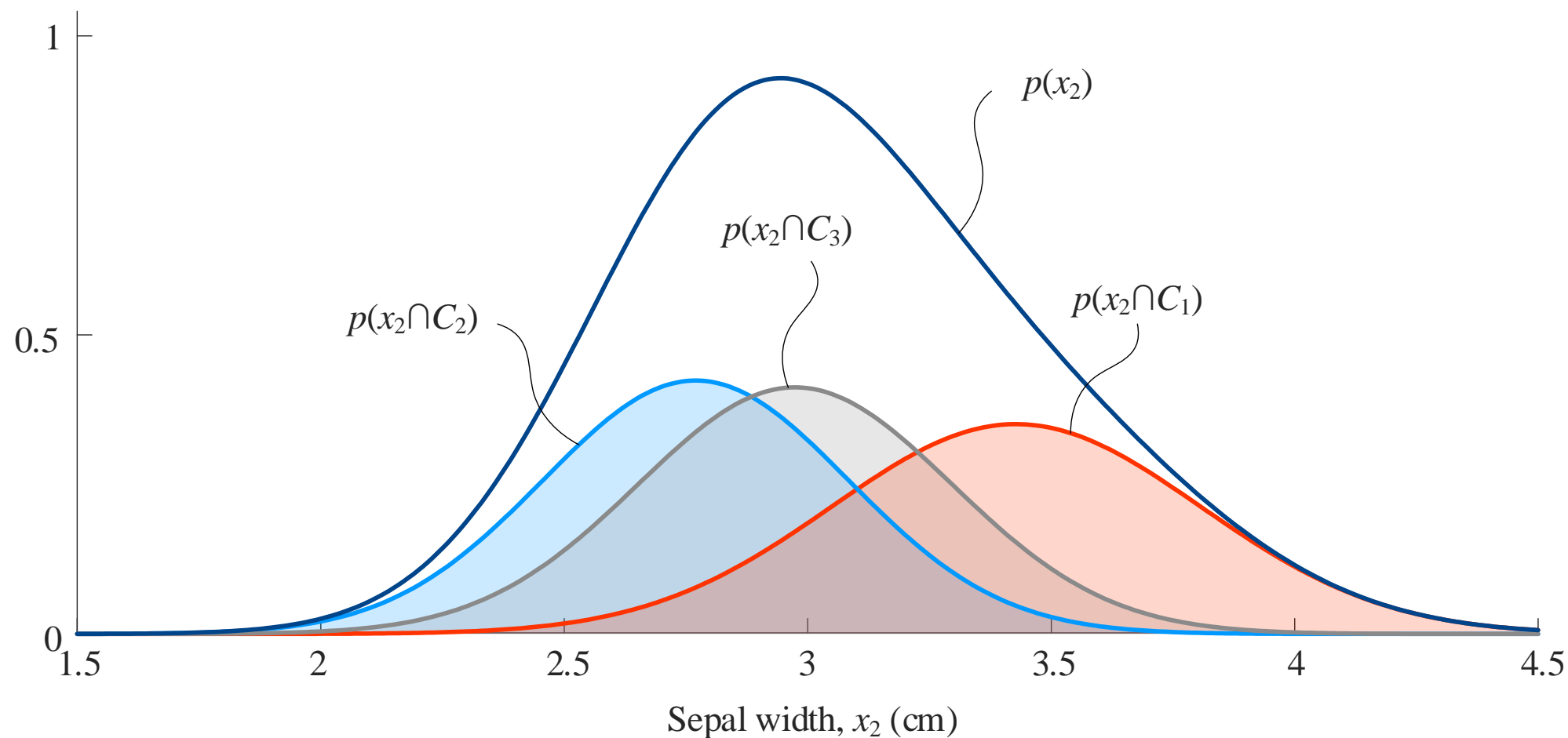
21

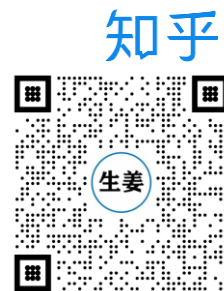
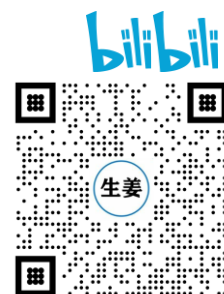
