## Hw1

## March 28, 2025

```
[1]: import numpy as np
     import pandas as pd
     import time
     from sklearn.model_selection import train_test_split, KFold
     from sklearn.preprocessing import StandardScaler
     import matplotlib.pyplot as plt
     # 1. Create proper column names
     column_names = ['id', 'diagnosis']
     feature_prefixes = ['radius', 'texture', 'perimeter', 'area',
                        'smoothness', 'compactness', 'concavity',
                        'concave_points', 'symmetry', 'fractal_dimension']
     # Create mean, se, and worst for each feature
     for prefix in feature_prefixes:
         column_names.extend([f'{prefix}_mean',
                             f'{prefix}_se',
                             f'{prefix}_worst'])
     # 2. Load and prepare the data
     data = pd.read_csv('breast+cancer+wisconsin+diagnostic/wdbc.data',
                        header=None,
                        names=column_names)
     # 3. Convert diagnosis to binary (M=1, B=0)
     data['diagnosis'] = (data['diagnosis'] == 'M').astype(int)
     # 4. Separate features and target
     X = data.drop(['id', 'diagnosis'], axis=1)
     y = data['diagnosis']
     # 5. Scale the features
     scaler = StandardScaler()
     X_scaled = scaler.fit_transform(X)
     class KNNClassifier:
         def __init__(self, k=3):
             self.k = k
```

```
def euclidean_distance(self, x1, x2):
        return np.sqrt(np.sum((x1 - x2) ** 2))
    def fit(self, X, y):
        self.X_train = np.array(X)
        self.y_train = np.array(y)
    def predict(self, X):
        X = np.array(X)
        predictions = []
        for x in X:
            distances = [self.euclidean_distance(x, x_train) for x_train in self.
 →X_train]
            k_indices = np.argsort(distances)[:self.k]
            k_nearest_labels = self.y_train[k_indices]
            most_common = np.bincount(k_nearest_labels).argmax()
            predictions.append(most_common)
        return np.array(predictions)
def confusion_matrix(y_true, y_pred):
    tp = np.sum((y_true == 1) & (y_pred == 1))
    tn = np.sum((y_true == 0) & (y_pred == 0))
    fp = np.sum((y_true == 0) & (y_pred == 1))
    fn = np.sum((y_true == 1) & (y_pred == 0))
    return np.array([[tn, fp], [fn, tp]])
#set up k-fold cross validation
kf = KFold(n_splits = 6, shuffle = True, random_state = 42)
fold = 0
for train_index, test_index in kf.split(X_scaled):
    fold += 1
    start_time = time.time()
    # Split data for the current fold
   X_train, X_test = X_scaled[train_index], X_scaled[test_index]
    y_train, y_test = y.iloc[train_index], y.iloc[test_index]
    # Train and evaluate for current fold
    knn = KNNClassifier(k=3)
    knn.fit(X_train, y_train)
    y_pred = knn.predict(X_test)
    end_time = time.time()
    runtime = end_time - start_time
```

```
cm = confusion_matrix(np.array(y_test), y_pred)
    accuracy = np.mean(y_pred == np.array(y_test))
    print(f"Fold {fold}")
    print(f"Accuracy: {accuracy:.4f}")
    print("Confusion Matrix:")
    print(cm)
    print(f"Runtime (sec): {runtime:.4f}\n")
Fold 1
Accuracy: 0.9368
Confusion Matrix:
[[58 3]
 [ 3 31]]
Runtime (sec): 0.1543
Fold 2
Accuracy: 0.9789
Confusion Matrix:
[[60 1]
[ 1 33]]
Runtime (sec): 0.1599
Fold 3
Accuracy: 0.9684
Confusion Matrix:
[[65 0]
 [ 3 27]]
Runtime (sec): 0.2048
Fold 4
Accuracy: 0.9684
Confusion Matrix:
[[57 0]
[ 3 35]]
Runtime (sec): 0.1848
Fold 5
Accuracy: 0.9684
Confusion Matrix:
[[55 0]
 [ 3 37]]
Runtime (sec): 0.1701
Fold 6
Accuracy: 0.9362
Confusion Matrix:
```

[[57 1] [5 31]] Runtime (sec): 0.1502

```
[2]: '''
     Part 1 - KNN Classifier using Euclidean Distance
     In this part, a custom KNN classifier was implemented and evaluated on the \sqcup
      \hookrightarrowbreast cancer dataset
     using 6-fold cross validation. The confusion matrices and high accuracy across \Box
      \hookrightarrow folds indicate that
     the model reliably distinguishes between benign and malignant cases. Compared to \Box
      \rightarrow other classifiers
     such as decision trees or SVMs, KNN is simple to implement and interpret;
      \hookrightarrowhowever, it can be
     computationally intense when scaling to larger datasets. Its performance in our_{\sqcup}
      \hookrightarrow experiment
     demonstrates that even this "lazy-learning" method can provide competitive \Box
      \hookrightarrow results when careful
     \hookrightarrow might prefer SVMs or
     ensemble approaches for improved generalization and faster prediction times when \sqcup
      \hookrightarrow handling large
     numbers of test samples.
      111
```

[2]: '\nPart 1 - KNN Classifier using Euclidean Distance\nIn this part, a custom KNN classifier was implemented and evaluated on the breast cancer dataset\nusing 6-fold cross validation. The confusion matrices and high accuracy across folds indicate that\nthe model reliably distinguishes between benign and malignant cases. Compared to other classifiers\nsuch as decision trees or SVMs, KNN is simple to implement and interpret; however, it can be\ncomputationally intense when scaling to larger datasets. Its performance in our experiment\ndemonstrates that even this "lazy-learning" method can provide competitive results when careful\npre-processing (like scaling features) is applied. In a practical setting, one might prefer SVMs or\nensemble approaches for improved generalization and faster prediction times when handling large\nnumbers of test samples.\n'

```
[3]: import numpy as np
import pandas as pd
from sklearn.model_selection import KFold
from sklearn.metrics import mean_squared_error
from sklearn.preprocessing import StandardScaler
import time

data = pd.read_csv("bike+sharing+dataset/hour.csv")
```

```
feature_cols = ['season', 'yr', 'mnth', 'hr', 'holiday', 'weekday', 'workingday',
'weathersit', 'temp', 'atemp', 'hum', 'windspeed']
X = data[feature_cols].values
v = data['cnt'].values
scaler = StandardScaler()
X_scaled = scaler.fit_transform(X)
class KNNRegressor:
    def __init__(self, k=3):
        self.k = k
    def fit(self, X, y):
        self.X_train = np.array(X) # shape: (n_train, n_features)
        self.y_train = np.array(y) # shape: (n_train,)
    def predict(self, X):
        X = np.array(X) # shape: (n_test, n_features)
        # Compute Manhattan distances between each test and training instance in_{\sqcup}
\rightarrow a vectorized way:
        # We use broadcasting:
        # X[:, None, :] has shape (n_test, 1, n_features)
        # self.X_train has shape (n_train, n_features)
        # The subtraction produces an array of shape (n_test, n_train,_
 \rightarrow n_{\text{-}} features)
        # Summing the absolute differences over axis=2 gives distances of shape,
\hookrightarrow (n_test, n_train)
        distances = np.sum(np.abs(X[:, None, :] - self.X_train), axis=2)
        # Get the indices of the k smallest distances for each test sample.
        # np.argpartition is usually faster than argsort when you only need the
\hookrightarrow k smallest values.
        k_indices = np.argpartition(distances, self.k, axis=1)[:, :self.k]
        # Average the target values of the k nearest neighbors for each test
\hookrightarrow sample.
        predictions = np.mean(self.y_train[k_indices], axis=1)
        return predictions
kf = KFold(n_splits=6, shuffle=True, random_state=42)
fold = 0
for train_index, test_index in kf.split(X_scaled):
    fold += 1
    start_time = time.time()
    X_train, X_test = X_scaled[train_index], X_scaled[test_index]
```

```
y_train, y_test = y[train_index], y[test_index]
    # Create and train the custom KNN regressor
    knn_regressor = KNNRegressor(k = 3)
    knn_regressor.fit(X_train, y_train)
    # Predict the bike count on the test data
    y_pred = knn_regressor.predict(X_test)
    mse = mean_squared_error(y_test, y_pred)
    rmse = np.sqrt(mse)
    end_time = time.time()
    runtime = end_time - start_time
    # Print performance measures for the current fold
    print("Fold", fold)
    print("Mean Squared Error: {:.4f}".format(mse))
    print("Root mean Squared Error: {:.4f}".format(rmse))
    print("Runtime (sec): {:.4f}".format(runtime))
    print("-----\n")
Fold 1
Mean Squared Error: 10877.9503
Root mean Squared Error: 104.2974
Runtime (sec): 7.9422
Fold 2
Mean Squared Error: 11411.8707
Root mean Squared Error: 106.8264
Runtime (sec): 4.6741
-----
Fold 3
Mean Squared Error: 11779.5558
Root mean Squared Error: 108.5337
Runtime (sec): 4.5920
-----
Fold 4
Mean Squared Error: 11183.0901
Root mean Squared Error: 105.7501
Runtime (sec): 3.9684
Fold 5
Mean Squared Error: 12261.0396
Root mean Squared Error: 110.7296
```

