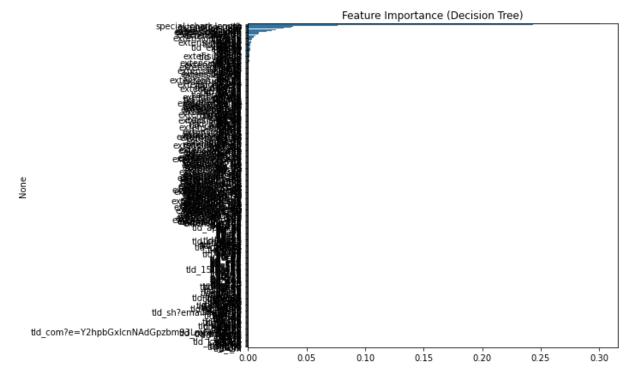```
In [1]: import pandas as pd
         from sklearn.model_selection import train_test_split
         from sklearn.preprocessing import LabelEncoder
         from sklearn.linear_model import LogisticRegression
         from sklearn.svm import SVC
         from sklearn.tree import DecisionTreeClassifier, export_text, plot_tree
         from sklearn.metrics import accuracy_score, f1_score
         import matplotlib.pyplot as plt
         import seaborn as sns

         # Загрузка данных
         df = pd.read_csv("filtered_dataset.csv")

         # Удалим столбец url (неинформативен для модели напрямую)
         df = df.drop(columns=["url","status","status_encoded"])

         # Кодирование категориальных признаков
         categorical_cols = ['tld', 'extension']
         df_encoded = pd.get_dummies(df, columns=categorical_cols, drop_first=True)

         # Разделение на признаки и целевую переменную
         X = df_encoded.drop("is_malicious", axis=1)
         y = df_encoded["is_malicious"]

         # Разделение на обучающую и тестовую выборки
         X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, ran
```

```
/home/lexcf/.local/lib/python3.10/site-packages/matplotlib/projections/__ini
t__.py:63: UserWarning: Unable to import Axes3D. This may be due to multiple
versions of Matplotlib being installed (e.g. as a system package and as a pi
p package). As a result, the 3D projection is not available.
  warnings.warn("Unable to import Axes3D. This may be due to multiple versio
ns of "
```

```
In [48]:  # Обучение моделей
```

```
In [2]:  # Логистическая регрессия
         print("Логистическая регрессия...")
         log_reg = LogisticRegression(max_iter=1000)
         log_reg.fit(X_train, y_train)

         print("SVM...")
         # SVM
         svm_model = SVC()
         svm_model.fit(X_train, y_train)

         print("Дерево решений...")
         # Дерево решений
         tree_model = DecisionTreeClassifier(random_state=42)
         tree_model.fit(X_train, y_train)

         print("OK")
```
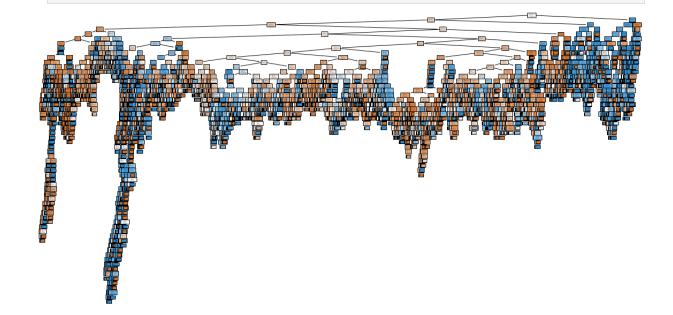
```
Логистическая регрессия...
SVM...
Дерево решений...
ОК
```

In [44]:
```python
# Сравнение моделей
```

In [50]:
```python
models = {
    "Logistic Regression": log_reg,
    "SVM": svm_model,
    "Decision Tree": tree_model
}

for name, model in models.items():
    y_pred = model.predict(X_test)
    acc = accuracy_score(y_test, y_pred)
    f1 = f1_score(y_test, y_pred)
    print(f"{name}: Accuracy = {acc:.2f}, F1-score = {f1:.2f}")
```

