HW4

Preparation:

A computer screen shot of a computer code

Description automatically generated

Task 1:

Process:A computer screen shot of a computer code

Description automatically generated

Interpretation:

A close-up of a white page

Description automatically generated

Outcomes:

Model accuracy: 0.808429118773946A diagram of a decision tree

Description automatically generated

Task 2:

Process:

A screenshot of a computer program

Description automatically generated

Results:A graph with a bar

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Model accuracy: 0.6603053.

Interpretation:

Passenger Fare: This feature has the longest bar and thus appears to have the largest positive weight in the SVM model. It implies that the fare paid by a passenger is strongly associated with the target variable, which in the context of the Titanic dataset, is likely the survival outcome. Higher fares might be indicative of higher socioeconomic status, which could correlate with a higher likelihood of survival.

No. of Parents or Children on Board: It is almost no influence for final result.

Age: The bar for Age is negative, indicating that as the age increases, the likelihood of the target variable being "1" (which might represent survival) decreases. In the Titanic case, this could mean that younger people had a higher likelihood of survival.

No. of Siblings or Spouses on Board: This feature also has a negative weight, suggesting that passengers with more siblings or spouses on board were less likely to have the target variable be "1". This might reflect the fact that individuals responsible for more family members could have faced more challenges in securing places in lifeboats.

Task3:

Process:

A screenshot of a computer program

Description automatically generated

Results:

Equation:

log(p / (1 - p)) = -0.18 + -0.02 \* X1 + -0.26 \* X2 + 0.1 \* X3 + 0.01 \* X4 + 0.18 \* X5 + 0.01 \* X6 + 0.08 \* X7 + 0.08 \* X8 + 0 \* X9 + -1 \* X10 + -3.87 \* X11 + -3.34 \* X12 + 1.19 \* X13 + 6.78 \* X14 + 0.32 \* X15 + 0 \* X16 + 0 \* X17 + 0.23 \* X18 + 0 \* X19

A graph with blue rectangles and white text

Description automatically generated

Task 4:

A computer screen shot of a program

Description automatically generated

Task 5:

Process:

A screenshot of a computer

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Result:A close up of words

Description automatically generated

K = 5 is the best value, because WCSS can be minimized.