```
3-fold cross validation:

Iteration 1, loss = inf
Validation score: 0.709000
Iteration 2, loss = inf
Validation score: 0.737500
Iteration 3, loss = inf
Validation score: 0.757500
Iteration 4, loss = inf
Validation score: 0.722000
Iteration 5, loss = inf
Validation score: 0.741000
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.738776
Iteration 2, loss = inf
Validation score: 0.758673
Iteration 3, loss = inf
Validation score: 0.733673
Iteration 4, loss = inf
Validation score: 0.756122
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.773469
Iteration 2, loss = inf
Validation score: 0.730102
Iteration 3, loss = inf
Validation score: 0.757143
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.712755
Iteration 2, loss = inf
Validation score: 0.735714
Iteration 3, loss = inf
Validation score: 0.737755
Iteration 4, loss = inf
Validation score: 0.587245
Iteration 5, loss = inf
Validation score: 0.741837
Iteration 6, loss = inf
Validation score: 0.727041
Iteration 7, loss = inf
Validation score: 0.764286
Iteration 8, loss = inf
Validation score: 0.726531
Iteration 9, loss = inf
Validation score: 0.785204
Iteration 10, loss = inf
Validation score: 0.732653
Iteration 11, loss = inf
Validation score: 0.409694
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
```

```
Validation score: 0.392347
Iteration 2, loss = inf
Validation score: 0.800000
Iteration 3, loss = inf
Validation score: 0.761224
Iteration 4, loss = inf
Validation score: 0.781633
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.751531
Iteration 2, loss = inf
Validation score: 0.767857
Iteration 3, loss = inf
Validation score: 0.390816
Iteration 4, loss = inf
Validation score: 0.754082
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.753571
Iteration 2, loss = inf
Validation score: 0.341327
Iteration 3, loss = inf
Validation score: 0.797959
Iteration 4, loss = inf
Validation score: 0.800510
Iteration 5, loss = inf
Validation score: 0.763265
Iteration 6, loss = inf
Validation score: 0.781122
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.757143
Iteration 2, loss = inf
Validation score: 0.781633
Iteration 3, loss = inf
Validation score: 0.359694
Iteration 4, loss = inf
Validation score: 0.720918
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.783673
Iteration 2, loss = inf
Validation score: 0.751531
Iteration 3, loss = inf
Validation score: 0.758163
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.797449
Iteration 2, loss = inf
Validation score: 0.782653
Iteration 3, loss = inf
Validation score: 0.746939
```

```
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.800000
Iteration 2, loss = inf
Validation score: 0.798469
Iteration 3, loss = inf
Validation score: 0.376020
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.773469
Iteration 2, loss = inf
Validation score: 0.420918
Iteration 3, loss = inf
Validation score: 0.752041
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.759184
Iteration 2, loss = inf
Validation score: 0.722959
Iteration 3, loss = inf
Validation score: 0.344388
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.709694
Iteration 2, loss = inf
Validation score: 0.757143
Iteration 3, loss = inf
Validation score: 0.753571
Iteration 4, loss = inf
Validation score: 0.430612
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.784694
Iteration 2, loss = inf
Validation score: 0.746429
Iteration 3, loss = inf
Validation score: 0.806633
Iteration 4, loss = inf
Validation score: 0.668878
Iteration 5, loss = inf
Validation score: 0.747959
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.416837
