**k-NN Algorithm**

1. **Target variable = Pclass, IDV = remaining, k=3,4,5,6,7**

Score Pclass 3 0.8576779026217228

Confusion\_Matrx: Pclass 3 [[ 62 6 2]

[ 8 28 13]

[ 3 6 139]]

Score Pclass 4 0.8239700374531835

Confusion\_Matrx: Pclass 4 [[ 60 7 3]

[ 8 31 10]

[ 5 14 129]]

Score Pclass 5 0.8164794007490637

Confusion\_Matrx: Pclass 5 [[ 57 10 3]

[ 8 26 15]

[ 4 9 135]]

Score Pclass 6 0.8314606741573034

Confusion\_Matrx: Pclass 6 [[ 63 5 2]

[ 7 31 11]

[ 4 16 128]]

Score Pclass 7 0.8352059925093633

Confusion\_Matrx: Pclass 7 [[ 59 8 3]

[ 7 29 13]

[ 4 9 135]]

1. **Target variable = Survived, IDV = remaining, k=3,4,5,6,7**

Score Survived 3 0.6891385767790262

Confusion\_Matrix: Survived 3 [[122 35]

[ 48 62]]

Score Survived 4 0.6591760299625468

Confusion\_Matrix: Survived 4 [[133 24]

[ 67 43]]

Score Survived 5 0.6966292134831461

Confusion\_Matrix: Survived 5 [[125 32]

[ 49 61]]

Score Survived 6 0.6891385767790262

Confusion\_Matrix: Survived 6 [[130 27]

[ 56 54]]

Score Survived 7 0.6928838951310862

Confusion\_Matrix: Survived 7 [[124 33]

[ 49 61]]

1. **Target variable = Sex, IDV = remaining, k=3,4,5,6,7**

Score Sex 3 0.6404494382022472

Confusion\_Matrix: Sex 3 [[ 49 49]

[ 47 122]]

Score Sex 4 0.6367041198501873

Confusion\_Matrix: Sex 4 [[ 64 34]

[ 63 106]]

Score Sex 5 0.704119850187266

Confusion\_Matrix: Sex 5 [[ 56 42]

[ 37 132]]

Score Sex 6 0.6741573033707865

Confusion\_Matrix: Sex 6 [[ 59 39]

[ 48 121]]

Score Sex 7 0.651685393258427

Confusion\_Matrix: Sex 7 [[ 45 53]

[ 40 129]]

1. **Target variable = Age, IDV = remaining, k=3,4,5,6,7**

Score Age 3 0.08239700374531835

Confusion\_Matrix: Age 3 [[1 0 1 ... 0 0 0]

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]

...

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]]

Score Age 4 0.09737827715355805

Confusion\_Matrix: Age 4 [[1 0 1 ... 0 0 0]

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]

...

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]]

Score Age 5 0.12359550561797752

Confusion\_Matrix: Age 5 [[1 0 1 ... 0 0 0]

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]

...

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]]

Score Age 6 0.15355805243445692

Confusion\_Matrix: Age 6 [[1 1 1 ... 0 0 0]

[0 0 0 ... 0 0 0]

[0 0 1 ... 0 0 0]

...

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]]

Score Age 7 0.15355805243445692

Confusion\_Matrix: Age 7 [[1 0 1 ... 0 0 0]

[0 0 0 ... 0 0 0]

[0 0 1 ... 0 0 0]

...

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]]

1. **Target variable = Embarked, IDV = remaining, k=3,4,5,6,7**

Score Embarked 3 0.700374531835206

Confusion\_Matrix: Embarked 3 [[ 17 3 29]

[ 1 8 13]

[ 30 4 162]]

Score Embarked 4 0.7228464419475655

Confusion\_Matrix: Embarked 4 [[ 24 5 20]

[ 2 10 10]

[ 27 10 159]]

Score Embarked 5 0.7602996254681648

Confusion\_Matrix: Embarked 5 [[ 21 5 23]

[ 1 9 12]

[ 18 5 173]]

Score Embarked 6 0.7378277153558053

Confusion\_Matrix: Embarked 6 [[ 23 6 20]

[ 1 8 13]

[ 23 7 166]]

Score Embarked 7 0.7453183520599251

Confusion\_Matrix: Embarked 7 [[ 18 7 24]

[ 1 7 14]

[ 19 3 174]]

1. **Target variable = Parch, IDV = remaining, k=3,4,5,6,7**

Score Parch 3 0.7865168539325843

Confusion\_Matrix: Parch 3 [[190 7 1 0 0]