```
Logistic Regression: Accuracy = 0.76, F1-score = 0.75
SVM: Accuracy = 0.78, F1-score = 0.75
Decision Tree: Accuracy = 0.86, F1-score = 0.86
```

In [ ]:
```python
# Визуализация признаков в дереве решений
```

In [51]:
```python
importances = tree_model.feature_importances_
feat_importance = pd.Series(importances, index=X.columns).sort_values(ascend

plt.figure(figsize=(10, 6))
sns.barplot(x=feat_importance.values, y=feat_importance.index)
plt.title("Feature Importance (Decision Tree)")
plt.tight_layout()
plt.show()
```


Feature Importance (Decision Tree)

`# Визуализация дерева решений`

```python
plt.figure(figsize=(20, 10))
plot_tree(tree_model, feature_names=X.columns, class_names=["Safe", "Malicio
plt.show()
rules = export_text(tree_model, feature_names=list(X.columns))
print(rules)
```

```
|--- special_chars_count <= 0.32
|   |--- extension_.php <= 0.50
|   |   |--- special_chars_count <= -0.39
|   |   |   |--- extension_.com <= 0.50
|   |   |   |   |--- extension_.ru <= 0.50
|   |   |   |   |   |--- url_length <= -0.53
|   |   |   |   |   |   |--- tld_ly <= 0.50
|   |   |   |   |   |   |   |--- tld_xyz <= 0.50
|   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |--- extension_none <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- extension_.ma <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
2
|   |   |   |   |   |   |   |   |   |   |--- extension_.ma >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- extension_none >  0.50
|   |   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.43
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
3
|   |   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.43
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 3
8
|   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |--- tld_exposed <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- tld_app <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
7
|   |   |   |   |   |   |   |   |   |   |--- tld_app >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- tld_exposed >  0.50
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- tld_xyz >  0.50
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |--- tld_ly >  0.50
|   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |--- url_length >  -0.53
|   |   |   |   |   |   |--- tld_net <= 0.50
|   |   |   |   |   |   |   |--- extension_.html <= 0.50
|   |   |   |   |   |   |   |   |--- url_length <= -0.26
|   |   |   |   |   |   |   |   |   |--- tld_org <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- tld_com <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 9
|   |   |   |   |   |   |   |   |   |   |--- tld_com >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
1
|   |   |   |   |   |   |   |   |   |--- tld_org >  0.50
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.49
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 3
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.49
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |--- url_length >  -0.26
|   |   |   |   |   |   |   |   |   |--- tld_com <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- tld_com >  0.50
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.17
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 4
```

```
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.17
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 4
|   |   |   |   |   |   |   |   |--- extension_.html >  0.50
|   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- tld_net >  0.50
|   |   |   |   |   |   |   |   |--- url_length <= -0.46
|   |   |   |   |   |   |   |   |   |--- url_length <= -0.49
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- url_length >  -0.49
|   |   |   |   |   |   |   |   |   |   |--- extension_none <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |--- extension_none >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.43
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.43
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |--- url_length >  -0.46
|   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |--- extension_.ru >  0.50
|   |   |   |   |   |   |--- special_chars_count <= -0.43
|   |   |   |   |   |   |   |--- url_length <= -0.78
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- url_length >  -0.78
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |--- special_chars_count >  -0.43
|   |   |   |   |   |   |   |--- url_length <= -0.58
|   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- url_length >  -0.58
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |--- extension_.com >  0.50
|   |   |   |   |--- url_length <= -0.56
|   |   |   |   |   |--- special_chars_count <= -0.43
|   |   |   |   |   |   |--- special_chars_count <= -0.46
|   |   |   |   |   |   |   |--- url_length <= -0.77
|   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- url_length >  -0.77
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |--- special_chars_count >  -0.46
|   |   |   |   |   |   |   |--- url_length <= -0.65
|   |   |   |   |   |   |   |   |--- url_length <= -0.69
|   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.74
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.74
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.72
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.72
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |--- url_length >  -0.69
|   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.67
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.67
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
```