Iteration 2, loss = inf
Validation score: 0.756122
Iteration 3, loss = inf
Validation score: 0.788265
Iteration 4, loss = inf
Validation score: 0.386224
Iteration 5, loss = inf
```

```
Validation score: 0.742347
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.401531
Iteration 2, loss = inf
Validation score: 0.778061
Iteration 3, loss = inf
Validation score: 0.739286
Iteration 4, loss = inf
Validation score: 0.776531
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.777041
Iteration 2, loss = inf
Validation score: 0.773980
Iteration 3, loss = inf
Validation score: 0.757653
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.747449
Iteration 2, loss = inf
Validation score: 0.396939
Iteration 3, loss = inf
Validation score: 0.775510
Iteration 4, loss = inf
Validation score: 0.774490
Iteration 5, loss = inf
Validation score: 0.783673
Iteration 6, loss = inf
Validation score: 0.754592
Iteration 7, loss = inf
Validation score: 0.801020
Iteration 8, loss = inf
Validation score: 0.618367
Iteration 9, loss = inf
Validation score: 0.764286
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.714796
Iteration 2, loss = inf
Validation score: 0.351531
Iteration 3, loss = inf
Validation score: 0.784694
Iteration 4, loss = inf
Validation score: 0.391837
Iteration 5, loss = inf
Validation score: 0.367857
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.387755
Iteration 2, loss = inf
Validation score: 0.709184
```

```
Iteration 3, loss = inf
Validation score: 0.414796
Iteration 4, loss = inf
Validation score: 0.712755
Iteration 5, loss = inf
Validation score: 0.723980
Iteration 6, loss = inf
Validation score: 0.762755
Iteration 7, loss = inf
Validation score: 0.761735
Iteration 8, loss = inf
Validation score: 0.755102
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.741327
Iteration 2, loss = inf
Validation score: 0.762245
Iteration 3, loss = inf
Validation score: 0.720408
Iteration 4, loss = inf
Validation score: 0.754082
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.772449
Iteration 2, loss = inf
Validation score: 0.755612
Iteration 3, loss = inf
Validation score: 0.720918
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.785204
Iteration 2, loss = inf
Validation score: 0.725510
Iteration 3, loss = inf
Validation score: 0.760714
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.725510
Iteration 2, loss = inf
Validation score: 0.721429
Iteration 3, loss = inf
Validation score: 0.756633
Iteration 4, loss = inf
Validation score: 0.362755
Iteration 5, loss = inf
Validation score: 0.790816
Iteration 6, loss = inf
Validation score: 0.806122
Iteration 7, loss = inf
Validation score: 0.766327
Iteration 8, loss = inf
Validation score: 0.797449
```

```
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.732143
Iteration 2, loss = inf
Validation score: 0.740306
Iteration 3, loss = inf
Validation score: 0.757143
Iteration 4, loss = inf
Validation score: 0.742347
Iteration 5, loss = inf
Validation score: 0.782143
Iteration 6, loss = inf
Validation score: 0.776531
Iteration 7, loss = inf
Validation score: 0.777041
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.778061
Iteration 2, loss = inf
Validation score: 0.791837
Iteration 3, loss = inf
Validation score: 0.804082
Iteration 4, loss = inf
Validation score: 0.739286
Iteration 5, loss = inf
Validation score: 0.733673
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.724490
Iteration 2, loss = inf
Validation score: 0.745408
Iteration 3, loss = inf
Validation score: 0.752551
Iteration 4, loss = inf
Validation score: 0.714286
Iteration 5, loss = inf
