

Data Modelling with Python

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Decision Tree Results.

Decision Tree:

Accuracy 0.764959
 Precision 0.799570
 Recall 0.764959
 F1 0.765208
 Cohen_Kappa 0.639004
 dtype: float64

0:00:19.331595

Using Test Set:

Decision Tree :

Accuracy = 0.7762233563494446

Cohen's Kappa = 0.6546537841204527

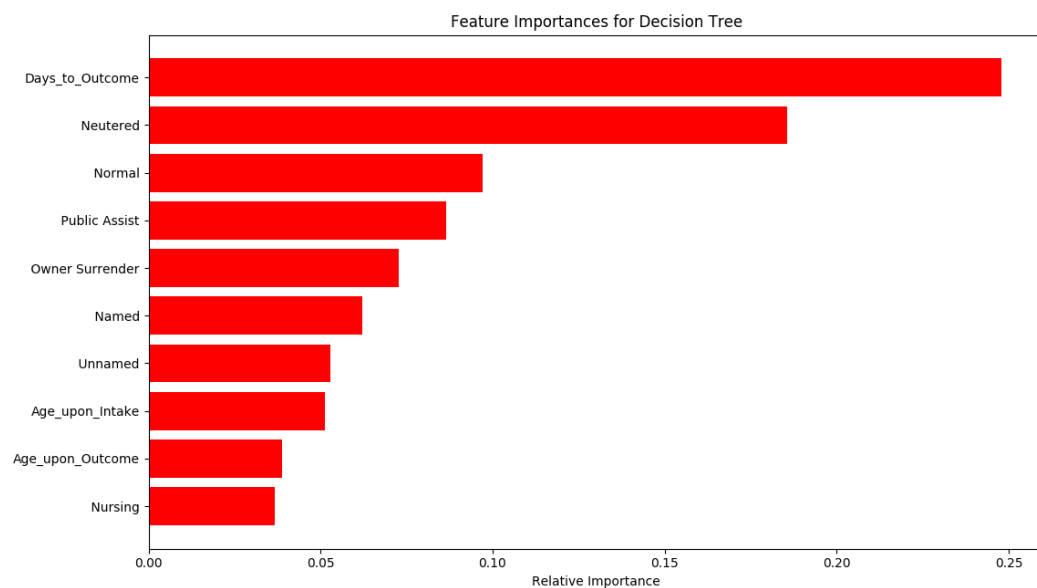
Confusion Matrix:

```
[[7051 191 102 270]
 [ 85 414 34 106]
 [ 420 140 2564 124]
 [1659 466 130 2899]]
```

	precision	recall	f1-score	support
Adoption	0.765165	0.926057	0.837958	7614
Euthanasia	0.341866	0.647887	0.447568	639
Return to Owner	0.906007	0.789409	0.843699	3248
Transfer	0.852898	0.562476	0.677891	5154
micro avg	0.776223	0.776223	0.776223	16655
macro avg	0.716484	0.731457	0.701779	16655
weighted avg	0.803541	0.776223	0.774566	16655

0:00:43.212589

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Random Forest Results.

```
Random Forest:
Accuracy      0.798763
Precision     0.796780
Recall        0.798763
F1            0.796015
Cohen_Kappa   0.688784
dtype: float64
```

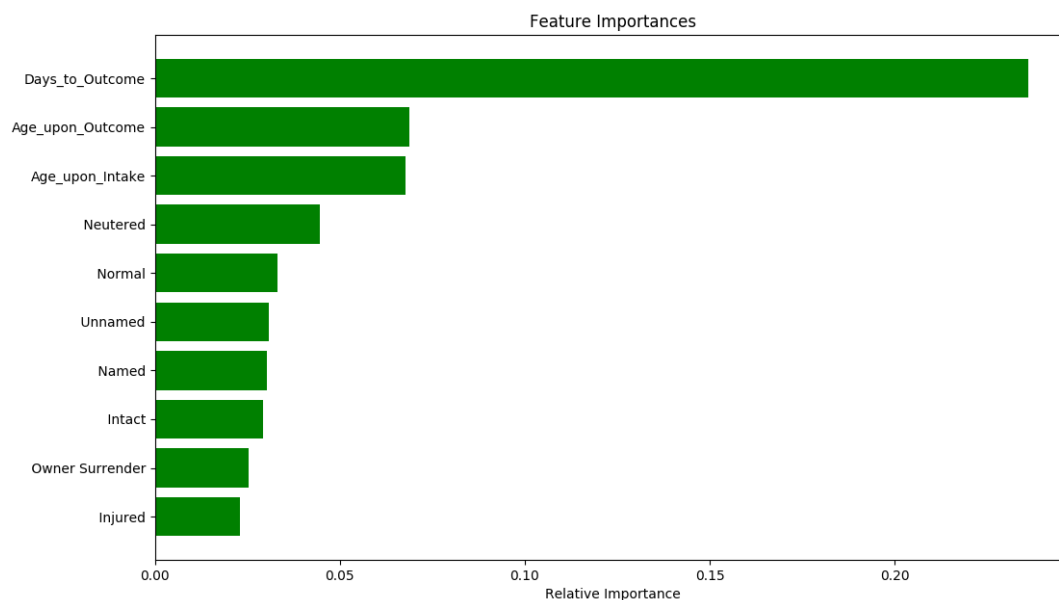
```
0:17:08.467347
```

```
Using Test Set:
Random Forest :
Accuracy = 0.7995196637646352
Cohen's Kappa = 0.6900528998584531
Confusion Matrix:
[[6679   30   229   676]
 [  74   335    68   162]
 [ 348    23 2691   186]
 [1229   122   192 3611]]
```

	precision	recall	f1-score	support
Adoption	0.801801	0.877200	0.837807	7614
Euthanasia	0.656863	0.524257	0.583116	639
Return to Owner	0.846226	0.828510	0.837274	3248
Transfer	0.779072	0.700621	0.737767	5154
micro avg	0.799520	0.799520	0.799520	16655
macro avg	0.770991	0.732647	0.748991	16655
weighted avg	0.797870	0.799520	0.796974	16655

```
0:19:10.811544
```

```
Dianas-MacBook-Pro-2:Capstone_Project Diana$ python3 modelling.py
```