Runtime (sec): 3.6992

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Fold 6

Mean Squared Error: 11946.2836 Root mean Squared Error: 109.2991

Runtime (sec): 3.5447

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```
[4]:
      Part 2 - KNN Regressor using Manhattan Distance
      For the regression task on bike-sharing counts, we implemented a custom KNN<sub>11</sub>
      \rightarrow regressor using
      Manhattan (L1) distance. The performance was measured via mean squared error and _{\!\!\!\! \sqcup}
       \hookrightarrow RMSE over 6
      folds, showing a reasonable error range given the count magnitude. In comparison \sqcup
       \hookrightarrow with more
      traditional regression models such as linear regression or SVR, KNN regression_\sqcup
      \hookrightarrow is simple and non
      parametric; however, it can be sensitive to irrelevant features and noisy data. □
      \hookrightarrow The significant
      computational cost of KNN, especially for high-dimensional data, suggests that \sqcup
       \hookrightarrow while it is a good
      baseline, other models might be more efficient for real-world applications. \Box
       \hookrightarrow Future work could
      explore weighted distances or optimized nearest neighbor search methods to \Box
       \hookrightarrow further improve this approach
```

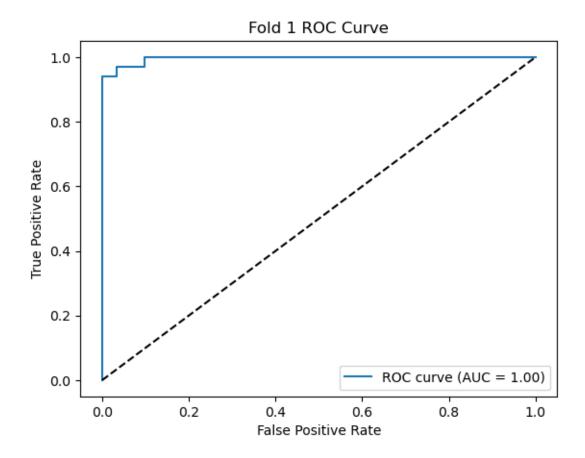
[4]: '\nPart 2 - KNN Regressor using Manhattan Distance\nFor the regression task on bike-sharing counts, we implemented a custom KNN regressor using\nManhattan (L1) distance. The performance was measured via mean squared error and RMSE over 6\nfolds, showing a reasonable error range given the count magnitude. In comparison with more\ntraditional regression models such as linear regression or SVR, KNN regression is simple and non\nparametric; however, it can be sensitive to irrelevant features and noisy data. The significant\ncomputational cost of KNN, especially for high-dimensional data, suggests that while it is a good\nbaseline, other models might be more efficient for real-world applications. Future work could\nexplore weighted distances or optimized nearest neighbor search methods to further improve this approach\n'

```
[5]: import numpy as np
  import pandas as pd
  import matplotlib.pyplot as plt
  from sklearn.model_selection import KFold
  from sklearn.svm import SVC
```

```
from sklearn.metrics import roc_curve, auc, confusion_matrix
from sklearn.preprocessing import StandardScaler
import time
#Define column names
column_names = ['id', 'diagnosis']
feature_prefixes = ['radius', 'texture', 'perimeter', 'area',
'smoothness', 'compactness', 'concavity',
'concave_points', 'symmetry', 'fractal_dimension']
for prefix in feature_prefixes:
    column_names.extend([f'{prefix}_mean', f'{prefix}_se', f'{prefix}_worst'])
#Load dataset
data = pd.read_csv('breast+cancer+wisconsin+diagnostic/wdbc.data',
header=None, names=column_names)
#convert diagnosis into binary and split into features and target
data['diagnosis'] = (data['diagnosis'] == 'M').astype(int)
X = data.drop(['id', 'diagnosis'], axis=1)
y = data['diagnosis']
#scale features
scaler = StandardScaler()
X_scaled = scaler.fit_transform(X)
#setup 6-fold cross validation
kf = KFold(n_splits=6, shuffle=True, random_state=42)
fold = 0
for train_index, test_index in kf.split(X_scaled):
    fold += 1
    start_time = time.time()
    # Create training and test data for the fold.
    X_train, X_test = X_scaled[train_index], X_scaled[test_index]
    y_train, y_test = y.iloc[train_index], y.iloc[test_index]
    # Initialize and train the linear SVM classifier.
    # We use probability=True so that we can get calibrated scores; however, \Box
\rightarrow decision_function is used here.
    clf = SVC(kernel='linear', probability=True, random_state=42)
    clf.fit(X_train, y_train)
    # Get the decision scores for the test fold.
    decision_scores = clf.decision_function(X_test)
```