```
|   |   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.67
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.67
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |--- url_length >  -0.65
|   |   |   |   |   |   |   |   |   |--- url_length <= -0.62
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.63
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.63
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- url_length >  -0.62
|   |   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.58
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.58
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |--- special_chars_count >  -0.43
|   |   |   |   |   |   |   |--- url_length <= -0.69
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- url_length >  -0.69
|   |   |   |   |   |   |   |   |--- url_length <= -0.60
|   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |--- url_length >  -0.60
|   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.58
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.58
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |--- url_length >  -0.56
|   |   |   |   |   |--- special_chars_count <= -0.43
|   |   |   |   |   |   |--- url_length <= -0.42
|   |   |   |   |   |   |   |--- url_length <= -0.51
|   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.46
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.46
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.53
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.53
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |--- url_length <= -0.53
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.54
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.54
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- url_length >  -0.53
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |--- url_length >  -0.51
|   |   |   |   |   |   |   |--- url_length <= -0.49
|   |   |   |   |   |   |   |   |--- tls <= 0.50
```

```
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |--- url_length >  -0.49
|   |   |   |   |   |   |   |   |   |--- url_length <= -0.44
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.47
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.47
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 3
|   |   |   |   |   |   |   |   |   |--- url_length >  -0.44
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- url_length >  -0.42
|   |   |   |   |   |   |   |   |--- url_length <= -0.40
|   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |--- url_length >  -0.40
|   |   |   |   |   |   |   |   |   |--- url_length <= -0.22
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.31
|   |   |   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 4
|   |   |   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.31
|   |   |   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- url_length >  -0.22
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |--- special_chars_count >  -0.43
|   |   |   |   |   |   |   |--- url_length <= -0.41
|   |   |   |   |   |   |   |   |--- url_length <= -0.54
|   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |--- url_length >  -0.54
|   |   |   |   |   |   |   |   |   |--- url_length <= -0.53
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- url_length >  -0.53
|   |   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.49
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.49
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 3
|   |   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.49
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.49
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- url_length >  -0.41
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |--- special_chars_count >  -0.39
|   |   |   |   |--- tld_org <= 0.50
|   |   |   |   |   |--- tld_com <= 0.50
|   |   |   |   |   |   |--- extension_.pdf <= 0.50
|   |   |   |   |   |   |   |--- special_chars_count <= -0.36
|   |   |   |   |   |   |   |   |--- url_length <= -0.46
|   |   |   |   |   |   |   |   |   |--- tld_app <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.74
```

```
|   |   |   |   |   |   |   |   |   |   |--- tld_ua <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |   |   |--- tld_ua >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- url_length >  -0.74
|   |   |   |   |   |   |   |   |   |   |--- extension_none <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 7
|   |   |   |   |   |   |   |   |   |   |--- extension_none >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|
4
|   |   |   |   |   |   |   |   |   |--- tld_app >  0.50
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |--- url_length >  -0.46
|   |   |   |   |   |   |   |   |   |--- tld_br <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- tld_review <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 8
|   |   |   |   |   |   |   |   |   |   |   |--- tld_review >  0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- tld_net <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 7
|   |   |   |   |   |   |   |   |   |   |   |--- tld_net >  0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 4
|   |   |   |   |   |   |   |   |   |--- tld_br >  0.50
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.42
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.42
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.40
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.40
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- special_chars_count >  -0.36
|   |   |   |   |   |   |   |   |--- tld_edu <= 0.50
|   |   |   |   |   |   |   |   |   |--- tld_ru <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- tld_net <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- tld_gov <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 5
|
1
|   |   |   |   |   |   |   |   |   |   |   |--- tld_gov >  0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- tld_net >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.32
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 8
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.32
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
|
2
|   |   |   |   |   |   |   |   |--- tld_ru >  0.50
|   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.19
|   |   |   |   |   |   |   |   |   |   |--- extension_none <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 7
|   |   |   |   |   |   |   |   |   |   |--- extension_none >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 7
|   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.19
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.26
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 3
```