Validation score: 0.731633
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.746939
Iteration 2, loss = inf
Validation score: 0.378061
Iteration 3, loss = inf
Validation score: 0.392347
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.723469
Iteration 2, loss = inf
Validation score: 0.786224
Iteration 3, loss = inf
Validation score: 0.750000
Iteration 4, loss = inf
```

```
Validation score: 0.798469
Iteration 5, loss = inf
Validation score: 0.806633
Iteration 6, loss = inf
Validation score: 0.418878
Iteration 7, loss = inf
Validation score: 0.432653
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.751020
Iteration 2, loss = inf
Validation score: 0.744898
Iteration 3, loss = inf
Validation score: 0.745918
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.741837
Iteration 2, loss = inf
Validation score: 0.410714
Iteration 3, loss = inf
Validation score: 0.744388
Iteration 4, loss = inf
Validation score: 0.795918
Iteration 5, loss = inf
Validation score: 0.720918
Iteration 6, loss = inf
Validation score: 0.791327
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.732143
Iteration 2, loss = inf
Validation score: 0.750000
Iteration 3, loss = inf
Validation score: 0.737755
Iteration 4, loss = inf
Validation score: 0.758163
Iteration 5, loss = inf
Validation score: 0.736735
Iteration 6, loss = inf
Validation score: 0.440306
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.741327
Iteration 2, loss = inf
Validation score: 0.801020
Iteration 3, loss = inf
Validation score: 0.756122
Iteration 4, loss = inf
Validation score: 0.397959
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.755102
```

```
Iteration 2, loss = inf
Validation score: 0.419898
Iteration 3, loss = inf
Validation score: 0.766327
Iteration 4, loss = inf
Validation score: 0.738265
Iteration 5, loss = inf
Validation score: 0.738776
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.723469
Iteration 2, loss = inf
Validation score: 0.737245
Iteration 3, loss = inf
Validation score: 0.794898
Iteration 4, loss = inf
Validation score: 0.752551
Iteration 5, loss = inf
Validation score: 0.812245
Iteration 6, loss = inf
Validation score: 0.739286
Iteration 7, loss = inf
Validation score: 0.756633
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.383673
Iteration 2, loss = inf
Validation score: 0.741837
Iteration 3, loss = inf
Validation score: 0.793878
Iteration 4, loss = inf
Validation score: 0.750510
Iteration 5, loss = inf
Validation score: 0.784694
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.758673
Iteration 2, loss = inf
Validation score: 0.766327
Iteration 3, loss = inf
Validation score: 0.727041
Iteration 4, loss = inf
Validation score: 0.753061
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.768367
Iteration 2, loss = inf
Validation score: 0.755102
Iteration 3, loss = inf
Validation score: 0.727041
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
```

```
Validation score: 0.404592
Iteration 2, loss = inf
Validation score: 0.731122
Iteration 3, loss = inf
Validation score: 0.400000
Iteration 4, loss = inf
Validation score: 0.768367
Iteration 5, loss = inf
Validation score: 0.787755
Iteration 6, loss = inf
Validation score: 0.750510
Iteration 7, loss = inf
Validation score: 0.756122
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.751531
Iteration 2, loss = inf
Validation score: 0.750510
Iteration 3, loss = inf
Validation score: 0.801020
Iteration 4, loss = inf
Validation score: 0.745918
Iteration 5, loss = inf
Validation score: 0.782143
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.738776