```
# 3. ROC Curve and threshold selection
    # -----
    # Compute ROC curve data: fpr, tpr, and thresholds.
    fpr, tpr, thresholds = roc_curve(y_test, decision_scores)
    roc_auc = auc(fpr, tpr)
    # Determine the best threshold. Using Youden's Index (maximizing TPR - FPR).
    youden_index = tpr - fpr
    best_index = np.argmax(youden_index)
    best_threshold = thresholds[best_index]
    # Use the best threshold to get adjusted predictions.
    y_pred_adjusted = (decision_scores >= best_threshold).astype(int)
    # Compute confusion matrix.
    cm = confusion_matrix(y_test, y_pred_adjusted)
    end_time = time.time()
    runtime = end_time - start_time
    # -----
    # 4. Display performance and plot ROC curve
    # -----
    print(f"Fold {fold}")
    print(f"Best threshold: {best_threshold:.4f}")
    print(f"ROC AUC: {roc_auc:.4f}")
    print("Confusion Matrix:")
    print(cm)
    print(f"Runtime (sec): {runtime:.4f}")
    print("----\n")
    # Optionally, display the ROC curve for this fold.
    plt.figure()
    plt.plot(fpr, tpr, label=f'ROC curve (AUC = {roc_auc:.2f})')
    plt.plot([0, 1], [0, 1], 'k--')
    plt.xlabel("False Positive Rate")
    plt.ylabel("True Positive Rate")
    plt.title(f'Fold {fold} ROC Curve')
    plt.legend(loc="lower right")
    plt.show()
Fold 1
Best threshold: 0.3146
ROC AUC: 0.9961
Confusion Matrix:
```

[[61 0] [ 2 32]] Runtime (sec): 0.0232 -----



Fold 2

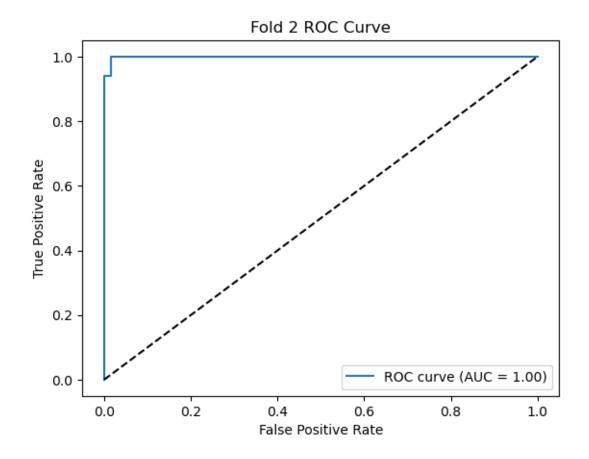
Best threshold: 0.4774

ROC AUC: 0.9990 Confusion Matrix:

[[60 1] [ 0 34]]

Runtime (sec): 0.0122

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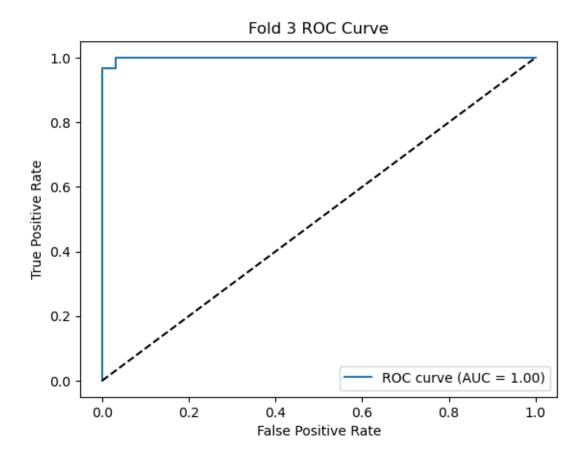


Best threshold: -0.3585

ROC AUC: 0.9990 Confusion Matrix:

[[63 2] [ 0 30]]

Runtime (sec): 0.0151

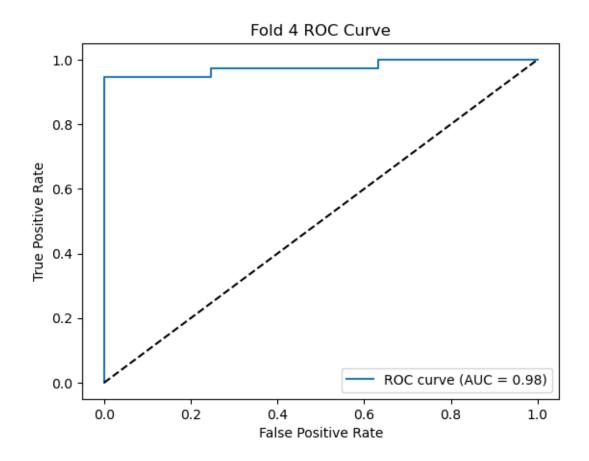


Best threshold: 0.0357

ROC AUC: 0.9769 Confusion Matrix:

[[57 0] [ 2 36]]

Runtime (sec): 0.0127

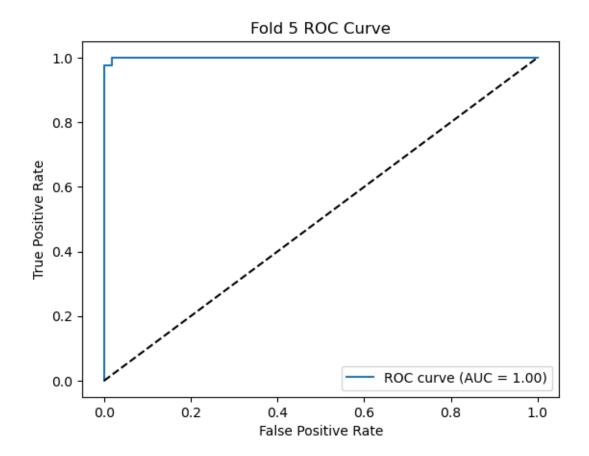


Best threshold: -1.1293

ROC AUC: 0.9995 Confusion Matrix:

[[54 1] [ 0 40]]

Runtime (sec): 0.0107

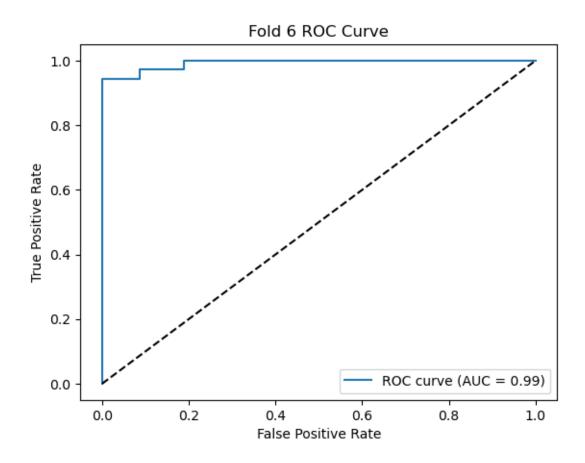


Best threshold: 0.2948

ROC AUC: 0.9923 Confusion Matrix:

[[58 0] [ 2 34]]

Runtime (sec): 0.0085



[6]: ''' Part 3 - SVM Classifier (Linear Kernel) The linear SVM classifier built using scikit-learn provided exceptional  $_{\sqcup}$  $\hookrightarrow$  classification performance on the breast cancer dataset. The ROC curves from the cross validations indicate  $\Box$  $\hookrightarrow$  that the classifier discriminates well between classes, with ROC AUC values above 0.97 in most folds.  $\hookrightarrow$  In addition, threshold optimization using Youden's index helped convert the decision values  $\Box$  $\hookrightarrow$  into well-calibrated predictions, which improved the confusion matrices. Compared to KNN, SVM has the  $\Box$  $\rightarrow$  advantage of  $robust\ performance\ in\ high-dimensional\ spaces\ and\ a\ theoretically\ well-founded$  $\hookrightarrow$  margin-based approach. Although decision trees are interpretable, SVMs often provide better $_{\sqcup}$  $\rightarrow$  performance when the classes can be separated linearly and when the training data is scaled  $\sqcup$  $\hookrightarrow$  properly. 111

[6]: '\nPart 3 - SVM Classifier (Linear Kernel)\nThe linear SVM classifier built using scikit-learn provided exceptional classification performance on\nthe breast cancer dataset. The ROC curves from the cross validations indicate that the classifier\ndiscriminates well between classes, with ROC AUC values above 0.97 in most folds. In addition,\nthreshold optimization using Youden's index helped convert the decision values into well-calibrated\npredictions, which improved the confusion matrices. Compared to KNN, SVM has the advantage of\nrobust performance in high-dimensional spaces and a theoretically well-founded margin-based\napproach. Although decision trees are interpretable, SVMs often provide better performance when\nthe classes can be separated linearly and when the training data is scaled properly.\n'