```
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.26
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 6
|   |   |   |   |   |   |   |   |--- tld_edu >  0.50
|   |   |   |   |   |   |   |   |   |--- url_length <= 0.25
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- url_length >  0.25
|   |   |   |   |   |   |   |   |   |   |--- url_length <= 0.32
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |--- url_length >  0.32
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |--- extension_.pdf >  0.50
|   |   |   |   |   |   |   |--- tld_cc <= 0.50
|   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- tld_cc >  0.50
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |--- tld_com >  0.50
|   |   |   |   |   |   |--- extension_.com <= 0.50
|   |   |   |   |   |   |   |--- url_length <= -0.08
|   |   |   |   |   |   |   |   |--- special_chars_count <= -0.02
|   |   |   |   |   |   |   |   |   |--- url_length <= -0.24
|   |   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.36
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.60
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 6
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.60
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
1
|   |   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.36
|   |   |   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
8
|   |   |   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
3
|   |   |   |   |   |   |   |   |   |--- url_length >  -0.24
|   |   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.29
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.12
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
1
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.12
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 7
|   |   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.29
|   |   |   |   |   |   |   |   |   |   |   |--- extension_.asp <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
5
|   |   |   |   |   |   |   |   |   |   |   |--- extension_.asp >  0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |--- special_chars_count >  -0.02
|   |   |   |   |   |   |   |   |   |--- extension_.asp <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.45
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.45
|   |   |   |   |   |   |   |   |   |   |   |--- extension_.pdf <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
4
|   |   |   |   |   |   |   |   |   |   |   |--- extension_.pdf >  0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
```

```
|   |   |   |   |   |   |   |   |--- extension_.asp >  0.50
|   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- url_length >  -0.08
|   |   |   |   |   |   |   |   |--- extension_.pdf <= 0.50
|   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.15
|   |   |   |   |   |   |   |   |   |   |--- extension_.htm <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- extension_.ico <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
4
|   |   |   |   |   |   |   |   |   |   |   |--- extension_.ico >  0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |--- extension_.htm >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= 0.22
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 9
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  0.22
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 3
|   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.15
|   |   |   |   |   |   |   |   |   |   |--- url_length <= 0.38
|   |   |   |   |   |   |   |   |   |   |   |--- special_chars_count <= 0.22
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
6
|   |   |   |   |   |   |   |   |   |   |   |--- special_chars_count >  0.22
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
5
|   |   |   |   |   |   |   |   |   |   |--- url_length >  0.38
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= 1.33
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
8
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  1.33
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |--- extension_.pdf >  0.50
|   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.19
|   |   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.19
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |--- extension_.com >  0.50
|   |   |   |   |   |   |   |--- url_length <= -0.25
|   |   |   |   |   |   |   |   |--- url_length <= -0.49
|   |   |   |   |   |   |   |   |   |--- url_length <= -0.63
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- url_length >  -0.63
|   |   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.53
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 5
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.53
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 5
|   |   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |--- url_length >  -0.49
|   |   |   |   |   |   |   |   |   |--- url_length <= -0.46
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- url_length >  -0.46
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.40
```

```
|   |   |   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.36
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.36
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.40
|   |   |   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.24
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 3
|   |   |   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.24
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |--- url_length >  -0.25
|   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |--- tld_org >  0.50
|   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |--- url_length <= -0.49
|   |   |   |   |   |   |   |--- url_length <= -0.51
|   |   |   |   |   |   |   |   |--- url_length <= -0.55
|   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |--- url_length >  -0.55
|   |   |   |   |   |   |   |   |   |--- url_length <= -0.53
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- url_length >  -0.53
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- url_length >  -0.51
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |--- url_length >  -0.49
|   |   |   |   |   |   |   |--- extension_.png <= 0.50
|   |   |   |   |   |   |   |   |--- extension_.pdf <= 0.50
|   |   |   |   |   |   |   |   |   |--- extension_.org <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.12
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.33
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 7
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.33
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 8
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.12
|   |   |   |   |   |   |   |   |   |   |   |--- extension_.htm <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 8
|   |   |   |   |   |   |   |   |   |   |   |--- extension_.htm >  0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 4
|   |   |   |   |   |   |   |   |   |--- extension_.org >  0.50
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |--- extension_.pdf >  0.50
|   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- extension_.png >  0.50
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |--- extension_.com <= 0.50
|   |   |   |   |   |   |   |--- extension_.htm <= 0.50
|   |   |   |   |   |   |   |   |--- extension_.br <= 0.50
|   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.32
|   |   |   |   |   |   |   |   |   |   |--- extension_.html <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.38
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 7
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.38
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- extension_.html >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.25
```