Iteration 2, loss = inf
Validation score: 0.743367
Iteration 3, loss = inf
Validation score: 0.793878
Iteration 4, loss = inf
Validation score: 0.819898
Iteration 5, loss = inf
Validation score: 0.765306
Iteration 6, loss = inf
Validation score: 0.778571
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.785714
Iteration 2, loss = inf
Validation score: 0.385204
Iteration 3, loss = inf
Validation score: 0.760204
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.757653
Iteration 2, loss = inf
Validation score: 0.771939
Iteration 3, loss = inf
Validation score: 0.779082
Iteration 4, loss = inf
Validation score: 0.769388
```

```
Iteration 5, loss = inf
Validation score: 0.744898
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.780612
Iteration 2, loss = inf
Validation score: 0.382143
Iteration 3, loss = inf
Validation score: 0.749490
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.722959
Iteration 2, loss = inf
Validation score: 0.720918
Iteration 3, loss = inf
Validation score: 0.793878
Iteration 4, loss = inf
Validation score: 0.765816
Iteration 5, loss = inf
Validation score: 0.775510
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.772959
Iteration 2, loss = inf
Validation score: 0.385204
Iteration 3, loss = inf
Validation score: 0.382143
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.719388
Iteration 2, loss = inf
Validation score: 0.726020
Iteration 3, loss = inf
Validation score: 0.751531
Iteration 4, loss = inf
Validation score: 0.427041
Iteration 5, loss = inf
Validation score: 0.766327
Iteration 6, loss = inf
Validation score: 0.424490
Iteration 7, loss = inf
Validation score: 0.795408
Iteration 8, loss = inf
Validation score: 0.754592
Iteration 9, loss = inf
Validation score: 0.746429
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.725000
Iteration 2, loss = inf
Validation score: 0.769898
Iteration 3, loss = inf
```
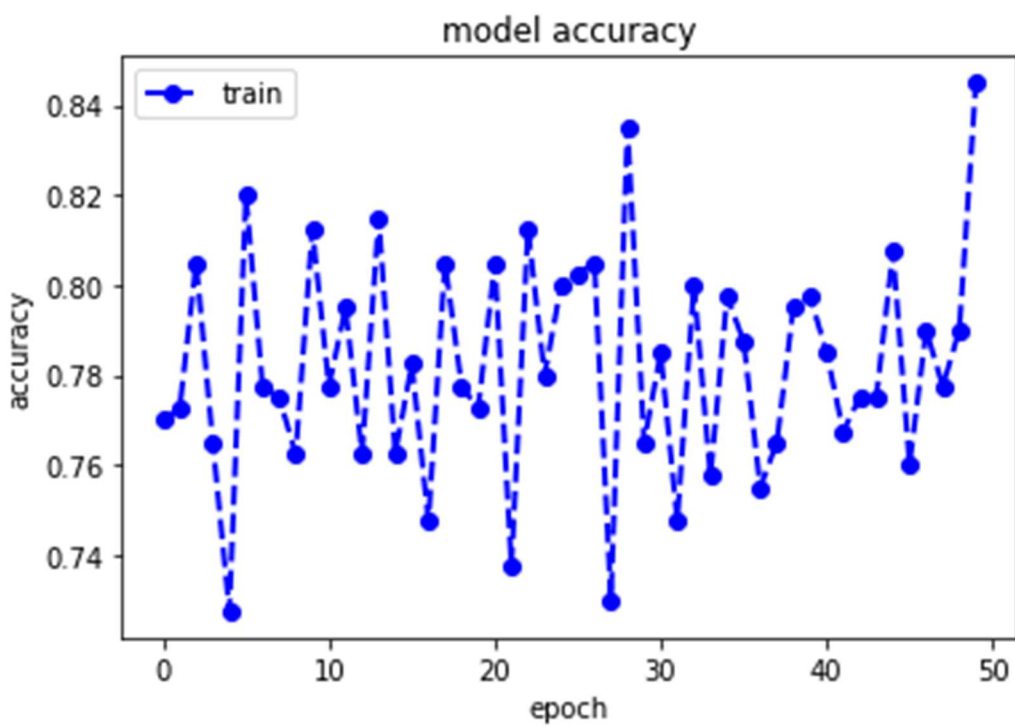
```
Validation score: 0.392857
Iteration 4, loss = inf
Validation score: 0.773469
Iteration 5, loss = inf
Validation score: 0.796939
Iteration 6, loss = inf
Validation score: 0.781633
Iteration 7, loss = inf
Validation score: 0.747449
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.773469
Iteration 2, loss = inf
Validation score: 0.737755
Iteration 3, loss = inf
Validation score: 0.779082
Iteration 4, loss = inf
Validation score: 0.736735
Iteration 5, loss = inf
Validation score: 0.764286
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.403061
Iteration 2, loss = inf
Validation score: 0.770918
Iteration 3, loss = inf
Validation score: 0.737245
Iteration 4, loss = inf
Validation score: 0.389286
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Accuracy: 0.78 (+/- 0.02) [Multi Layers Perceptron]
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 0.0
1.0 1.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 0.0
1.0 0.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
0.0 1.0
0.0 0.0
1.0 0.0
0.0 1.0
0.0 1.0
```

```
1.0  1.0
1.0  1.0
1.0  1.0
1.0  1.0
1.0  1.0
1.0  0.0
1.0  0.0
1.0  1.0
0.0  0.0
1.0  1.0
1.0  1.0
1.0  1.0
1.0  1.0
1.0  1.0
1.0  0.0
0.0  0.0
0.0  0.0
1.0  1.0
1.0  1.0
1.0  1.0
0.0  0.0
1.0  1.0
1.0  1.0
0.0  0.0
1.0  1.0
1.0  1.0
1.0  1.0
0.0  1.0
1.0  1.0
0.0  0.0
0.0  0.0
1.0  1.0
1.0  1.0
1.0  0.0
1.0  1.0
1.0  0.0
1.0  1.0
1.0  1.0
1.0  0.0
0.0  0.0
0.0  0.0
1.0  1.0
1.0  1.0
1.0  0.0
1.0  0.0
0.0  1.0
1.0  1.0
1.0  1.0
0.0  1.0
1.0  1.0
1.0  1.0
1.0  1.0
0.0  0.0
1.0  1.0
1.0  1.0
1.0  0.0
1.0  1.0
```

```
1.0 0.0
0.0 0.0
1.0 0.0
0.0 0.0
1.0 1.0
0.0 0.0
0.0 0.0
0.0 0.0