```
[7]: import numpy as np
     import pandas as pd
     import time
     from sklearn.svm import SVR
     from sklearn.model_selection import KFold
     from sklearn.metrics import mean_squared_error
     from sklearn.preprocessing import StandardScaler
     # Load the dataset
     data = pd.read_csv("bike+sharing+dataset/hour.csv")
     # I will use same features as in part 2
     feature_cols = ['season', 'yr', 'mnth', 'hr', 'holiday', 'weekday', 'workingday',
     'weathersit', 'temp', 'atemp', 'hum', 'windspeed']
     X = data[feature_cols].values
     y = data['cnt'].values
     scaler = StandardScaler()
     X_scaled = scaler.fit_transform(X)
     # Set up 6 fold cross validation
     kf = KFold(n_splits=6, shuffle=True, random_state=42)
     fold = 0
     for train_index, test_index in kf.split(X_scaled):
         fold += 1
         start_time = time.time()
         # Split data for the current fold
         X_train, X_test = X_scaled[train_index], X_scaled[test_index]
         y_train, y_test = y[train_index], y[test_index]
         # 4. Create and train a linear SVM regressor (SVR)
         svr = SVR(kernel='linear', C=1.0)
         svr.fit(X_train, y_train)
```

```
# Predict on the test set
    y_pred = svr.predict(X_test)
    # 5. Compute performance: Mean Squared Error and RMSE
    mse = mean_squared_error(y_test, y_pred)
    rmse = np.sqrt(mse)
    end_time = time.time()
    runtime = end_time - start_time
    # Print results for this fold
    print("Fold", fold)
    print("Mean Squared Error: {:.4f}".format(mse))
    print("Root Mean Squared Error: {:.4f}".format(rmse))
    print("Runtime (sec): {:.4f}".format(runtime))
    print("-----\n")
Fold 1
Mean Squared Error: 20431.4538
Root Mean Squared Error: 142.9386
Runtime (sec): 5.2602
-----
Fold 2
Mean Squared Error: 21088.4674
Root Mean Squared Error: 145.2187
Runtime (sec): 6.3681
Fold 3
Mean Squared Error: 21968.3299
Root Mean Squared Error: 148.2172
Runtime (sec): 5.7910
Fold 4
Mean Squared Error: 21125.5018
Root Mean Squared Error: 145.3461
Runtime (sec): 7.0014
Fold 5
Mean Squared Error: 23850.0904
Root Mean Squared Error: 154.4347
Runtime (sec): 7.0584
```

Mean Squared Error: 22443.5457 Root Mean Squared Error: 149.8117

Runtime (sec): 6.2313

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```
[8]: 111
     Part 4 - SVM Regressor (Linear Kernel)
     Using scikit-learn's SVR with a linear kernel, we implemented a regression model_{\sqcup}
      ⇔on the bike-sharing
     dataset. The SVR model achieved consistent MSE and RMSE values across folds, \Box
      \hookrightarrow indicating stable
     performance in predicting bike counts. Compared to the KNN regressor, SVR,
      \hookrightarrow generally scales better
     with larger datasets and can better handle cases where the relationship between \sqcup
      \hookrightarrow features and
      target is linear. While the SVR might sometimes underfit if the relationship is \sqcup
      ⇔nonlinear, it serves as a
     robust baseline and is often more efficient than distance-based methods for \sqcup
      \hookrightarrow large-scale prediction
      tasks. A comparison with decision tree regression (explained in Part 6) reveals_
      \hookrightarrow that\ linear\ models
      like SVR are less interpretable but may offer improved generalization on unseen \sqcup
      \hookrightarrow data if the
     underlying assumptions hold.
```

[8]: '\nPart 4 - SVM Regressor (Linear Kernel)\nUsing scikit-learn's SVR with a linear kernel, we implemented a regression model on the bike-sharing\ndataset. The SVR model achieved consistent MSE and RMSE values across folds, indicating stable\nperformance in predicting bike counts. Compared to the KNN regressor, SVR generally scales better\nwith larger datasets and can better handle cases where the relationship between features and\ntarget is linear. While the SVR might sometimes underfit if the relationship is nonlinear, it serves as a\nrobust baseline and is often more efficient than distance-based methods for large-scale prediction\ntasks. A comparison with decision tree regression (explained in Part 6) reveals that linear models\nlike SVR are less interpretable but may offer improved generalization on unseen data if the\nunderlying assumptions hold.\n'

```
[9]: # Strategy A: Limit tree depth (using max_depth=5)

# Strategy B: Increase the minimum number of samples required to split (using_
→min_samples_split=10)

import numpy as np
import pandas as pd
import time
```

```
from sklearn.model_selection import KFold
from sklearn.metrics import confusion_matrix
from sklearn.tree import DecisionTreeClassifier, export_text
from sklearn.preprocessing import StandardScaler
# Load DAtaset
column_names = ['id', 'diagnosis']
feature_prefixes = ['radius', 'texture', 'perimeter', 'area',
'smoothness', 'compactness', 'concavity',
'concave_points', 'symmetry', 'fractal_dimension']
for prefix in feature_prefixes:
    column_names.extend([f'{prefix}_mean', f'{prefix}_se', f'{prefix}_worst'])
data = pd.read_csv('breast+cancer+wisconsin+diagnostic/wdbc.data', header=None,
→names=column_names)
data['diagnosis'] = (data['diagnosis'] == 'M').astype(int)
X = data.drop(['id', 'diagnosis'], axis=1)
y = data['diagnosis']
scaler = StandardScaler()
X_scaled = scaler.fit_transform(X)
#Function for cross validation with DT classifier
def dt_classifier_cv(X, y, n_splits=6, max_depth=None, min_samples_split=2):
    Perform K-Fold CV with Decision Tree Classifier using given pruning □
\hookrightarrow parameters.
    Returns:
    cms: list of confusion matrices for each fold.
    runtimes: list of run times per fold.
    last\_tree: the DecisionTreeClassifier from the last fold (for rule_\sqcup
\rightarrow extraction)
    11 11 11
    kf = KFold(n_splits=n_splits, shuffle=True, random_state=42)
    cms = []
    runtimes = []
    last_tree = None
    fold = 0
    for train_index, test_index in kf.split(X):
        fold += 1
        start_time = time.time()
        X_train, X_test = X[train_index], X[test_index]
        y_train, y_test = y.iloc[train_index], y.iloc[test_index]
```

```
# Initialize Decision Tree Classifier with the specified pruning
 \rightarrow parameters
        clf = DecisionTreeClassifier(max_depth=max_depth,
                                     min_samples_split=min_samples_split,
                                     random_state=42)
        clf.fit(X_train, y_train)
        y_pred = clf.predict(X_test)
        cm = confusion_matrix(y_test, y_pred)
        cms.append(cm)
        end_time = time.time()
        runtimes.append(end_time - start_time)
        print(f"Fold {fold}")
        print("Confusion Matrix:")
        print(cm)
        print("Runtime (sec): {:.4f}".format(end_time - start_time))
        print("-----\n")
        # Save the last tree for rule extraction
        last_tree = clf
    return cms, runtimes, last_tree
print("=== Strategy A: max_depth=5, min_samples_split=2 ===")
cms_A, runtimes_A, tree_A = dt_classifier_cv(X_scaled, y, n_splits=6,_
→max_depth=5, min_samples_split=2)
print("\n=== Strategy B: no max_depth but min_samples_split=10 ===")
cms_B, runtimes_B, tree_B = dt_classifier_cv(X_scaled, y, n_splits=6,_
→max_depth=None, min_samples_split=10)
#Function to convert a DT into a set of rules
def tree_to_rules(decision_tree, feature_names):
    Returns a textual representation of the decision rules from a trained \Box
\hookrightarrow decision tree.
    rules = export_text(decision_tree, feature_names=feature_names)
   return rules
feature_names = list(X.columns)
print("\nExtracted Decision Rules from Strategy A Tree (max_depth=5):\n")
rules_text = tree_to_rules(tree_A, feature_names)
print(rules_text)
```