XGBoost Results.

```
XGBoost:
Accuracy      0.799454
Precision     0.806845
Recall        0.799454
F1            0.799050
Cohen_Kappa   0.693388
dtype: float64
```

```
1:14:40.631426
```

```
Using Test Set:
```

```
XGBoost :
```

```
Accuracy = 0.8020414290003002
```

```
Cohen's Kappa = 0.6972133249608257
```

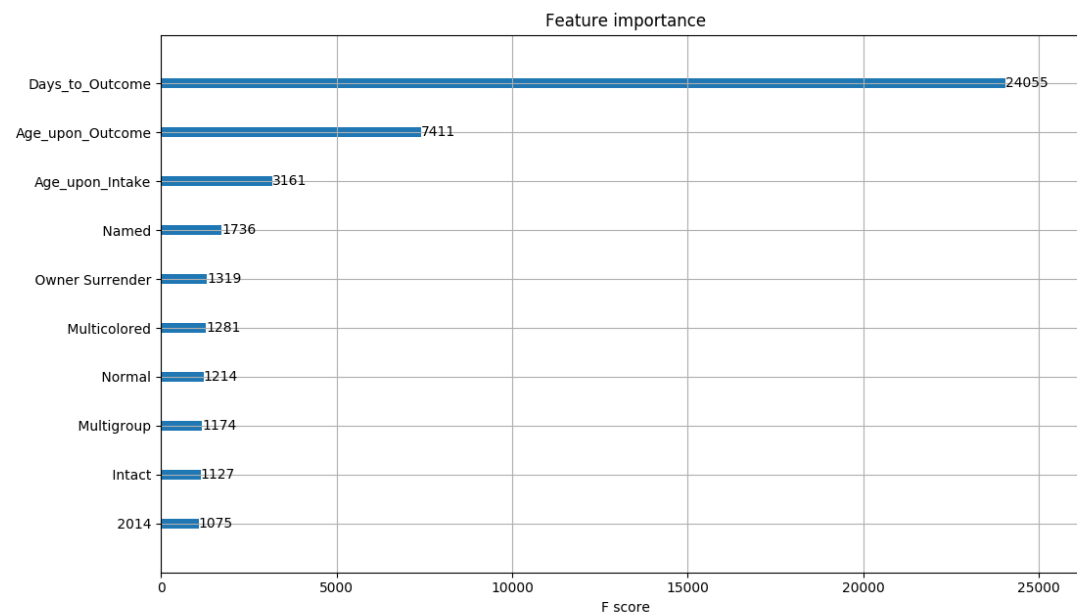
```
Confusion Matrix:
```

```
[[6792  147  205  470]
 [  50  425   55  109]
 [ 293   77 2733  145]
 [1242  313  191 3408]]
```

	precision	recall	f1-score	support
Adoption	0.810791	0.892041	0.849478	7614
Euthanasia	0.441788	0.665102	0.530918	639
Return to Owner	0.858354	0.841441	0.849813	3248
Transfer	0.824782	0.661234	0.734008	5154
micro avg	0.802041	0.802041	0.802041	16655
macro avg	0.733929	0.764954	0.741054	16655
weighted avg	0.810239	0.802041	0.801588	16655

```
1:22:35.378253
```

```
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```



Neural Network Results.

Neural Network:

Accuracy 0.762287
 Precision 0.788449
 Recall 0.762287
 F1 0.766613
 Cohen_Kappa 0.642252
 dtype: float64

0:04:36.021320

Using Test Set:

Neural Network :

Accuracy = 0.7615731011708196

Cohen's Kappa = 0.6409413430710281

Confusion Matrix:

[[6587 325 289 413]

[46 443 41 109]

[291 165 2659 133]

[1346 587 226 2995]]

	precision	recall	f1-score	support
Adoption	0.796493	0.865117	0.829388	7614
Euthanasia	0.291447	0.693271	0.410375	639
Return to Owner	0.827061	0.818658	0.822838	3248
Transfer	0.820548	0.581102	0.680373	5154
micro avg	0.761573	0.761573	0.761573	16655
macro avg	0.683887	0.739537	0.685743	16655
weighted avg	0.790521	0.761573	0.765921	16655

//

0:05:03.776408

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k-Nearest Neighbor Results.

K-Nearest Neighbors:

Accuracy 0.720707
 Precision 0.758818
 Recall 0.720707
 F1 0.727357
 Cohen_Kappa 0.589282
 dtype: float64

0:17:53.929032

Using Test Set:

K-Nearest Neighbors :

Accuracy = 0.7187030921645151

Cohen's Kappa = 0.586271666950364

Confusion Matrix:

```
[[5853  321  999  441]
 [   37  405   90  107]
 [  305  126 2713  104]
 [   974  514  667 2999]]
```

	precision	recall	f1-score	support
Adoption	0.816432	0.768716	0.791856	7614
Euthanasia	0.296486	0.633803	0.403990	639
Return to Owner	0.607071	0.835283	0.703123	3248
Transfer	0.821419	0.581878	0.681204	5154
micro avg	0.718703	0.718703	0.718703	16655
macro avg	0.635352	0.704920	0.645043	16655
weighted avg	0.757198	0.718703	0.725428	16655

//

0:22:10.468387

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