0.0 0.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 0.0
1.0 1.0
1.0 1.0
0.0 0.0
0.0 0.0
1.0 0.0
```


model accuracy

```
correct: 77
wrong: 23
Accuracy: 0.94 (+/- 0.01) [Random Forest]
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
0.0 0.0
```
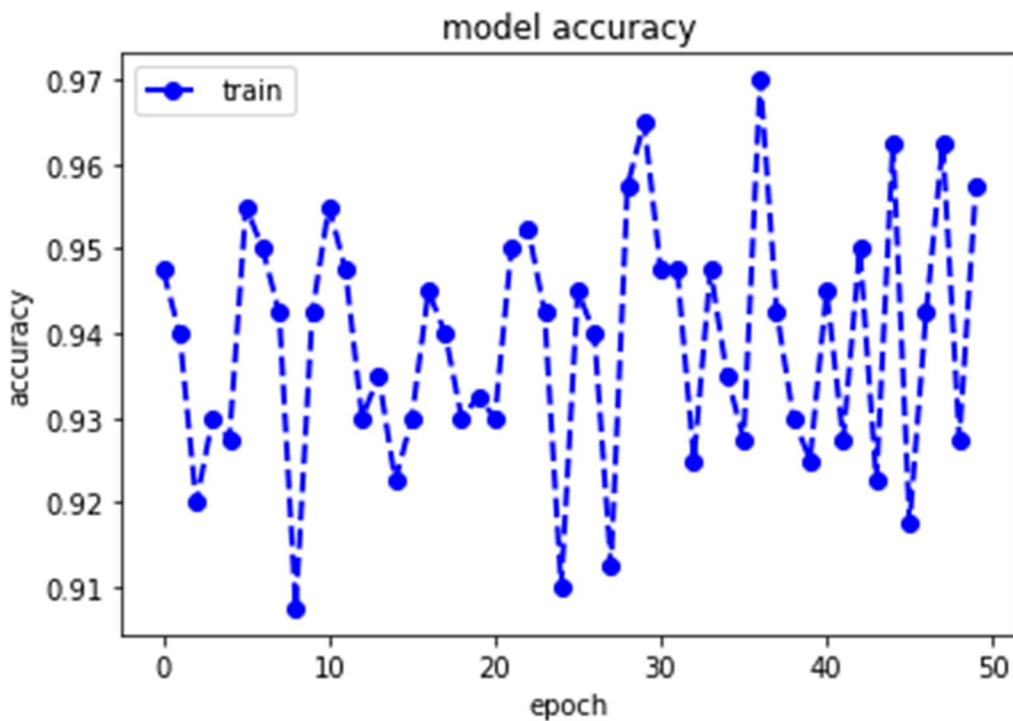
```
1.0 1.0
1.0 1.0
0.0 0.0
0.0 0.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
0.0 0.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
0.0 0.0
0.0 0.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
0.0 0.0
0.0 0.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
0.0 0.0
0.0 0.0
1.0 1.0
1.0 1.0
0.0 0.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
0.0 0.0
0.0 0.0
0.0 0.0
1.0 1.0
1.0 1.0
```

```
0.0 0.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
0.0 0.0
1.0 1.0
0.0 0.0
0.0 0.0
0.0 0.0
0.0 0.0
1.0 1.0
0.0 0.0
0.0 0.0
0.0 0.0
0.0 0.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
0.0 0.0
0.0 0.0
0.0 0.0
```

model accuracy

```
correct: 100
wrong: 0
Iteration 1, loss = inf
Validation score: 0.771500
Iteration 2, loss = inf
Validation score: 0.751000
Iteration 3, loss = inf
Validation score: 0.761000
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.725510
Iteration 2, loss = inf
Validation score: 0.745918
Iteration 3, loss = inf
Validation score: 0.743367
Iteration 4, loss = inf
Validation score: 0.731122
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.747449
Iteration 2, loss = inf
Validation score: 0.734184
Iteration 3, loss = inf
Validation score: 0.750000
Iteration 4, loss = inf
Validation score: 0.752041
Iteration 5, loss = inf
Validation score: 0.378571
Iteration 6, loss = inf
Validation score: 0.751531
```

Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.784694
Iteration 2, loss = inf
Validation score: 0.747959
Iteration 3, loss = inf
Validation score: 0.748980
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.755102
Iteration 2, loss = inf
Validation score: 0.377041
Iteration 3, loss = inf
Validation score: 0.750000
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.389796
Iteration 2, loss = inf
Validation score: 0.756122
Iteration 3, loss = inf
Validation score: 0.763265
Iteration 4, loss = inf
Validation score: 0.686735
Iteration 5, loss = inf
Validation score: 0.774490
Iteration 6, loss = inf
Validation score: 0.775510
Iteration 7, loss = inf
Validation score: 0.790816
Iteration 8, loss = inf
Validation score: 0.801531
Iteration 9, loss = inf
Validation score: 0.794388
Iteration 10, loss = inf
Validation score: 0.753061
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.744898
Iteration 2, loss = inf
Validation score: 0.781633
Iteration 3, loss = inf
Validation score: 0.781633
Iteration 4, loss = inf
Validation score: 0.785204
Iteration 5, loss = inf
Validation score: 0.741327
Iteration 6, loss = inf
Validation score: 0.795918
Iteration 7, loss = inf
Validation score: 0.742347
Iteration 8, loss = inf
Validation score: 0.743367

```
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.718367
Iteration 2, loss = inf
Validation score: 0.752551
Iteration 3, loss = inf
Validation score: 0.759184
Iteration 4, loss = inf
Validation score: 0.381633
Iteration 5, loss = inf
Validation score: 0.780102
Iteration 6, loss = inf
Validation score: 0.772449
Iteration 7, loss = inf
Validation score: 0.759694
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.719898
Iteration 2, loss = inf
Validation score: 0.774490
Iteration 3, loss = inf
Validation score: 0.435714
Iteration 4, loss = inf
Validation score: 0.749490
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.775000