```
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.25
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |--- special_chars_count >  -0.32
|   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.29
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.21
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 3
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.21
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.29
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- extension_.br >  0.50
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |--- extension_.htm >  0.50
|   |   |   |   |   |   |   |--- url_length <= -0.14
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- url_length >  -0.14
|   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |--- extension_.com >  0.50
|   |   |   |   |   |   |--- class: 1
|   |--- extension_.php >  0.50
|   |   |--- url_length <= 0.04
|   |   |   |--- special_chars_count <= -0.09
|   |   |   |   |--- tld_org <= 0.50
|   |   |   |   |   |--- tld_ir <= 0.50
|   |   |   |   |   |   |--- tld_com <= 0.50
|   |   |   |   |   |   |   |--- tld_int <= 0.50
|   |   |   |   |   |   |   |   |--- tld_az <= 0.50
|   |   |   |   |   |   |   |   |   |--- url_length <= -0.03
|   |   |   |   |   |   |   |   |   |   |--- tld_ru <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 6
|   |   |   |   |   |   |   |   |   |   |--- tld_ru >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 4
|   |   |   |   |   |   |   |   |   |--- url_length >  -0.03
|   |   |   |   |   |   |   |   |   |   |--- tld_info <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |   |   |--- tld_info >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |--- tld_az >  0.50
|   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- tld_int >  0.50
|   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |--- tld_com >  0.50
|   |   |   |   |   |   |   |--- url_length <= -0.44
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- url_length >  -0.44
|   |   |   |   |   |   |   |   |--- url_length <= -0.42
|   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.36
|   |   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.39
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.39
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.36
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |--- url_length >  -0.42
|   |   |   |   |   |   |   |   |   |--- url_length <= -0.24
```

```
|   |   |   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.15
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 8
|   |   |   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.15
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.24
|   |   |   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.32
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 5
|   |   |   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.32
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
1
|   |   |   |   |   |--- tld_ir >  0.50
|   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |--- url_length <= -0.56
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- url_length >  -0.56
|   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |--- tld_org >  0.50
|   |   |   |   |   |   |--- special_chars_count <= -0.14
|   |   |   |   |   |   |   |--- url_length <= -0.30
|   |   |   |   |   |   |   |   |--- special_chars_count <= -0.34
|   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |--- special_chars_count >  -0.34
|   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- url_length >  -0.30
|   |   |   |   |   |   |   |   |--- url_length <= -0.01
|   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |--- url_length >  -0.01
|   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |--- special_chars_count >  -0.14
|   |   |   |   |   |   |   |--- class: 0
|   |   |   |--- special_chars_count >  -0.09
|   |   |   |   |--- tld_ru <= 0.50
|   |   |   |   |   |--- tld_com <= 0.50
|   |   |   |   |   |   |--- tld_info <= 0.50
|   |   |   |   |   |   |   |--- tld_uk <= 0.50
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- tld_uk >  0.50
|   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |--- tld_info >  0.50
|   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |--- tld_com >  0.50
|   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |--- special_chars_count <= -0.05
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- special_chars_count >  -0.05
|   |   |   |   |   |   |   |   |--- url_length <= -0.15
|   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |--- url_length >  -0.15
|   |   |   |   |   |   |   |   |   |--- url_length <= -0.04
|   |   |   |   |   |   |   |   |   |   |--- url_length <= -0.11
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |   |   |--- url_length >  -0.11
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- url_length >  -0.04
```