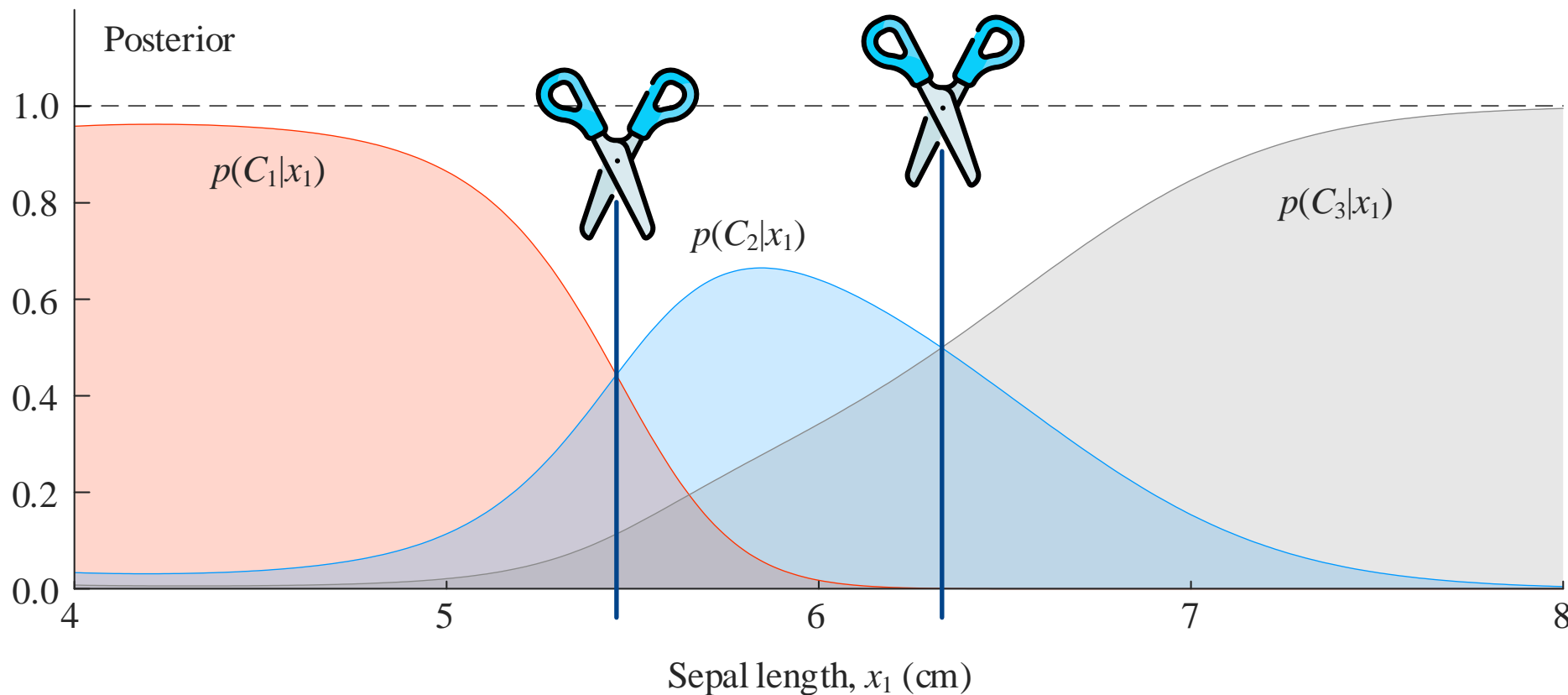


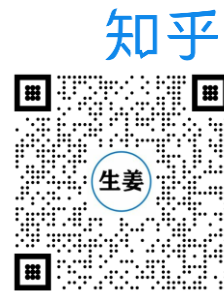
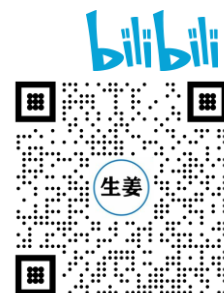
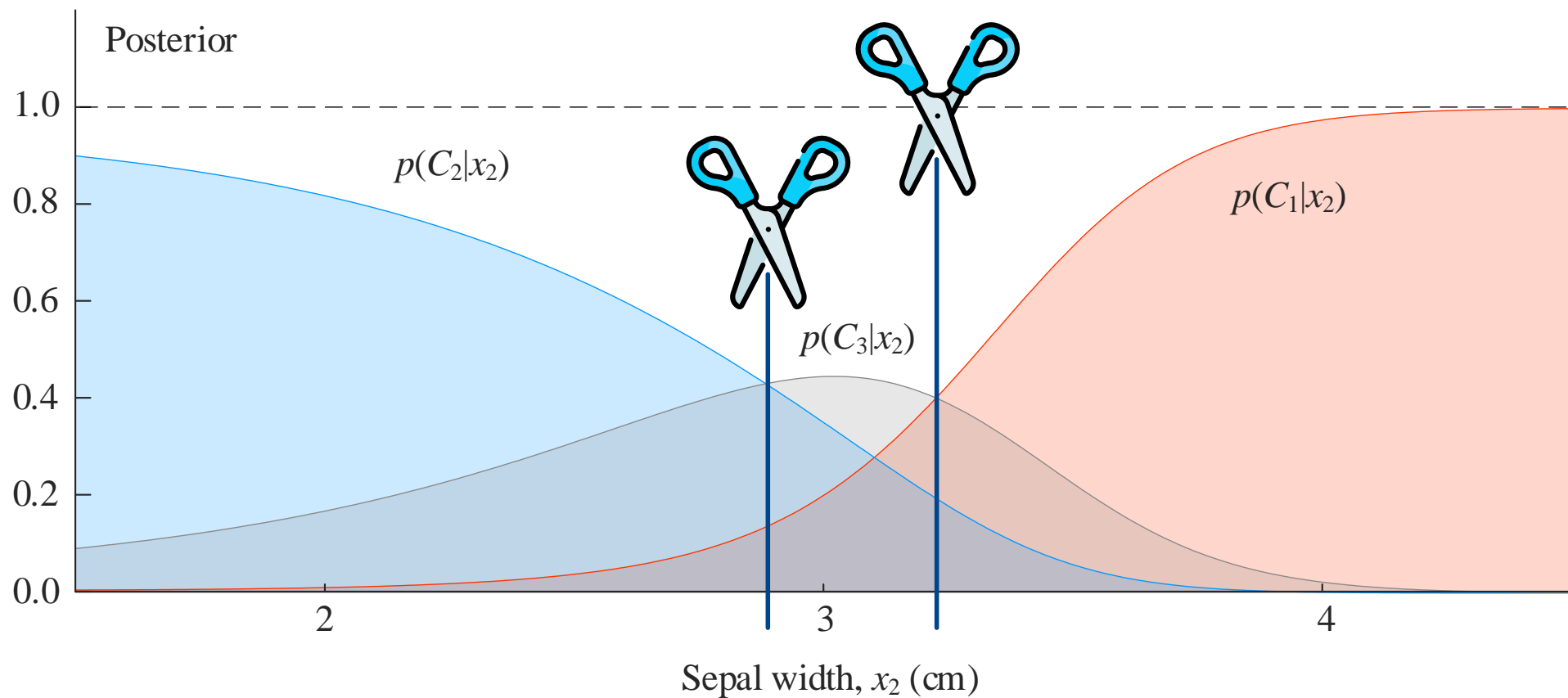
