ASSIGNMENT 1:

1. Multiple linear regression r2 value=0.93

ii) Support vector machine[hyper parameters] r2 values are:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S no | Hyper parameters | Linear  R2 value | Rbf  R2 value | Poly  R2 value | Sigmoid  R2 value |
| 1 | C10 | -0.039 | -0.056 | -0.053 | -0.054 |
| 2 | C100 | 0.10 | -0.050 | -0.019 | -0.030 |
| 3 | C500 | 0.59 | -0.024 | 0.114 | 0.070 |
| 4 | C1000 | 0.78 | 0.006 | 0.266 | 0.18 |
| 5 | C2000 | 0.87 | 0.067 | 0.48 | 0.39 |
| 6 | C3000 | 0.89 | 0.12 | 0.63 | 0.59 |

iii) Decision tree[hyper parameters] r2 values are:

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| --- | --- | --- | --- | --- |
| S no | CRITERION | MAX\_FEATURES | SPLITTER | R2 VALUE |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | Squared error | None | Best | 0.92 |
| 2 | Squared error | None | Random | 0.87 |
| 3 | Squared error | Sqrt | Best | 0.30 |
| 4 | Squared error | Sqrt | Random | 0.54 |
| 5 | Squared error | Log2 | Best | 0.24 |
| 6 | Squared error | Log2 | Random | 0.67 |

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| --- | --- | --- | --- | --- |
| 1 | Absolute error | None | Best | 0.93 |
| 2 | Absolute error | None | Random | 0.92 |
| 3 | Absolute error | Sqrt | Best | 0.24 |
| 4 | Absolute error | Sqrt | Random | 0.36 |
| 5 | Absolute error | Log2 | Best | 0.92 |
| 6 | Absolute error | Log2 | random | 0.39 |

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| --- | --- | --- | --- | --- |
| 1 | Friedman mse | None | Best | 0.91 |
| 2 | Friedman mse | None | Random | 0.89 |
| 3 | Friedman mse | Sqrt | Best | 0.66 |
| 4 | Friedman mse | Sqrt | Random | 0.73 |
| 5 | Friedman mse | Log2 | Best | 0.77 |
| 6 | Friedman mse | Log2 | random | 0.37 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | poisson | None | Best | 0.91 |
| 2 | Poisson | None | Random | 0.93 |
| 3 | Poisson | Sqrt | Best | 0.73 |
| 4 | Poisson | Sqrt | Random | -0.045 |
| 5 | Poisson | Log2 | Best | 0.086 |
| 6 | poisson | Log2 | random | 0.55 |

iii)Random forest [hyper parameters]r2 values are:

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| --- | --- | --- | --- |
| S no | CRITERION | MAX FEATURES | R2 VALUE |
| 1 | Squared error | None | 0.93 |
| 2 | Squared error | Sqrt | 0.81 |
| 3 | Squared error | Log2 | 0.80 |
| 4 | Absolute error | None | 0.94 |
| 5 | Absolute error | Sqrt | 0.82 |
| 6 | Absolute error | Log2 | 0.77 |
| 7 | Friedman mse | None | 0.93 |
| 8 | Friedman mse | Sqrt | 0.78 |
| 9 | Friedman mse | Log2 | 0.81 |
| 10 | poisson | None | 0.91 |
| 11 | Poisson | Sqrt | 0.77 |
| 12 | poisson | Log2 | 0.74 |

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