```
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |--- tld_ru >  0.50
|   |   |   |   |   |--- class: 0
|   |   |--- url_length >  0.04
|   |   |   |--- tld_media <= 0.50
|   |   |   |   |--- tld_com <= 0.50
|   |   |   |   |   |--- class: 1
|   |   |   |   |--- tld_com >  0.50
|   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |--- special_chars_count <= 0.15
|   |   |   |   |   |   |   |--- url_length <= 0.67
|   |   |   |   |   |   |   |   |--- special_chars_count <= -0.19
|   |   |   |   |   |   |   |   |   |--- special_chars_count <= -0.22
|   |   |   |   |   |   |   |   |   |   |--- url_length <= 0.09
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |   |   |--- url_length >  0.09
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 4
|   |   |   |   |   |   |   |   |   |--- special_chars_count >  -0.22
|   |   |   |   |   |   |   |   |   |   |--- url_length <= 0.10
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |--- url_length >  0.10
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 5
|   |   |   |   |   |   |   |   |--- special_chars_count >  -0.19
|   |   |   |   |   |   |   |   |   |--- special_chars_count <= 0.05
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- special_chars_count >  0.05
|   |   |   |   |   |   |   |   |   |   |--- special_chars_count <= 0.08
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |   |   |--- special_chars_count >  0.08
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- url_length >  0.67
|   |   |   |   |   |   |   |   |--- url_length <= 0.68
|   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |--- url_length >  0.68
|   |   |   |   |   |   |   |   |   |--- special_chars_count <= 0.02
|   |   |   |   |   |   |   |   |   |   |--- url_length <= 0.79
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |--- url_length >  0.79
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- special_chars_count >  0.02
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |--- special_chars_count >  0.15
|   |   |   |   |   |   |   |--- url_length <= 0.29
|   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- url_length >  0.29
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |--- special_chars_count <= -0.24
|   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |--- special_chars_count >  -0.24
|   |   |   |   |   |   |   |--- class: 1
|   |   |   |--- tld_media >  0.50
|   |   |   |   |--- class: 0
|--- special_chars_count >  0.32
```

```
|   |--- extension_.pdf <= 0.50
|   |   |--- special_chars_count <= 0.63
|   |   |   |--- extension_.php <= 0.50
|   |   |   |   |--- extension_.html <= 0.50
|   |   |   |   |   |--- extension_.aspx <= 0.50
|   |   |   |   |   |   |--- special_chars_count <= 0.36
|   |   |   |   |   |   |   |--- url_length <= 0.72
|   |   |   |   |   |   |   |   |--- tld_edu <= 0.50
|   |   |   |   |   |   |   |   |   |--- url_length <= 0.04
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- url_length >  0.04
|   |   |   |   |   |   |   |   |   |   |--- url_length <= 0.08
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- url_length >  0.08
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 7
|   |   |   |   |   |   |   |   |--- tld_edu >  0.50
|   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- url_length >  0.72
|   |   |   |   |   |   |   |   |--- url_length <= 0.96
|   |   |   |   |   |   |   |   |   |--- tld_org <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- url_length <= 0.74
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |   |   |--- url_length >  0.74
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- tld_org >  0.50
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |--- url_length >  0.96
|   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |--- url_length <= 1.05
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |--- url_length >  1.05
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |--- special_chars_count >  0.36
|   |   |   |   |   |   |   |--- url_length <= 0.08
|   |   |   |   |   |   |   |   |--- extension_none <= 0.50
|   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |--- extension_none >  0.50
|   |   |   |   |   |   |   |   |   |--- special_chars_count <= 0.53
|   |   |   |   |   |   |   |   |   |   |--- tld_net <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 6
|   |   |   |   |   |   |   |   |   |   |--- tld_net >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- special_chars_count >  0.53
|   |   |   |   |   |   |   |   |   |   |--- tld_net <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- tld_net >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- url_length >  0.08
|   |   |   |   |   |   |   |   |--- tld_ua <= 0.50
|   |   |   |   |   |   |   |   |   |--- tld_edu <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- extension_.asp <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
6
|   |   |   |   |   |   |   |   |   |   |--- extension_.asp >  0.50
```