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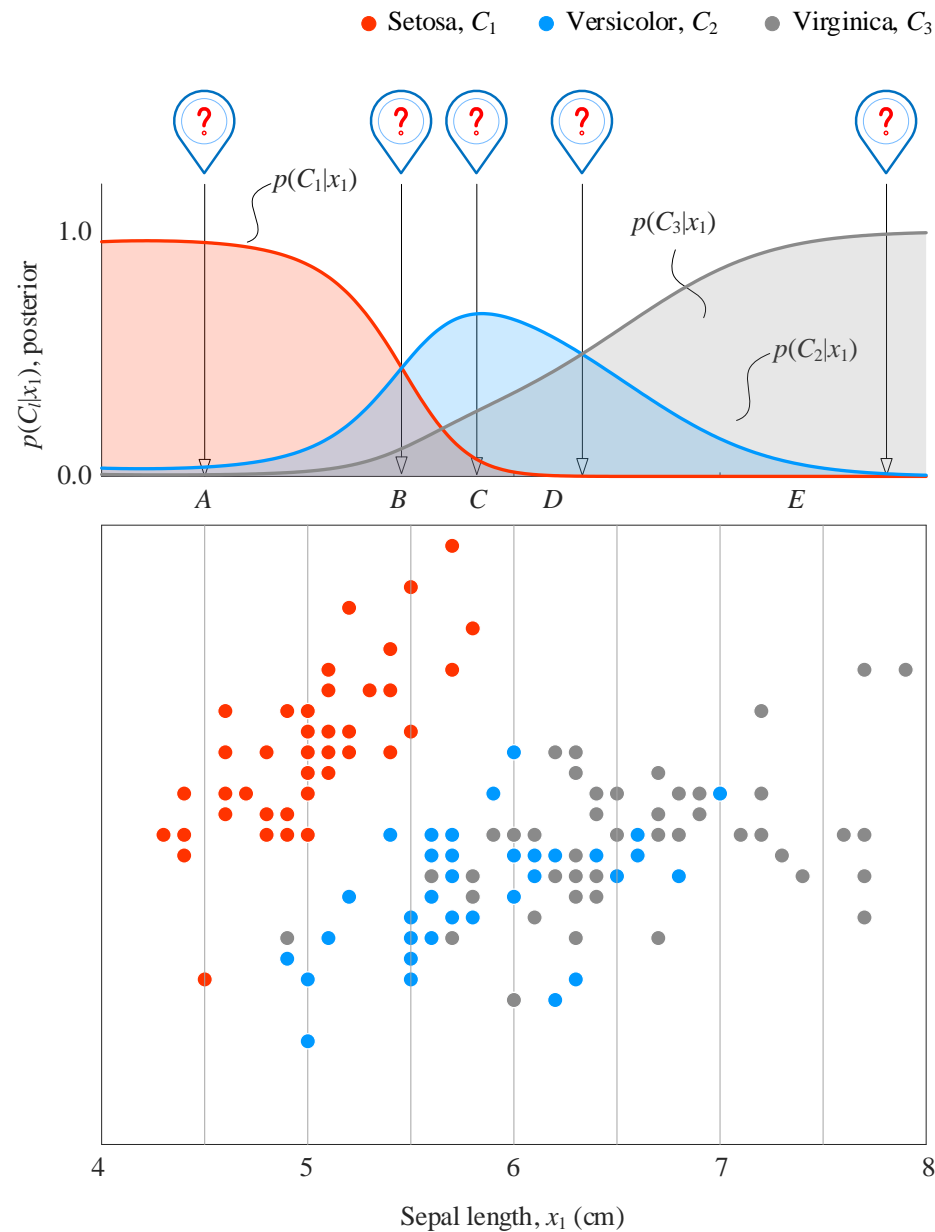






# 利用花萼长度特征后验概率，进行分类预测

