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CS 445

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<div align="center">Assignment 3: Naive Bayes Classifier & Basian Learning</div>

Task 1

A. The probability that the sensor is placed in Portland is 29.63%

B. The probability that the second email also indicates a daily high under 80 degrees is 31.01%

C. The probability that the first three emails all indicate daily under 80 degrees is 0.246%

All of the above answers have been converted to percentages to be read more easily.

Task 4

Training Results:

Class 1,   Attribute 1,   Mean = 0.52,   Standard Deviation = 0.1

Class 1,   Attribute 2,   Mean = 0.54,   Standard Deviation = 0.1

Class 1,   Attribute 3,   Mean = 0.52,   Standard Deviation = 0.07

Class 1,   Attribute 4,   Mean = 0.41,   Standard Deviation = 0.17

Class 1,   Attribute 5,   Mean = 0.5,   Standard Deviation = 0.01

Class 1,   Attribute 6,   Mean = 0.0,   Standard Deviation = 0.01

Class 1,   Attribute 7,   Mean = 0.5,   Standard Deviation = 0.05

Class 1,   Attribute 8,   Mean = 0.24,   Standard Deviation = 0.05

Class 2,   Attribute 1,   Mean = 0.45,   Standard Deviation = 0.11

Class 2,   Attribute 2,   Mean = 0.45,   Standard Deviation = 0.1

Class 2,   Attribute 3,   Mean = 0.53,   Standard Deviation = 0.06

Class 2,   Attribute 4,   Mean = 0.23,   Standard Deviation = 0.11

Class 2,   Attribute 5,   Mean = 0.5,   Standard Deviation = 0.04

Class 2,   Attribute 6,   Mean = 0.0,   Standard Deviation = 0.01

Class 2,   Attribute 7,   Mean = 0.49,   Standard Deviation = 0.06

Class 2,   Attribute 8,   Mean = 0.33,   Standard Deviation = 0.14

Class 3,   Attribute 1,   Mean = 0.43,   Standard Deviation = 0.1

Class 3,   Attribute 2,   Mean = 0.48,   Standard Deviation = 0.11

Class 3,   Attribute 3,   Mean = 0.36,   Standard Deviation = 0.06

Class 3,   Attribute 4,   Mean = 0.22,   Standard Deviation = 0.08

Class 3,   Attribute 5,   Mean = 0.51,   Standard Deviation = 0.05

Class 3,   Attribute 6,   Mean = 0.0,   Standard Deviation = 0.01

Class 3,   Attribute 7,   Mean = 0.51,   Standard Deviation = 0.04

Class 3,   Attribute 8,   Mean = 0.27,   Standard Deviation = 0.09

Class 4,   Attribute 1,   Mean = 0.79,   Standard Deviation = 0.07

Class 4,   Attribute 2,   Mean = 0.76,   Standard Deviation = 0.07

Class 4,   Attribute 3,   Mean = 0.38,   Standard Deviation = 0.06

Class 4,   Attribute 4,   Mean = 0.32,   Standard Deviation = 0.11

Class 4,   Attribute 5,   Mean = 0.5,   Standard Deviation = 0.01

Class 4,   Attribute 6,   Mean = 0.0,   Standard Deviation = 0.01

Class 4,   Attribute 7,   Mean = 0.51,   Standard Deviation = 0.07

Class 4,   Attribute 8,   Mean = 0.27,   Standard Deviation = 0.09

Class 5,   Attribute 1,   Mean = 0.74,   Standard Deviation = 0.15

Class 5,   Attribute 2,   Mean = 0.62,   Standard Deviation = 0.12

Class 5,   Attribute 3,   Mean = 0.42,   Standard Deviation = 0.08

Class 5,   Attribute 4,   Mean = 0.3,   Standard Deviation = 0.12

Class 5,   Attribute 5,   Mean = 0.5,   Standard Deviation = 0.01

Class 5,   Attribute 6,   Mean = 0.0,   Standard Deviation = 0.01