Iteration 2, loss = inf
Validation score: 0.736224
Iteration 3, loss = inf
Validation score: 0.772959
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.707653
Iteration 2, loss = inf
Validation score: 0.773469
Iteration 3, loss = inf
Validation score: 0.764796
Iteration 4, loss = inf
Validation score: 0.716837
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.776020
Iteration 2, loss = inf
Validation score: 0.765816
Iteration 3, loss = inf
Validation score: 0.373469
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.729592
Iteration 2, loss = inf
```

```
Validation score: 0.791837
Iteration 3, loss = inf
Validation score: 0.738265
Iteration 4, loss = inf
Validation score: 0.713776
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.773980
Iteration 2, loss = inf
Validation score: 0.395918
Iteration 3, loss = inf
Validation score: 0.736735
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.726020
Iteration 2, loss = inf
Validation score: 0.726020
Iteration 3, loss = inf
Validation score: 0.782143
Iteration 4, loss = inf
Validation score: 0.755612
Iteration 5, loss = inf
Validation score: 0.774490
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.737755
Iteration 2, loss = inf
Validation score: 0.736224
Iteration 3, loss = inf
Validation score: 0.734694
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.763265
Iteration 2, loss = inf
Validation score: 0.759184
Iteration 3, loss = inf
Validation score: 0.749490
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.755612
Iteration 2, loss = inf
Validation score: 0.381633
Iteration 3, loss = inf
Validation score: 0.777551
Iteration 4, loss = inf
Validation score: 0.741837
Iteration 5, loss = inf
Validation score: 0.781633
Iteration 6, loss = inf
Validation score: 0.748980
Iteration 7, loss = inf
Validation score: 0.744898
```

```
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.721429
Iteration 2, loss = inf
Validation score: 0.735714
Iteration 3, loss = inf
Validation score: 0.741327
Iteration 4, loss = inf
Validation score: 0.817857
Iteration 5, loss = inf
Validation score: 0.741327
Iteration 6, loss = inf
Validation score: 0.755102
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.763776
Iteration 2, loss = inf
Validation score: 0.791327
Iteration 3, loss = inf
Validation score: 0.759184
Iteration 4, loss = inf
Validation score: 0.771429
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.780102
Iteration 2, loss = inf
Validation score: 0.739286
Iteration 3, loss = inf
Validation score: 0.765816
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.716837
Iteration 2, loss = inf
Validation score: 0.778061
Iteration 3, loss = inf
Validation score: 0.759184
Iteration 4, loss = inf
Validation score: 0.809694
Iteration 5, loss = inf
Validation score: 0.377551
Iteration 6, loss = inf
Validation score: 0.727041
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.804082
Iteration 2, loss = inf
Validation score: 0.744388
Iteration 3, loss = inf
Validation score: 0.743367
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
```

```
Validation score: 0.745918
Iteration 2, loss = inf
Validation score: 0.412755
Iteration 3, loss = inf
Validation score: 0.793367
Iteration 4, loss = inf
Validation score: 0.736224
Iteration 5, loss = inf
Validation score: 0.392857
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.772449
Iteration 2, loss = inf
Validation score: 0.748469
Iteration 3, loss = inf
Validation score: 0.760714
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.791327
Iteration 2, loss = inf
Validation score: 0.777551