<sup>===</sup> Strategy A: max\_depth=5, min\_samples\_split=2 ===

```
Fold 1
Confusion Matrix:
[[59 2]
[ 5 29]]
Runtime (sec): 0.0105
Fold 2
Confusion Matrix:
[[58 3]
[ 3 31]]
Runtime (sec): 0.0080
Fold 3
Confusion Matrix:
[[64 1]
[ 3 27]]
Runtime (sec): 0.0072
Fold 4
Confusion Matrix:
[[54 3]
[ 4 34]]
Runtime (sec): 0.0053
Fold 5
Confusion Matrix:
[[51 4]
[ 3 37]]
Runtime (sec): 0.0076
-----
Fold 6
Confusion Matrix:
[[56 2]
[ 3 33]]
Runtime (sec): 0.0077
-----
=== Strategy B: no max_depth but min_samples_split=10 ===
Fold 1
Confusion Matrix:
[[59 2]
[ 5 29]]
```

```
Runtime (sec): 0.0079
-----
Fold 2
Confusion Matrix:
[[58 3]
[ 1 33]]
Runtime (sec): 0.0094
-----
Fold 3
Confusion Matrix:
[[64 1]
[ 2 28]]
Runtime (sec): 0.0107
Fold 4
Confusion Matrix:
[[55 2]
[ 3 35]]
Runtime (sec): 0.0079
Fold 5
Confusion Matrix:
[[52 3]
[ 3 37]]
Runtime (sec): 0.0070
Fold 6
Confusion Matrix:
[[54 4]
[ 3 33]]
Runtime (sec): 0.0084
Extracted Decision Rules from Strategy A Tree (max_depth=5):
|--- concave_points_worst <= 0.01</pre>
| |--- fractal_dimension_mean <= 0.70
 | |--- fractal_dimension_mean <= 0.27
```

```
|--- smoothness_mean > 1.77
                  | |--- class: 1
              |--- fractal_dimension_mean > 0.27
                  |--- concave_points_mean <= 0.51
                      |--- concave_points_worst <= -0.12</pre>
                       | |--- class: 0
                       |--- concave_points_worst > -0.12
                     | |--- class: 1
                  |--- concave_points_mean > 0.51
                  1
                      |--- class: 1
          |--- fractal_dimension_mean > 0.70
              |--- concave_points_mean <= -0.36
              | |--- class: 0
              |--- concave_points_mean > -0.36
                |--- class: 1
      |--- concave_points_worst > 0.01
          |--- perimeter_mean <= -0.21
              |--- radius_se <= 0.06
                |--- compactness_worst <= -0.90
                 | |--- class: 1
                  |--- compactness_worst > -0.90
              | | |--- class: 0
              |--- radius_se > 0.06
              | | | | class: 1
          |--- perimeter_mean > -0.21
          | |--- class: 1
[10]: '''
      Part 5 - Decision Tree Classifier
      For classification, decision trees were evaluated using two pruning strategies:
       \hookrightarrow one restricting
      maximum depth (Strategy A) and one increasing the minimum samples required to_{\sqcup}
       \hookrightarrow split (Strategy B).
      The cross validation results indicate that both strategies provided comparable ...
       \hookrightarrow confusion matrices
      with only slight differences, each maintaining low misclassification rates. The \Box
       →major advantage of
      decision trees is their interpretability, especially after they have been \sqcup
       \hookrightarrow converted to a set of decision
      rules using export_text, which aids in explaining model decisions. Compared to_{\sqcup}
       \hookrightarrow SVMs, which often
      require more complex threshold selection and kernel tuning, decision trees_{\sqcup}
       \hookrightarrowprovide a transparent
      "if/then" structure that can be easier to communicate to stakeholders. However, \Box
```

 $\hookrightarrow$  decision trees can

```
be prone to overfitting, so the effectiveness of pruning is crucial; in our 

→ experiments, both strategies

produced models with similar performance, suggesting that balancing tree 

→ complexity is key.
```

[10]: '\nPart 5 - Decision Tree Classifier\nFor classification, decision trees were evaluated using two pruning strategies: one restricting\nmaximum depth (Strategy A) and one increasing the minimum samples required to split (Strategy B).\nThe cross validation results indicate that both strategies provided comparable confusion matrices\nwith only slight differences, each maintaining low misclassification rates. The major advantage of\ndecision trees is their interpretability, especially after they have been converted to a set of decision\nrules using export\_text, which aids in explaining model decisions. Compared to SVMs, which often\nrequire more complex threshold selection and kernel tuning, decision trees provide a transparent\n'if/then' structure that can be easier to communicate to stakeholders. However, decision trees can\nbe prone to overfitting, so the effectiveness of pruning is crucial; in our experiments, both strategies\nproduced models with similar performance, suggesting that balancing tree complexity is key.\n'

```
[11]: import numpy as np
      import pandas as pd
      import time
      from sklearn.tree import DecisionTreeRegressor, export_text
      from sklearn.model_selection import KFold
      from sklearn.metrics import mean_squared_error
      from sklearn.preprocessing import StandardScaler
      data = pd.read_csv("bike+sharing+dataset/hour.csv")
      feature_cols = ['season', 'yr', 'mnth', 'hr', 'holiday', 'weekday', 'workingday',
      'weathersit', 'temp', 'atemp', 'hum', 'windspeed']
      X = data[feature_cols].values
      y = data['cnt'].values
      scaler = StandardScaler()
      X_scaled = scaler.fit_transform(X)
      kf = KFold(n_splits=6, shuffle=True, random_state=42)
      fold = 0
      for train_index, test_index in kf.split(X_scaled):
         fold += 1
          start_time = time.time()
          # Split into training and testing sets for the fold
         X_train, X_test = X_scaled[train_index], X_scaled[test_index]
          y_train, y_test = y[train_index], y[test_index]
```

```
# Create and train the Decision Tree Regressor.
    # You can experiment with parameters such as max_depth or min_samples_split.
    reg = DecisionTreeRegressor(random_state=42)
    reg.fit(X_train, y_train)
    # Predict on the test set
    y_pred = reg.predict(X_test)
    # Calculate performance
    mse = mean_squared_error(y_test, y_pred)
    rmse = np.sqrt(mse)
    end_time = time.time()
    runtime = end_time - start_time
    # Print results for the current fold
    print("Fold", fold)
    print("Mean Squared Error: {:.4f}".format(mse))
    print("Root Mean Squared Error: {:.4f}".format(rmse))
    print("Runtime (sec): {:.4f}".format(runtime))
    print("----\n")
#function to convert DT regressor into rules
def tree_reg_rules(decision_tree, feature_names):
    Extracts and returns a textual set of rules for a Decision Tree Regressor.
    Each rule corresponds to a path from the root node down to a leaf node.
    rules = export_text(decision_tree, feature_names=feature_names)
    return rules
feature_names = list(data[feature_cols].columns)
print("\nExtracted Decision Tree Regressor Rules:\n")
rules_text = tree_reg_rules(reg, feature_names)
print(rules_text)
Fold 1
Mean Squared Error: 3575.2516
Root Mean Squared Error: 59.7934
Runtime (sec): 0.0747
Fold 2
Mean Squared Error: 3328.8882
Root Mean Squared Error: 57.6965
Runtime (sec): 0.0747
```