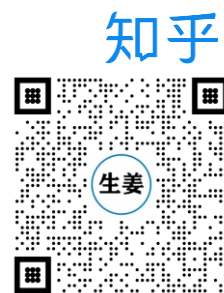
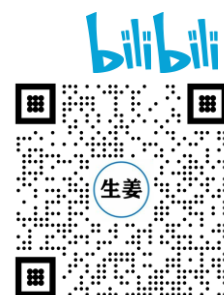
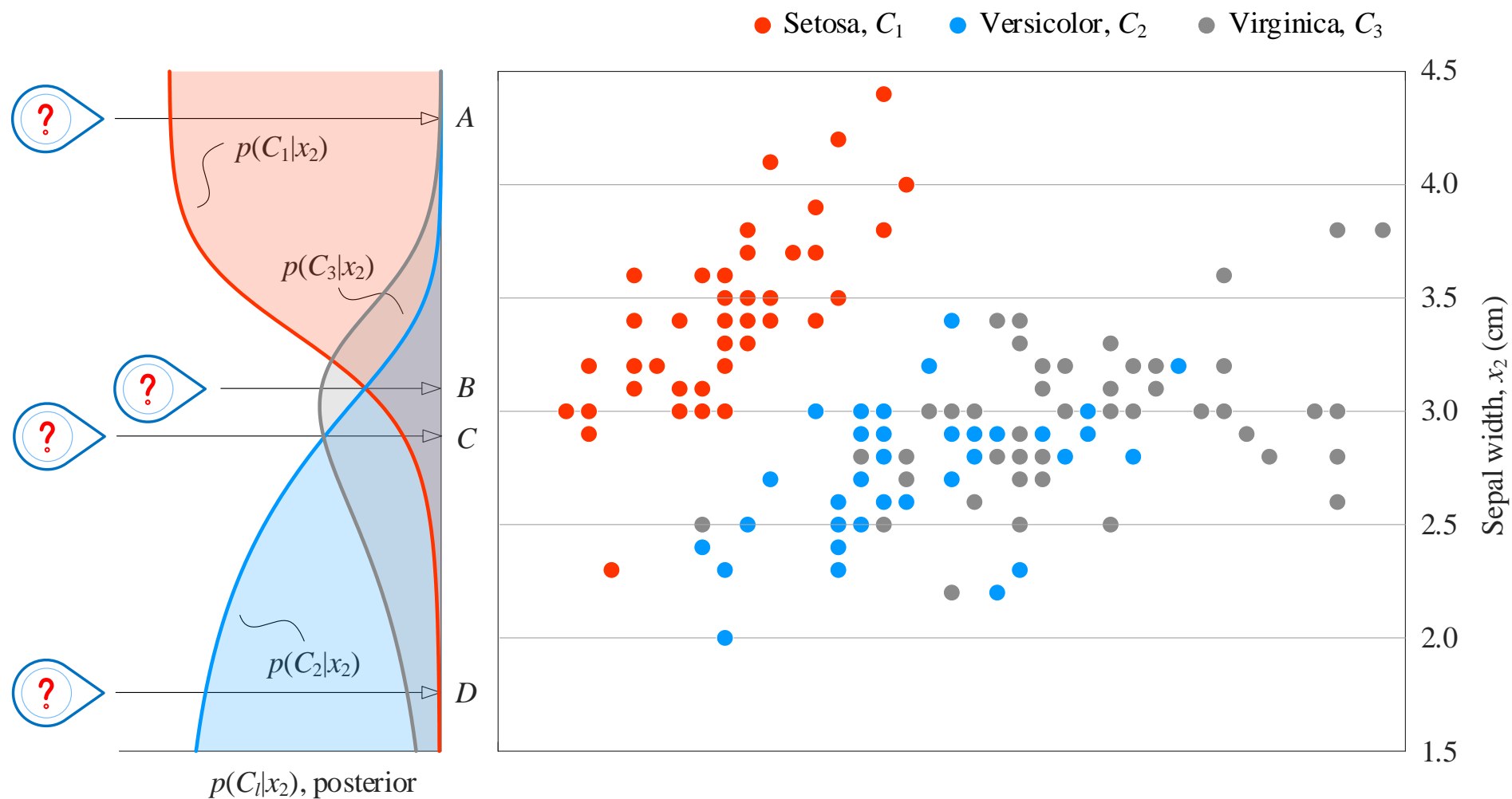
26





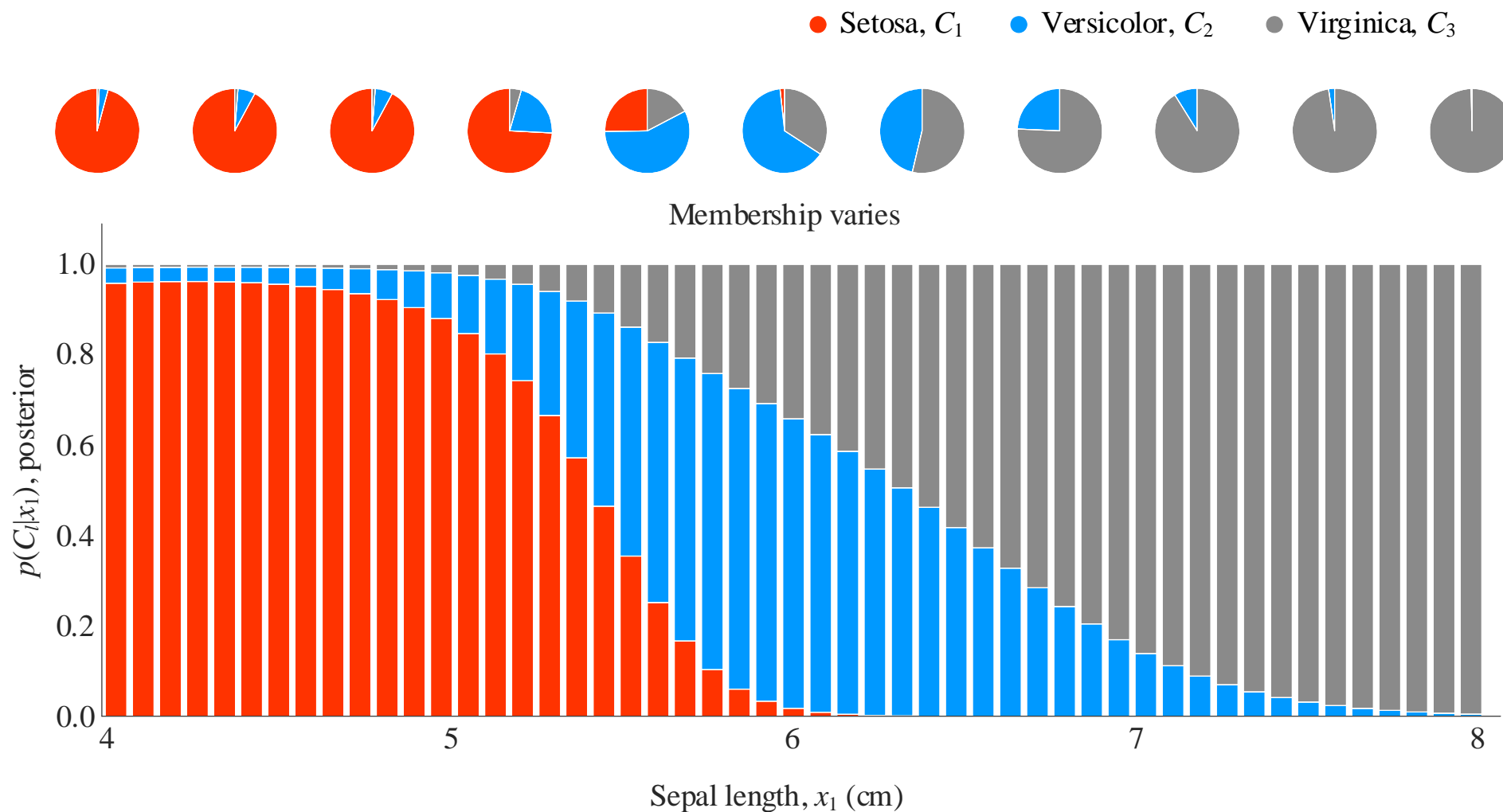
# 利用花萼宽度特征后验概率，进行分类预测

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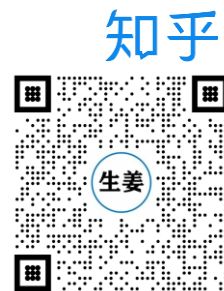