Class 5,   Attribute 7,   Mean = 0.51,   Standard Deviation = 0.06

Class 5,   Attribute 8,   Mean = 0.24,   Standard Deviation = 0.04

Class 6,   Attribute 1,   Mean = 0.54,   Standard Deviation = 0.14

Class 6,   Attribute 2,   Mean = 0.5,   Standard Deviation = 0.12

Class 6,   Attribute 3,   Mean = 0.51,   Standard Deviation = 0.05

Class 6,   Attribute 4,   Mean = 0.24,   Standard Deviation = 0.1

Class 6,   Attribute 5,   Mean = 0.5,   Standard Deviation = 0.01

Class 6,   Attribute 6,   Mean = 0.49,   Standard Deviation = 0.38

Class 6,   Attribute 7,   Mean = 0.51,   Standard Deviation = 0.03

Class 6,   Attribute 8,   Mean = 0.24,   Standard Deviation = 0.05

Class 7,   Attribute 1,   Mean = 0.48,   Standard Deviation = 0.11

Class 7,   Attribute 2,   Mean = 0.47,   Standard Deviation = 0.09

Class 7,   Attribute 3,   Mean = 0.54,   Standard Deviation = 0.06

Class 7,   Attribute 4,   Mean = 0.22,   Standard Deviation = 0.12

Class 7,   Attribute 5,   Mean = 0.5,   Standard Deviation = 0.04

Class 7,   Attribute 6,   Mean = 0.0,   Standard Deviation = 0.03

Class 7,   Attribute 7,   Mean = 0.5,   Standard Deviation = 0.06

Class 7,   Attribute 8,   Mean = 0.26,   Standard Deviation = 0.09

Class 8,   Attribute 1,   Mean = 0.74,   Standard Deviation = 0.1

Class 8,   Attribute 2,   Mean = 0.73,   Standard Deviation = 0.11

Class 8,   Attribute 3,   Mean = 0.49,   Standard Deviation = 0.05

Class 8,   Attribute 4,   Mean = 0.29,   Standard Deviation = 0.07

Class 8,   Attribute 5,   Mean = 0.5,   Standard Deviation = 0.01

Class 8,   Attribute 6,   Mean = 0.0,   Standard Deviation = 0.01

Class 8,   Attribute 7,   Mean = 0.46,   Standard Deviation = 0.08

Class 8,   Attribute 8,   Mean = 0.23,   Standard Deviation = 0.02

Class 9,   Attribute 1,   Mean = 0.55,   Standard Deviation = 0.14

Class 9,   Attribute 2,   Mean = 0.56,   Standard Deviation = 0.15

Class 9,   Attribute 3,   Mean = 0.51,   Standard Deviation = 0.06

Class 9,   Attribute 4,   Mean = 0.2,   Standard Deviation = 0.06

Class 9,   Attribute 5,   Mean = 0.5,   Standard Deviation = 0.01

Class 9,   Attribute 6,   Mean = 0.0,   Standard Deviation = 0.01

Class 9,   Attribute 7,   Mean = 0.53,   Standard Deviation = 0.05

Class 9,   Attribute 8,   Mean = 0.24,   Standard Deviation = 0.04

Class 10,   Attribute 1,   Mean = 0.78,   Standard Deviation = 0.05

Class 10,   Attribute 2,   Mean = 0.74,   Standard Deviation = 0.11

Class 10,   Attribute 3,   Mean = 0.48,   Standard Deviation = 0.09

Class 10,   Attribute 4,   Mean = 0.33,   Standard Deviation = 0.06

Class 10,   Attribute 5,   Mean = 1.0,   Standard Deviation = 0.01

Class 10,   Attribute 6,   Mean = 0.0,   Standard Deviation = 0.01

Class 10,   Attribute 7,   Mean = 0.55,   Standard Deviation = 0.02

Class 10,   Attribute 8,   Mean = 0.23,   Standard Deviation = 0.01

Test Results:

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         ID=483,          Predicted=1,     Probability=13.1364,     True=1,          Accuracy=1

Total Accuracy: 45.04%
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