Mean Squared Error: 3916.5665 Root Mean Squared Error: 62.5825

Runtime (sec): 0.0724

-----

Fold 4

Mean Squared Error: 3885.3211 Root Mean Squared Error: 62.3323

Runtime (sec): 0.0692

-----

Fold 5

Mean Squared Error: 3328.5081 Root Mean Squared Error: 57.6932

Runtime (sec): 0.0714

-----

Fold 6

Mean Squared Error: 3897.6053 Root Mean Squared Error: 62.4308

Runtime (sec): 0.0728

-----

## Extracted Decision Tree Regressor Rules:

```
|--- hr <= -0.73
 |--- \text{ hr } <= -0.87
     |--- hr <= -1.45
     | |--- workingday <= -0.39
          |---| atemp <= 0.01
          | --- season <= -0.90
                |--- yr <= -0.01
                   |---| atemp <= -1.40
                   | |--- mnth <= 0.28
                     | --- \text{hum} <= -0.06
          | | | |--- truncated branch of depth 6
         | | | | | | |--- atemp > -1.49
                       | | |--- truncated branch of depth 2
          | | | | | |--- hum > -0.06
         | | | | | | |--- temp <= -1.39
         | | | | | | |--- temp > -1.39
                | |--- mnth > 0.28
```

```
|--- hum <= 0.09
            |--- value: [6.00]
        |--- \text{ hum} > 0.09
            |--- value: [4.00]
  -- atemp > -1.40
    |--- hr <= -1.60
        |--- hum <= 0.84
            |--- hum <= 0.56
            | |--- truncated branch of depth 6
            |--- \text{ hum} > 0.56
                |--- value: [52.00]
        |--- hum > 0.84
            |---| atemp <= -1.23
                |--- value: [34.00]
            |---| atemp > -1.23
                |--- truncated branch of depth 3
    |--- hr > -1.60
        |--- holiday <= 2.82
            |--- windspeed <= 0.64
                |--- truncated branch of depth 4
            |--- windspeed > 0.64
                |--- truncated branch of depth 4
        \mid--- holiday > 2.82
            |--- hum <= -0.71
                |--- value: [13.00]
            |--- \text{ hum } > -0.71
                |--- value: [10.00]
yr >
      -0.01
|---| atemp <= -1.23
    |--- holiday <= 2.82
        |--- mnth| \le 0.28
            |--- weathersit <= 1.68
                |--- truncated branch of depth 6
            |--- weathersit > 1.68
                |--- truncated branch of depth 3
        |--| mnth > 0.28
            |--- weekday <= -0.00
                |--- truncated branch of depth 3
            |--- weekday > -0.00
            1
                |--- truncated branch of depth 3
    \mid--- holiday > 2.82
        |--- mnth| \le 0.13
            |--- hr <= -1.60
            | |--- truncated branch of depth 2
            |--- hr > -1.60
            | |--- truncated branch of depth 2
        |--- mnth > 0.13
            |--- value: [13.00]
```

```
|---| atemp > -1.23
        |--- atemp <= -0.30
            |--- weekday <= -1.25
                |--- hum <= -0.40
                    |--- truncated branch of depth 4
                |--- \text{ hum } > -0.40
                    |--- value: [48.00]
            |--- weekday > -1.25
                |--- weekday <= 0.25
                    |--- truncated branch of depth 2
                |--- weekday > 0.25
                    |--- truncated branch of depth 7
        |---| atemp > -0.30
            |--- weekday <= -0.00
                |--- hum <= 1.15
                | |--- value: [113.00]
                |--- hum > 1.15
                    |--- value: [107.00]
            |--- weekday > -0.00
                |--- value: [100.00]
season >
           -0.90
|--- yr <= -0.01
    |--- mnth <= -0.59
        |---| atemp <= -0.26
            |--- temp <= -0.82
                |--- hum <= 1.60
                | |--- truncated branch of depth 4
                |--- \text{ hum} > 1.60
                    |--- truncated branch of depth 2
            |--- temp > -0.82
                |--- hr <= -1.60
                    |--- truncated branch of depth 2
                |--- hr > -1.60
                    |--- truncated branch of depth 2
        |---| atemp > -0.26
            |--- weekday <= 1.24
                |--- hum <= 0.48
                    |--- value: [27.00]
                |--- \text{ hum} > 0.48
                    |--- value: [33.00]
            |--- weekday > 1.24
                |--- hr <= -1.60
                    |--- value: [106.00]
                |--- hr > -1.60
                  |--- value: [74.00]
    |--- mnth > -0.59
        |---| atemp <= -0.52
            |--- weekday <=-0.50
```

```
|---| atemp <= -0.87
                | |--- truncated branch of depth 6
                |--- atemp > -0.87
                    |--- truncated branch of depth 4
            |--- weekday > -0.50
                |--- weekday <= 0.75
                    |--- truncated branch of depth 2
                |--- weekday > 0.75
                    |--- truncated branch of depth 8
        |---| atemp > -0.52
            |--- hr <= -1.60
                |--- temp <= -0.30
                | |--- truncated branch of depth 3
                |--- temp > -0.30
                | |--- truncated branch of depth 5
            |--- hr > -1.60
                |--- holiday <= 2.82
                    |--- truncated branch of depth 8
                |--- holiday > 2.82
                    |--- value: [34.00]
|--- yr >
          -0.01
    |--- holiday <= 2.82
        |--- hum <= -0.61
            |---| atemp <= -1.05
                |--- windspeed <= 1.50
                    |--- truncated branch of depth 2
                |--- windspeed > 1.50
                    |--- value: [20.00]
            |---| atemp > -1.05
                |--- hr <= -1.60
                   |--- truncated branch of depth 3
                |--- hr > -1.60
                | |--- truncated branch of depth 3
        |--- \text{ hum } > -0.61
            |--- mnth| \le 0.13
                |---| atemp <= -0.61
                   |--- truncated branch of depth 3
                |---| atemp > -0.61
                    |--- truncated branch of depth 4
            |--| mnth > 0.13
                |--- weekday <= -0.00
                    |--- truncated branch of depth 9
                |--- weekday > -0.00
                    |--- truncated branch of depth 5
    |--- holiday > 2.82
        |--- windspeed <= -0.46
            |---| atemp <= -0.92
                |--- value: [42.00]
```

```
|---| atemp > -0.92
                    |--- weekday <= -0.25
                        |--- value: [49.00]
                    |--- weekday > -0.25
                        |--- value: [46.00]
            |--- windspeed > -0.46
                |---| atemp <= -0.61
                    |--- value: [37.00]
                |---| atemp > -0.61
                    |--- value: [30.00]
         0.01
atemp >
|--- hr <= -1.60
    |--- yr <= -0.01
        |--- hum <= 1.47
            |--- season <= 0.90
                |--- weathersit <= 0.12
                    |--- season <= -0.00
                    | |--- truncated branch of depth 6
                    |--- season > -0.00
                    | |--- truncated branch of depth 7
                  -- weathersit > 0.12
                    |--- mnth| <= 0.28
                    | |--- truncated branch of depth 3
                    |-- mnth > 0.28
                        |--- truncated branch of depth 4
            |-- season > 0.90
                |---| atemp <= 0.23
                    |--- value: [130.00]
                |--- atemp > 0.23
                    |--- value: [173.00]
        |--- hum >
            |--- \text{ temp}| <= 0.28
                |--- holiday <= 2.82
                   |--- value: [39.00]
                \left| --- \text{ holiday} \right> 2.82
                    |--- value: [53.00]
            |--- temp > 0.28
                |--- windspeed <= -1.19
                    |--- value: [116.00]
                |--- windspeed > -1.19
                    |--- season <= 0.45
                        |--- value: [103.00]
                    |--- season > 0.45
                        |--- value: [93.00]
        yr >
        |--- weathersit <= 0.12
            |--- holiday <= 2.82
            | --- mnth <= -0.01
```

```
|--- weekday <= -0.00
                    | |--- truncated branch of depth 5
                    |--- weekday > -0.00
                         |--- truncated branch of depth 5
                |--- mnth > -0.01
                    |---| atemp <= 0.27
                         |--- truncated branch of depth 3
                    |--- atemp > 0.27
                         |--- truncated branch of depth 7
            \mid--- holiday > 2.82
                |--- temp <= 0.85
                    |--- hum <= 0.27
                    | |--- value: [41.00]
                     |--- \text{ hum} > 0.27
                         |--- value: [65.00]
                |--- temp > 0.85
                    |--- value: [159.00]
          -- weathersit > 0.12
            |--- hum <= -0.56
                |--- value: [191.00]
            |--- \text{ hum} > -0.56
                |--- weekday <= -1.25
                    |--- hum <= 1.21
                       |--- truncated branch of depth 4
                    |--- \text{ hum } > 1.21
                        |--- value: [99.00]
                |--- weekday > -1.25
                     |--- mnth <= -0.01
                    | |--- truncated branch of depth 2
                    |--- mnth > -0.01
                       |--- truncated branch of depth 3
|--- hr >
         -1.60
    |--- yr <= -0.01
        |--- mnth <= -0.30
            \mid--- windspeed <= -0.09
                |--- weekday <= -1.25
                    |--- hum <= 1.62
                    | |--- truncated branch of depth 2
                    |--- \text{ hum} > 1.62
                        |--- value: [47.00]
                |--- weekday > -1.25
                     |--- weekday <= 0.25
                         |--- value: [79.00]
                     |--- weekday > 0.25
                         |--- value: [82.00]
            |--- windspeed > -0.09
                |--- season <= -0.90
                    |--- value: [51.00]
```

```
|--- season > -0.90
            |---| atemp <= 0.23
              |--- value: [54.00]
            |--- atemp > 0.23
                |--- value: [55.00]
            1
           -0.30
  -- mnth >
    |--- mnth| <= 0.28
        |--- holiday <= 2.82
            |--- windspeed <= -0.76
              |--- truncated branch of depth 4
            |-- windspeed > -0.76
                |--- truncated branch of depth 8
        |--- holiday > 2.82
            |--- value: [119.00]
    |--| mnth > 0.28
        |---| atemp <= 0.54
            \mid--- windspeed <= -0.76
                |--- truncated branch of depth 3
            |--- windspeed > -0.76
                |--- value: [124.00]
        |--- atemp > 0.54
            |--- temp <= 0.69
                |--- value: [47.00]
            |--- temp > 0.69
                |--- truncated branch of depth 5
      -0.01
yr >
|--- holiday <= 2.82
    |--- weekday <= -0.00
        |--- mnth <= -0.30
            |--- temp <= 0.53
            | |--- truncated branch of depth 2
            |--- temp > 0.53
                |--- value: [78.00]
        |---mnth> -0.30
            |--- temp <= 1.11
                |--- truncated branch of depth 8
            |--- temp > 1.11
                |--- truncated branch of depth 3
    |--- weekday > -0.00
        |--- mnth <= 0.86
            |---| atemp <= 0.63
                |--- truncated branch of depth 8
            |--- atemp > 0.63
                |--- truncated branch of depth 6
        |-- mnth > 0.86
            |--- value: [146.00]
|--- holiday > 2.82
   |--- weathersit <= 0.12
```

```
|--- value: [28.00]
                  |--- weathersit > 0.12
                       |--- hum <= 1.08
                           |--- value: [59.00]
                       |--- \text{ hum} > 1.08
                           |--- value: [55.00]
-- workingday >
                -0.39
 |--- hr <= -1.60
      |--- \text{ temp}| <= -0.56
          |--- season <= 0.45
              |--- yr <= -0.01
                  |--- temp <= -0.76
                       |--- mnth <= 0.43
                           |--- hum <= 1.39
                           | |--- truncated branch of depth 11
                           |--- \text{ hum} > 1.39
                             |--- truncated branch of depth 4
                       |--- mnth > 0.43
                           |--- weathersit <= 0.12
                           | |--- truncated branch of depth 2
                           |--- weathersit > 0.12
                               |--- truncated branch of depth 2
                  |--- temp > -0.76
                       |--- hum <= -0.69
                           |--- value: [11.00]
                       |--- \text{ hum} > -0.69
                           |--- hum <= 0.43
                               |--- truncated branch of depth 3
                           |--- \text{ hum} > 0.43
                               |--- truncated branch of depth 2
              |--- yr >
                         -0.01
                  |--- weekday <= 0.75
                       |--- windspeed <= 0.83
                           |--- temp <= -1.07
                               |--- truncated branch of depth 9
                           |--- temp > -1.07
                               |--- truncated branch of depth 5
                       |--- windspeed > 0.83
                           |--- hum <= -1.36
                           | |--- truncated branch of depth 2
                           |--- \text{ hum } > -1.36
                               |--- truncated branch of depth 3
                  |--- weekday > 0.75
                       |---| atemp <= -1.18
                           |--- value: [25.00]
                       |--- atemp > -1.18
                           |---| atemp <= -1.05
                           | |--- value: [38.00]
```

```
|---| atemp > -1.05
                        |--- truncated branch of depth 2
                    |--- season > 0.45
        \mid--- windspeed <= 0.64
            |--- weekday <= 0.75
                |--- hum <= 0.79
                    |--- temp <= -1.07
                        |--- truncated branch of depth 6
                    |--- temp > -1.07
                        |--- truncated branch of depth 6
                |--- \text{ hum} > 0.79
                     |--- windspeed <= 0.03
                        |--- truncated branch of depth 6
                     |--- windspeed > 0.03
                        |--- value: [31.00]
            |--- weekday > 0.75
                |--- weathersit <= 0.12
                    |--- hum <= -0.53
                        |--- value: [30.00]
                     |--- \text{ hum} > -0.53
                        |--- truncated branch of depth 5
                |--- weathersit > 0.12
                    |--- value: [65.00]
        |--- windspeed > 0.64
            |--- weathersit <= 0.12
                |--- weekday <= 0.25
                    |--- value: [24.00]
                |--- weekday > 0.25
                    |--- weekday <= 0.75
                        |--- value: [44.00]
                     |--- weekday > 0.75
                        |--- value: [55.00]
            |--- weathersit > 0.12
                |--- yr <= -0.01
                    |--- value: [21.00]
                |--- yr > -0.01
                    |--- value: [283.00]
|--- temp >
            -0.56
    |--- weekday <= 0.75
        |--- yr <= -0.01
            |--- temp <= 0.43
                |--- hum <= 1.03
                    |--- weekday <= -0.25
                        |--- truncated branch of depth 6
                    |--- weekday > -0.25
                        |--- truncated branch of depth 5
                |--- \text{ hum } > 1.03
                    |--- weathersit <= 1.68
```

```
|--- truncated branch of depth 9
                |--- weathersit > 1.68