Iteration 3, loss = inf
Validation score: 0.717857
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.742857
Iteration 2, loss = inf
Validation score: 0.779082
Iteration 3, loss = inf
Validation score: 0.771939
Iteration 4, loss = inf
Validation score: 0.762245
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.766327
Iteration 2, loss = inf
Validation score: 0.763265
Iteration 3, loss = inf
Validation score: 0.745918
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.423980
Iteration 2, loss = inf
Validation score: 0.754082
Iteration 3, loss = inf
Validation score: 0.782143
Iteration 4, loss = inf
Validation score: 0.750000
Iteration 5, loss = inf
Validation score: 0.754082
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
```

```
Iteration 1, loss = inf
Validation score: 0.624490
Iteration 2, loss = inf
Validation score: 0.732143
Iteration 3, loss = inf
Validation score: 0.743878
Iteration 4, loss = inf
Validation score: 0.791327
Iteration 5, loss = inf
Validation score: 0.774490
Iteration 6, loss = inf
Validation score: 0.776531
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.738776
Iteration 2, loss = inf
Validation score: 0.752041
Iteration 3, loss = inf
Validation score: 0.758163
Iteration 4, loss = inf
Validation score: 0.729592
Iteration 5, loss = inf
Validation score: 0.741837
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.375000
Iteration 2, loss = inf
Validation score: 0.392347
Iteration 3, loss = inf
Validation score: 0.749490
Iteration 4, loss = inf
Validation score: 0.778061
Iteration 5, loss = inf
Validation score: 0.767347
Iteration 6, loss = inf
Validation score: 0.749490
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.763776
Iteration 2, loss = inf
Validation score: 0.753571
Iteration 3, loss = inf
Validation score: 0.749490
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.746429
Iteration 2, loss = inf
Validation score: 0.741837
Iteration 3, loss = inf
Validation score: 0.759694
Iteration 4, loss = inf
Validation score: 0.801020
Iteration 5, loss = inf
```

```
Validation score: 0.400510
Iteration 6, loss = inf
Validation score: 0.769898
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.744388
Iteration 2, loss = inf
Validation score: 0.721939
Iteration 3, loss = inf
Validation score: 0.755102
Iteration 4, loss = inf
Validation score: 0.751020
Iteration 5, loss = inf
Validation score: 0.782653
Iteration 6, loss = inf
Validation score: 0.751531
Iteration 7, loss = inf
Validation score: 0.753061
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.744388
Iteration 2, loss = inf
Validation score: 0.731633
Iteration 3, loss = inf
Validation score: 0.719898
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.788265
Iteration 2, loss = inf
Validation score: 0.732143
Iteration 3, loss = inf
Validation score: 0.740816
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.728061
Iteration 2, loss = inf
Validation score: 0.736735
Iteration 3, loss = inf
Validation score: 0.411735
Iteration 4, loss = inf
Validation score: 0.416327
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.740816
Iteration 2, loss = inf
Validation score: 0.731122
Iteration 3, loss = inf
Validation score: 0.732143
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.783163
```
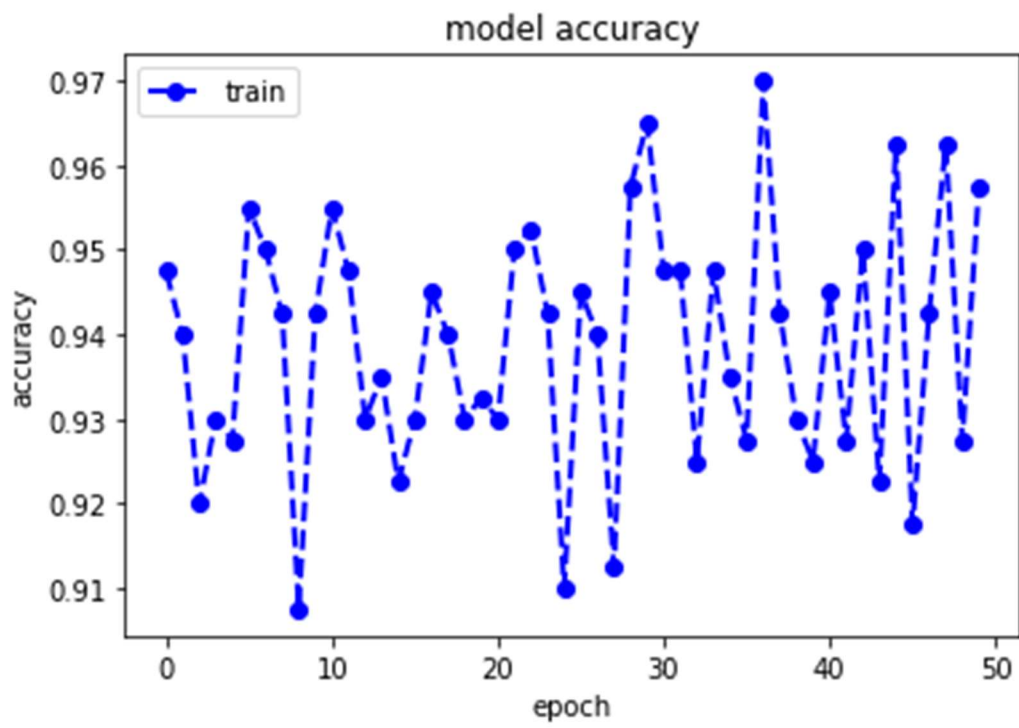
```
Iteration 2, loss = inf
Validation score: 0.742857
Iteration 3, loss = inf
Validation score: 0.764286
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.766837
Iteration 2, loss = inf
Validation score: 0.761735
Iteration 3, loss = inf
Validation score: 0.795408