[ 26 13 1 0 0]

[ 15 5 7 0 0]

[ 1 0 0 0 0]

[ 1 0 0 0 0]]

Score Parch 4 0.7865168539325843

Confusion\_Matrix: Parch 4 [[193 4 1 0 0]

[ 29 11 0 0 0]

[ 15 6 6 0 0]

[ 0 1 0 0 0]

[ 1 0 0 0 0]]

Score Parch 5 0.7865168539325843

Confusion\_Matrix: Parch 5 [[193 4 1 0 0]

[ 28 9 3 0 0]

[ 15 4 8 0 0]

[ 0 1 0 0 0]

[ 1 0 0 0 0]]

Score Parch 6 0.797752808988764

Confusion\_Matrix: Parch 6 [[197 0 1 0 0]

[ 29 8 3 0 0]

[ 15 4 8 0 0]

[ 0 0 1 0 0]

[ 1 0 0 0 0]]

Score Parch 7 0.7940074906367042

Confusion\_Matrix: Parch 7 [[196 1 1 0 0]

[ 29 8 3 0 0]

[ 15 4 8 0 0]

[ 0 1 0 0 0]

[ 1 0 0 0 0]]

1. **Target variable = SibSp, IDV = remaining, k=3,4,5,6,7**

Score SibSp 3 0.7340823970037453

Confusion\_Matrix: SibSp 3 [[157 22 1 0 2 0 0]

[ 27 31 3 2 2 0 0]

[ 5 1 1 1 0 0 0]

[ 1 3 0 3 0 0 0]

[ 0 1 0 0 1 0 0]

[ 0 0 0 0 0 1 0]

[ 0 0 0 0 0 0 2]]

Score SibSp 4 0.7078651685393258

Confusion\_Matrix: SibSp 4 [[163 16 1 0 2 0 0]

[ 38 20 3 2 2 0 0]

[ 5 1 0 2 0 0 0]

[ 1 4 0 2 0 0 0]

[ 0 0 1 0 1 0 0]

[ 0 0 0 0 0 1 0]

[ 0 0 0 0 0 0 2]]

Score SibSp 5 0.7265917602996255

Confusion\_Matrix: SibSp 5 [[159 20 1 0 2 0 0]

[ 30 30 3 0 1 0 1]

[ 5 1 1 1 0 0 0]

[ 2 5 0 0 0 0 0]

[ 0 0 1 0 1 0 0]

[ 0 0 0 0 0 1 0]

[ 0 0 0 0 0 0 2]]

Score SibSp 6 0.7265917602996255

Confusion\_Matrix: SibSp 6 [[161 19 1 0 1 0 0]

[ 33 29 0 0 2 0 1]

[ 6 2 0 0 0 0 0]

[ 1 5 0 0 1 0 0]

[ 0 0 1 0 1 0 0]

[ 0 0 0 0 0 1 0]

[ 0 0 0 0 0 0 2]]

Score SibSp 7 0.7228464419475655

Confusion\_Matrix: SibSp 7 [[157 23 1 0 1 0 0]

[ 30 32 0 0 2 0 1]

[ 6 2 0 0 0 0 0]

[ 1 4 0 0 2 0 0]

[ 0 0 1 0 1 0 0]

[ 0 0 0 0 0 1 0]

[ 0 0 0 0 0 0 2]]

1. **Target variable = Fare, IDV = remaining, k=3,4,5,6,7**

Score Fare 3 0.27715355805243447

Confusion\_Matrix: Fare 3 [[ 3 0 1 ... 0 0 0]

[ 0 0 2 ... 0 0 0]

[ 0 0 51 ... 0 0 0]

...

[ 0 0 0 ... 0 0 0]

[ 0 0 1 ... 0 0 0]

[ 0 0 0 ... 0 0 0]]

Score Fare 4 0.27340823970037453

Confusion\_Matrix: Fare 4 [[3 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]

...

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]

[0 0 0 ... 0 0 0]]

Score Fare 5 0.2696629213483146

Confusion\_Matrix: Fare 5 [[ 2 0 1 ... 0 0 0]

[ 0 0 2 ... 0 0 0]

[ 1 1 51 ... 0 0 0]

...

[ 0 0 0 ... 0 0 0]

[ 0 0 1 ... 0 0 0]

[ 0 0 0 ... 0 0 1]]

Score Fare 6 0.26217228464419473

Confusion\_Matrix: Fare 6 [[ 2 0 2 ... 0 0 0]

[ 0 0 3 ... 0 0 0]

[ 1 0 56 ... 0 0 0]

...