```
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- tld_edu >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- tld_ua >  0.50
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |--- extension_.aspx >  0.50
|   |   |   |   |   |   |   |--- special_chars_count <= 0.54
|   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |--- special_chars_count >  0.54
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |--- extension_.html >  0.50
|   |   |   |   |   |   |--- url_length <= 0.47
|   |   |   |   |   |   |   |--- special_chars_count <= 0.58
|   |   |   |   |   |   |   |   |--- url_length <= 0.19
|   |   |   |   |   |   |   |   |   |--- url_length <= 0.14
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- url_length >  0.14
|   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |--- url_length >  0.19
|   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- special_chars_count >  0.58
|   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |--- url_length >  0.47
|   |   |   |   |   |   |   |--- tld_cn <= 0.50
|   |   |   |   |   |   |   |   |--- tld_tw <= 0.50
|   |   |   |   |   |   |   |   |   |--- url_length <= 1.03
|   |   |   |   |   |   |   |   |   |   |--- special_chars_count <= 0.54
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- special_chars_count >  0.54
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= 0.87
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  0.87
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- url_length >  1.03
|   |   |   |   |   |   |   |   |   |   |--- tld_hu <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- tld_my <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 4
|   |   |   |   |   |   |   |   |   |   |   |--- tld_my >  0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |--- tld_hu >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |--- tld_tw >  0.50
|   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- tld_cn >  0.50
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |--- extension_.php >  0.50
|   |   |   |   |--- tld_org <= 0.50
|   |   |   |   |   |--- class: 1
|   |   |   |   |--- tld_org >  0.50
|   |   |   |   |   |--- class: 0
|   |   |--- special_chars_count >  0.63
|   |   |   |--- extension_.cmap <= 0.50
|   |   |   |   |--- tld_uk <= 0.50
|   |   |   |   |   |--- url_length <= 8.55
|   |   |   |   |   |   |--- url_length <= 1.11
|   |   |   |   |   |   |   |--- extension_.htm <= 0.50
```

```
|   |   |   |   |   |   |   |   |   |--- tld_ru <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- tld_org <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- tld_com <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 4
|   |   |   |   |   |   |   |   |   |   |   |--- tld_com >  0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 1
2
|   |   |   |   |   |   |   |   |   |   |--- tld_org >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |--- tld_ru >  0.50
|   |   |   |   |   |   |   |   |   |   |--- extension_.html <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |--- extension_.html >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |--- extension_.htm >  0.50
|   |   |   |   |   |   |   |   |   |--- tld_kr <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- tld_de <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- tld_de >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- tld_kr >  0.50
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- url_length >  1.11
|   |   |   |   |   |   |   |   |--- tld_ru <= 0.50
|   |   |   |   |   |   |   |   |   |--- extension_.aspx <= 0.50
|   |   |   |   |   |   |   |   |   |   |--- extension_.com <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- special_chars_count <= 1.17
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 5
|   |   |   |   |   |   |   |   |   |   |   |--- special_chars_count >  1.17
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |--- extension_.com >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |   |--- extension_.aspx >  0.50
|   |   |   |   |   |   |   |   |   |   |--- tls <= 0.50
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- tls >  0.50
|   |   |   |   |   |   |   |   |   |   |   |--- url_length <= 2.26
|   |   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |   |   |--- url_length >  2.26
|   |   |   |   |   |   |   |   |   |   |   |   |--- truncated branch of depth 2
|   |   |   |   |   |   |   |   |--- tld_ru >  0.50
|   |   |   |   |   |   |   |   |   |--- special_chars_count <= 3.39
|   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |   |   |--- special_chars_count >  3.39
|   |   |   |   |   |   |   |   |   |   |--- url_length <= 3.44
|   |   |   |   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |   |   |   |   |--- url_length >  3.44
|   |   |   |   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |--- url_length >  8.55
|   |   |   |   |   |   |--- url_length <= 8.89
```

```
|   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |--- url_length >  8.89
|   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |--- tld_uk >  0.50
|   |   |   |   |   |--- special_chars_count <= 2.21
|   |   |   |   |   |   |--- url_length <= 0.97
|   |   |   |   |   |   |   |--- extension_.html <= 0.50
|   |   |   |   |   |   |   |   |--- class: 1
|   |   |   |   |   |   |   |--- extension_.html >  0.50
|   |   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |   |--- url_length >  0.97
|   |   |   |   |   |   |   |--- class: 0
|   |   |   |   |   |--- special_chars_count >  2.21
|   |   |   |   |   |   |--- class: 1
|   |   |   |--- extension_.cmap >  0.50
|   |   |   |   |--- class: 0
|   |--- extension_.pdf >  0.50
|   |   |--- special_chars_count <= 1.23
|   |   |   |--- class: 0
|   |   |--- special_chars_count >  1.23
|   |   |   |--- tld_com <= 0.50
|   |   |   |   |--- class: 0
|   |   |   |--- tld_com >  0.50
|   |   |   |   |--- class: 1
```

In [ ]: