

2. 计算机-应用结果：

正常短信
9条



$$\begin{aligned} P(\text{“您好”}|\text{正常}) &= \frac{5}{16} \\ P(\text{“话费”}|\text{正常}) &= \frac{4}{16} \\ P(\text{“链接”}|\text{正常}) &= \frac{1}{16} \\ P(\text{“验证码”}|\text{正常}) &= \frac{6}{16} \end{aligned}$$

此时，我们手机收到一条短信：
“您好 话费”



$$P(\text{正常}) = \frac{\text{正常短信数量}}{\text{总短信数量}} = \frac{9}{9 + 3} = 0.75$$

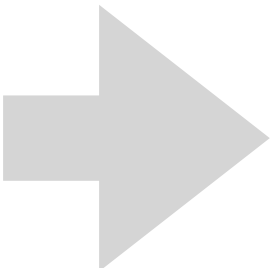
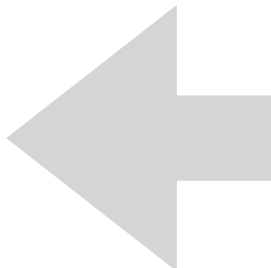
首先，计算机进行盲猜，根据之前收到的两类短信的数量做出初步判断

垃圾短信
3条



$$\begin{aligned} P(\text{“您好”}|\text{垃圾}) &= \frac{2}{8} \\ P(\text{“话费”}|\text{垃圾}) &= \frac{1}{8} \\ P(\text{“链接”}|\text{垃圾}) &= \frac{5}{8} \\ P(\text{“验证码”}|\text{垃圾}) &= \frac{0}{8} \end{aligned}$$

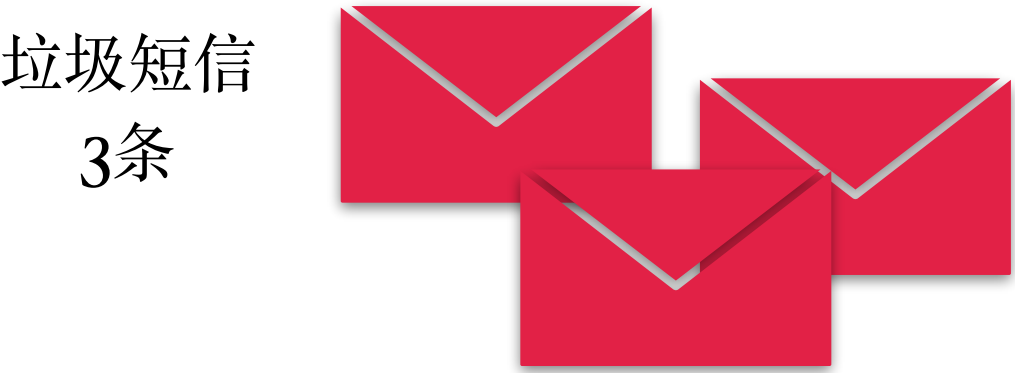
$$P(\text{垃圾}) = \frac{\text{垃圾短信数量}}{\text{总短信数量}} = \frac{3}{9 + 3} = 0.25$$



2. 计算机-应用结果：

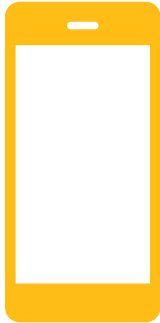


$P(\text{正常}) = 0.75$



$P(\text{垃圾}) = 0.25$

此时，我们手机收到一条短信：
“您好 话费”



$$P(\text{“您好”}|\text{正常}) = \frac{5}{16}$$

$$P(\text{“话费”}|\text{正常}) = \frac{4}{16}$$

$$P(\text{“链接”}|\text{正常}) = \frac{1}{16}$$

$$P(\text{“验证码”}|\text{正常}) = \frac{6}{16}$$

$$P(\text{正常}) \times P(\text{“您好”}|\text{正常}) \times P(\text{“话费”}|\text{正常}) = 0.75 \times \frac{5}{16} \times \frac{4}{16} = 0.059$$