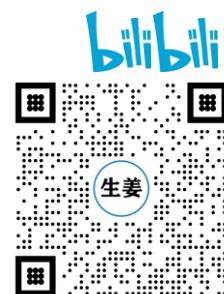
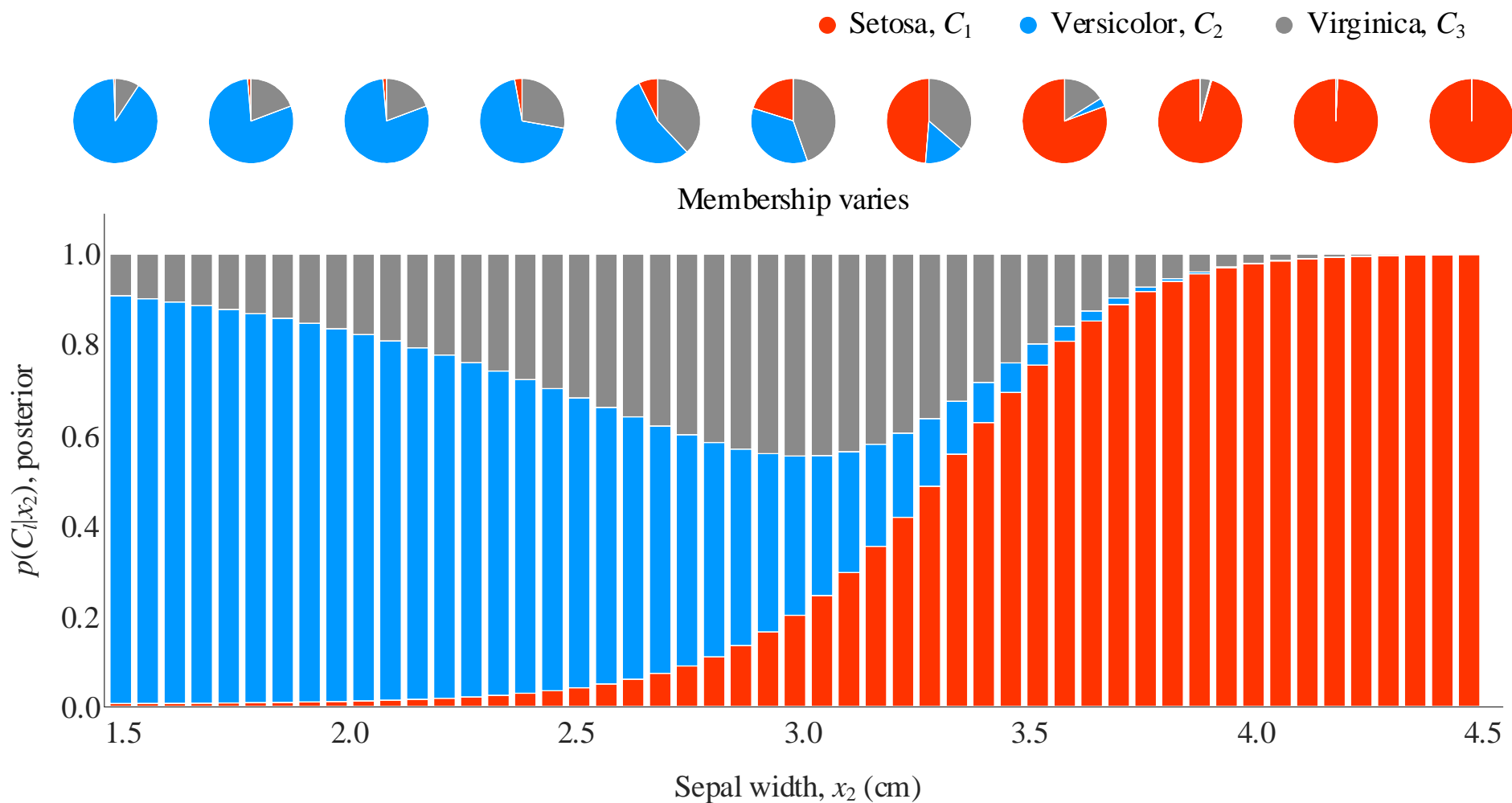
# 利用花萼长度特征成员值确定分类，基于高斯分布