Iteration 4, loss = inf
Validation score: 0.410714
Iteration 5, loss = inf
Validation score: 0.754592
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.776020
Iteration 2, loss = inf
Validation score: 0.727041
Iteration 3, loss = inf
Validation score: 0.762245
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.783673
Iteration 2, loss = inf
Validation score: 0.791327
Iteration 3, loss = inf
Validation score: 0.800510
Iteration 4, loss = inf
Validation score: 0.752041
Iteration 5, loss = inf
Validation score: 0.790816
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.752551
Iteration 2, loss = inf
Validation score: 0.737755
Iteration 3, loss = inf
Validation score: 0.768367
Iteration 4, loss = inf
Validation score: 0.788265
Iteration 5, loss = inf
Validation score: 0.740306
Iteration 6, loss = inf
Validation score: 0.730102
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.404082
Iteration 2, loss = inf
Validation score: 0.763776
Iteration 3, loss = inf
```

```
Validation score: 0.396429
Iteration 4, loss = inf
Validation score: 0.806122
Iteration 5, loss = inf
Validation score: 0.811735
Iteration 6, loss = inf
Validation score: 0.781633
Iteration 7, loss = inf
Validation score: 0.745918
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.740816
Iteration 2, loss = inf
Validation score: 0.380102
Iteration 3, loss = inf
Validation score: 0.785714
Iteration 4, loss = inf
Validation score: 0.779592
Iteration 5, loss = inf
Validation score: 0.750510
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.774490
Iteration 2, loss = inf
Validation score: 0.753061
Iteration 3, loss = inf
Validation score: 0.739796
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.789796
Iteration 2, loss = inf
Validation score: 0.751020
Iteration 3, loss = inf
Validation score: 0.788776
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.766837
Iteration 2, loss = inf
Validation score: 0.802551
Iteration 3, loss = inf
Validation score: 0.762245
Iteration 4, loss = inf
Validation score: 0.759694
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.723980
Iteration 2, loss = inf
Validation score: 0.733163
Iteration 3, loss = inf
Validation score: 0.792347
Iteration 4, loss = inf
Validation score: 0.740816
```

```
Iteration 5, loss = inf
Validation score: 0.746429
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Iteration 1, loss = inf
Validation score: 0.743367
Iteration 2, loss = inf
Validation score: 0.779592
Iteration 3, loss = inf
Validation score: 0.716327
Iteration 4, loss = inf
Validation score: 0.756633
Validation score did not improve more than tol=0.000000 for 1 consecutive
epochs. Stopping.
Accuracy: 0.94 (+/- 0.01) [StackingClassifier]
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
0.0 0.0
0.0 0.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
0.0 0.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
0.0 0.0
0.0 0.0
1.0 1.0
0.0 0.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
1.0 1.0
0.0 0.0
0.0 0.0
0.0 0.0
1.0 1.0
1.0 1.0
```

```
1.0  1.0
0.0  0.0
1.0  1.0
1.0  1.0
0.0  0.0
1.0  1.0
1.0  1.0
1.0  1.0
1.0  1.0
1.0  1.0
0.0  0.0
0.0  0.0
1.0  1.0
1.0  1.0
0.0  0.0
1.0  1.0
0.0  0.0
1.0  1.0
1.0  1.0
0.0  0.0
0.0  0.0
0.0  0.0
1.0  1.0
1.0  1.0
0.0  0.0
0.0  0.0
1.0  1.0
1.0  1.0
1.0  1.0
1.0  1.0
1.0  1.0
1.0  1.0
1.0  1.0
0.0  0.0
1.0  1.0
1.0  1.0
0.0  0.0
1.0  1.0
0.0  0.0
0.0  0.0
0.0  0.0
0.0  0.0
1.0  1.0
0.0  0.0
0.0  0.0
0.0  0.0
0.0  0.0
1.0  1.0
0.0  0.0
1.0  1.0
1.0  1.0
1.0  1.0
0.0  0.0
1.0  1.0
1.0  1.0
0.0  0.0
0.0  0.0
```

0.0 0.0

model accuracy

correct: 100
wrong: 0