[ 0 0 0 ... 0 0 0]

[ 0 0 1 ... 0 0 0]

[ 0 0 0 ... 0 0 1]]

Score Fare 7 0.250936329588015

Confusion\_Matrix: Fare 7 [[ 2 0 2 ... 0 0 0]

[ 0 0 3 ... 0 0 0]

[ 1 0 53 ... 0 0 0]

...

[ 0 0 0 ... 0 0 0]

[ 0 0 1 ... 0 0 0]

[ 0 0 0 ... 0 0 1]]

**Target variable = Pclass, IDV = remaining, k=1 to 267**

Score 1 88.76404494382022

Score 2 86.14232209737828

Score 3 85.76779026217228

Score 4 82.39700374531836

Score 5 81.64794007490637

Score 6 83.14606741573034

Score 7 83.52059925093633

Score 8 83.14606741573034

Score 9 82.39700374531836

Score 10 82.39700374531836

Score 11 81.64794007490637

Score 12 82.02247191011236

Score 13 82.02247191011236

Score 14 81.64794007490637

Score 15 81.64794007490637

Score 16 82.02247191011236

Score 17 82.02247191011236

Score 18 82.02247191011236

Score 19 81.27340823970037

Score 20 81.27340823970037

Score 21 80.52434456928839

Score 22 79.40074906367042

Score 23 80.14981273408239

Score 24 78.65168539325843

Score 25 79.40074906367042

Score 26 79.02621722846442

Score 27 79.40074906367042

Score 28 79.02621722846442

Score 29 78.65168539325843

Score 30 78.65168539325843

Score 31 78.65168539325843

Score 32 78.65168539325843

Score 33 79.02621722846442

Score 34 79.02621722846442

Score 35 79.02621722846442

Score 36 79.02621722846442

Score 37 79.02621722846442

Score 38 78.65168539325843

Score 39 77.52808988764045

Score 40 79.02621722846442

Score 41 79.02621722846442

Score 42 79.02621722846442

Score 43 79.02621722846442

Score 44 79.02621722846442

Score 45 79.7752808988764

Score 46 79.7752808988764

Score 47 79.7752808988764

Score 48 80.14981273408239

Score 49 78.65168539325843

Score 50 78.27715355805243

Score 51 78.27715355805243

Score 52 78.65168539325843

Score 53 77.90262172284645

Score 54 77.90262172284645

Score 55 77.15355805243446

Score 56 77.90262172284645

Score 57 76.77902621722846

Score 58 76.77902621722846

Score 59 77.15355805243446

Score 60 77.15355805243446

Score 61 77.52808988764045

Score 62 77.15355805243446

Score 63 76.40449438202246

Score 64 75.65543071161048

Score 65 75.65543071161048

Score 66 74.90636704119851

Score 67 76.02996254681648

Score 68 75.65543071161048

Score 69 76.40449438202246

Score 70 75.65543071161048

Score 71 76.02996254681648

Score 72 76.02996254681648

Score 73 76.02996254681648

Score 74 75.65543071161048

Score 75 76.02996254681648

Score 76 76.02996254681648

Score 77 76.40449438202246

Score 78 76.40449438202246

Score 79 75.65543071161048

Score 80 75.28089887640449

Score 81 74.90636704119851

Score 82 74.15730337078652

Score 83 74.15730337078652

Score 84 74.15730337078652

Score 85 74.53183520599251

Score 86 74.90636704119851

Score 87 74.90636704119851

Score 88 74.90636704119851

Score 89 75.28089887640449

Score 90 75.65543071161048

Score 91 75.65543071161048

Score 92 75.65543071161048

Score 93 75.28089887640449

Score 94 75.65543071161048

Score 95 75.65543071161048

Score 96 75.28089887640449

Score 97 74.53183520599251

Score 98 74.90636704119851

Score 99 73.40823970037454

Score 100 74.15730337078652

Score 101 73.03370786516854

Score 102 73.03370786516854

Score 103 73.03370786516854

Score 104 73.03370786516854

Score 105 73.40823970037454

Score 106 73.78277153558052

Score 107 73.78277153558052

Score 108 74.15730337078652

Score 109 74.15730337078652

Score 110 74.53183520599251

Score 111 74.90636704119851

Score 112 74.90636704119851

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Score 117 74.90636704119851

Score 118 74.90636704119851

Score 119 74.53183520599251

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Score 129 74.90636704119851

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Score 143 76.40449438202246

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Score 197 73.03370786516854

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