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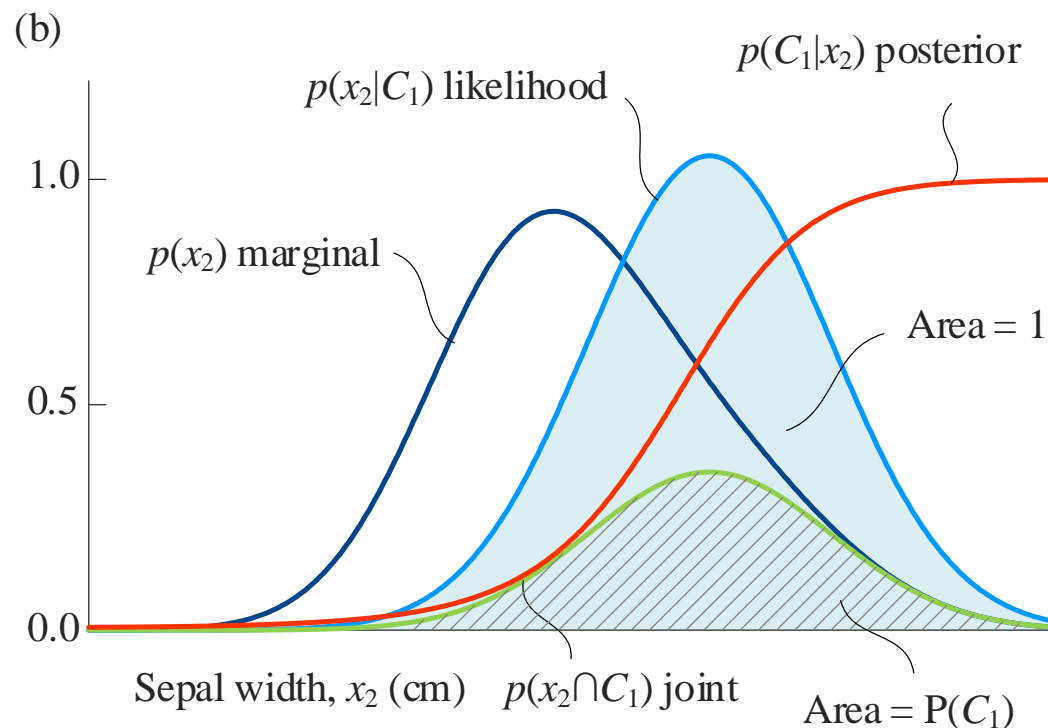
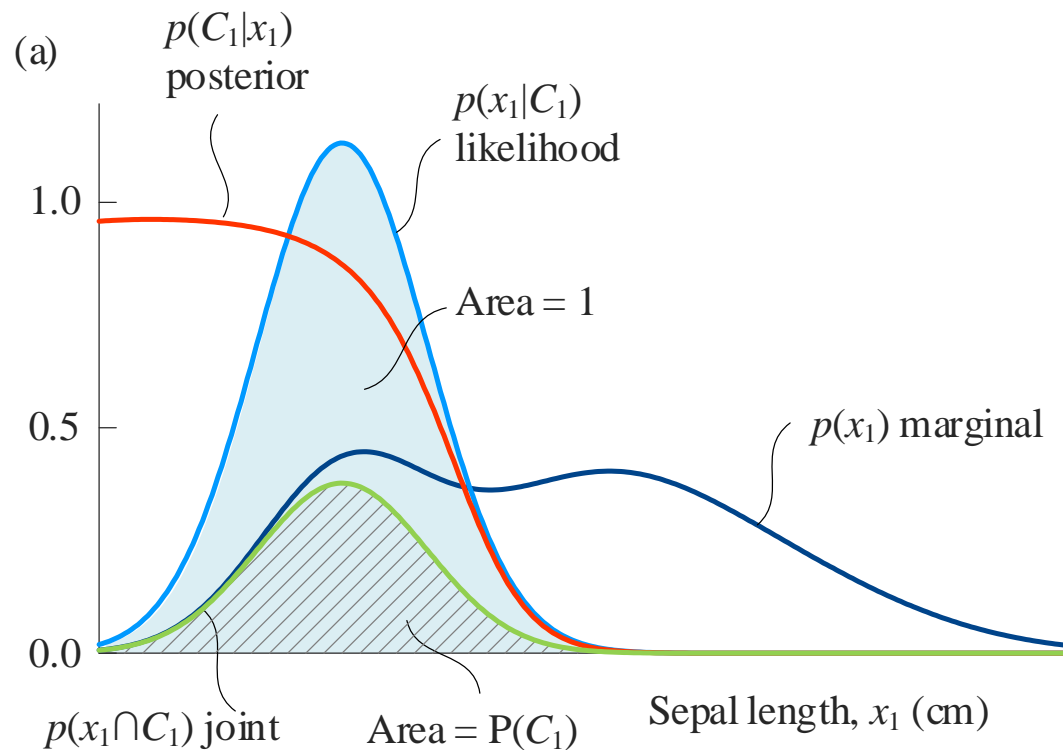
# 利用花萼宽度特征成员值确定分类，基于高斯分布

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# 比较四种概率密度函数曲线随特征变化趋势，基于高斯分布

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