其次，计算机根据其学习成果，

判断新收到短信中每一个词在两类中的概率，并相乘。

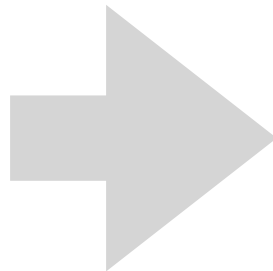
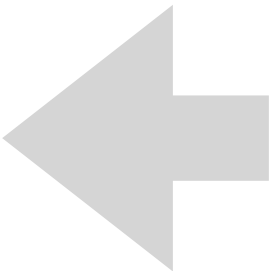
$$P(\text{“您好”}|\text{垃圾}) = \frac{2}{8}$$

$$P(\text{“话费”}|\text{垃圾}) = \frac{1}{8}$$

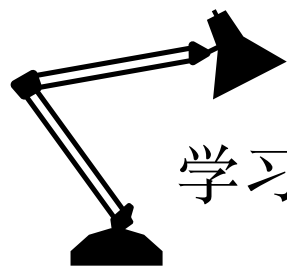
$$P(\text{“链接”}|\text{垃圾}) = \frac{5}{8}$$

$$P(\text{“验证码”}|\text{垃圾}) = \frac{0}{8}$$

$$P(\text{垃圾}) \times P(\text{“您好”}|\text{垃圾}) \times P(\text{“话费”}|\text{垃圾}) = 0.25 \times \frac{2}{8} \times \frac{1}{8} = 0.0078125$$



2. 计算机-应用结果：



学习成果：

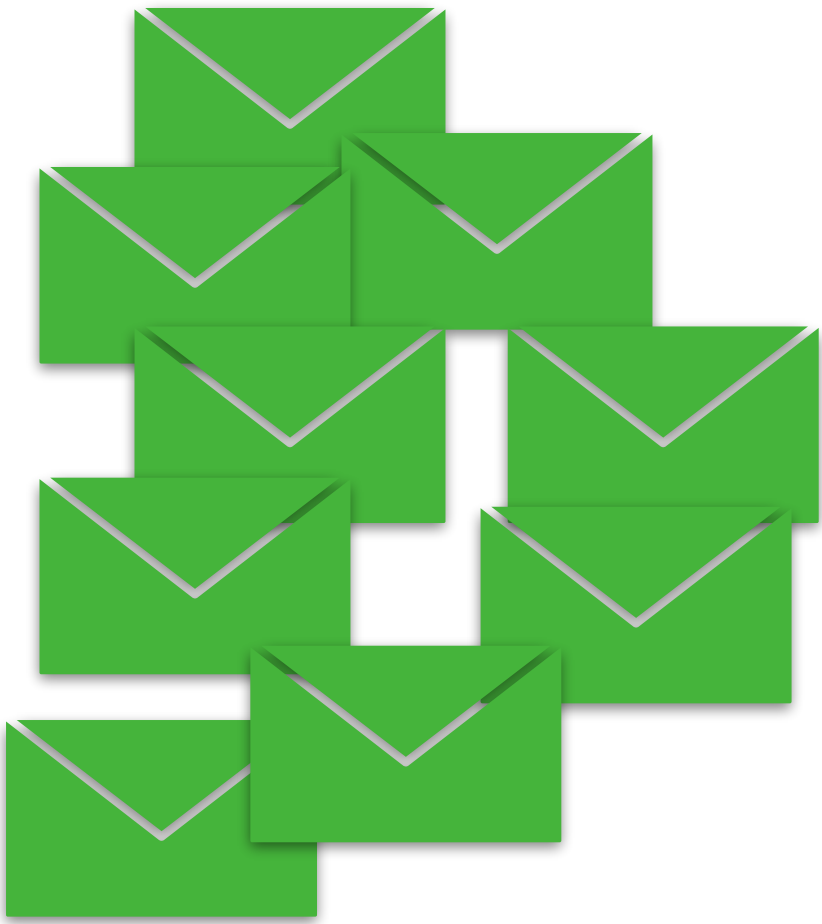
$$P(\text{“您好”}|\text{正常}) = \frac{5}{16}$$

$$P(\text{“话费”}|\text{正常}) = \frac{4}{16}$$

$$P(\text{“链接”}|\text{正常}) = \frac{1}{16}$$

$$P(\text{“验证码”}|\text{正常}) = \frac{6}{16}$$

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至此，计算机已经差不多完成了对已收到的短信的学习。

接下来就可以让计算机帮助我们判断新收到短信的类型，来验证它学习的成果。

$$P(\text{“您好”}|\text{垃圾}) = \frac{2}{8}$$

$$P(\text{“话费”}|\text{垃圾}) = \frac{1}{8}$$

$$P(\text{“链接”}|\text{垃圾}) = \frac{5}{8}$$

$$P(\text{“验证码”}|\text{垃圾}) = \frac{0}{8}$$

垃圾短信
3条