                    |--- truncated branch of depth 2
        |--- temp > 0.43
            |--- weekday <= 0.25
                |--- temp <= 1.21
                    |--- truncated branch of depth 10
                |--- temp > 1.21
                   |--- truncated branch of depth 6
            |--- weekday > 0.25
                \mid--- windspeed <= -0.76
                   |--- value: [17.00]
                |--- windspeed > -0.76
                | |--- truncated branch of depth 7
              -0.01
      -- yr >
        |--- weekday <= 0.25
            |--- weathersit <= 0.12
                |--- mnth <= -0.59
                    |--- truncated branch of depth 7
                |---mnth>-0.59
                | |--- truncated branch of depth 9
            |--- weathersit > 0.12
                |---| atemp <= -0.04
                | |--- truncated branch of depth 5
                |--- atemp > -0.04
                |--- truncated branch of depth 10
        |--- weekday > 0.25
            |--- temp <= -0.14
                |--- hum <= 1.18
                | |--- truncated branch of depth 2
                |--- \text{ hum } > 1.18
                | |--- value: [11.00]
            |--- temp > -0.14
                |--- windspeed <= -0.09
                    |--- truncated branch of depth 10
                |--- windspeed > -0.09
                   |--- truncated branch of depth 3
                1
|--- weekday >
               0.75
    |--- yr <= -0.01
        |---| atemp <= 0.63
            |--- weathersit <= 1.68
                |--- season <= -0.90
                   |--- truncated branch of depth 2
                |--- season > -0.90
                | |--- truncated branch of depth 6
            |--- weathersit > 1.68
                |--- \text{ temp}| <= 0.12
                | |--- value: [9.00]
```

```
|--- temp > 0.12
                            |--- value: [16.00]
                |--- atemp > 0.63
                    |--- windspeed <= 0.15
                         |--- hum <= 0.14
                           |--- truncated branch of depth 3
                        |--- \text{ hum} > 0.14
                             |--- truncated branch of depth 4
                    |--- windspeed > 0.15
                        |--- season <= -0.00
                            |--- truncated branch of depth 2
                         |--- season > -0.00
                            |--- value: [80.00]
              -- yr >
                |--- weathersit <= 1.68
                    |--- \text{ temp}| <= 0.28
                        |--- mnth <= -1.17
                        | |--- truncated branch of depth 3
                        |--- mnth > -1.17
                            |--- truncated branch of depth 5
                    |--- temp > 0.28
                        |--- season <= -0.90
                        | |--- value: [54.00]
                        |--- season > -0.90
                            |--- truncated branch of depth 11
                   - weathersit > 1.68
                    |--- season <= 0.90
                        |--- value: [34.00]
                    |--- season > 0.90
                        |--- value: [17.00]
|--- hr >
    |--- temp <= -0.04
        |--- mnth| <= -0.88
            |--- temp <= -0.66
                |--- yr <= -0.01
                    |---| atemp <= -0.83
                        |--- windspeed <= 0.64
                            |--- truncated branch of depth 9
                        |--- windspeed > 0.64
                        1
                            |--- truncated branch of depth 6
                    |--- atemp > -0.83
                         |--- hum <= 1.18
                        | |--- truncated branch of depth 2
                        |--- \text{ hum} > 1.18
                           |--- value: [8.00]
                |--- yr > -0.01
                    |--- weekday <= 0.75
                        |--- temp <= -1.39
```

```
|--- truncated branch of depth 3
                |--- temp > -1.39
                    |--- truncated branch of depth 7
            |--- weekday > 0.75
                |--- \text{ temp}| <= -1.07
                    |--- truncated branch of depth 3
                |--- temp > -1.07
                    \mid--- truncated branch of depth 2
      -- temp > -0.66
        |--- hum <= 0.87
            |--- weekday <= 0.25
                |--- hum <= -0.89
                | |--- truncated branch of depth 2
                |--- \text{ hum} > -0.89
                    |--- truncated branch of depth 3
            |--- weekday > 0.25
                |--- hum <= 0.25
                | |--- truncated branch of depth 5
                |--- \text{ hum} > 0.25
                |--- truncated branch of depth 2
        |--- \text{ hum} > 0.87
            |--- windspeed <= -0.09
                |--- windspeed <= -0.58
                | |--- truncated branch of depth 2
                |--- windspeed > -0.58
                    |--- value: [19.00]
            |--- windspeed > -0.09
                |--- windspeed <= 0.83
                    |--- truncated branch of depth 2
                |--- windspeed > 0.83
                    |--- value: [26.00]
|--- mnth > -0.88
    |--- weekday <= 0.75
        |--- yr <= -0.01
            |--- weekday <= 0.25
                |--- mnth <= -0.59
                | |--- truncated branch of depth 4
                |--- mnth > -0.59
                    |--- truncated branch of depth 8
            |--- weekday > 0.25
                |--| mnth <= 1.44
                    |--- truncated branch of depth 4
                |--- mnth > 1.44
                   |--- truncated branch of depth 3
        |--- yr > -0.01
            |--- weekday <= -0.25
                |--- weathersit <= 1.68
                | |--- truncated branch of depth 7
```

```
|--- weathersit > 1.68
                    | |--- truncated branch of depth 3
                |--- weekday > -0.25
                    |--- hum <= -0.01
                        |--- truncated branch of depth 5
                    |--- \text{ hum } > -0.01
                    | |--- truncated branch of depth 5
        |--- weekday > 0.75
            |--- \text{ temp}| <= -0.76
                |--- mnth| <= 0.13
                    |--- temp <= -1.02
                        |--- value: [4.00]
                    |--- temp > -1.02
                        |--- value: [9.00]
                |--- mnth > 0.13
                    |--- weathersit <= 0.12
                    | |--- truncated branch of depth 7
                    |--- weathersit > 0.12
                    |--- truncated branch of depth 2
            |--- temp > -0.76
                |---| mnth <= 1.15
                    |--- yr <= -0.01
                       |--- truncated branch of depth 4
                    |--- yr > -0.01
                        |--- truncated branch of depth 3
                |--| mnth > 1.15
                    |--- weathersit <= 1.68
                        |--- value: [17.00]
                    |--- weathersit > 1.68
                       |--- value: [9.00]
|--- temp > -0.04
    |--- weekday <= 0.75
        |--- yr <= -0.01
            |--- temp <= 0.69
                |--- weathersit <= 1.68
                    |--- hum <= -0.04
                    | |--- truncated branch of depth 5
                    |--- \text{ hum } > -0.04
                    | |--- truncated branch of depth 10
                |--- weathersit > 1.68
                    |--- weekday <= -0.25
                        |--- truncated branch of depth 3
                    |--- weekday > -0.25
                        |--- truncated branch of depth 4
            |--- temp > 0.69
                |--- hum <= 0.14
                    |--- temp <= 1.11
                    | |--- truncated branch of depth 5
```

```
|--- temp > 1.11
                | |--- truncated branch of depth 3
            |--- \text{ hum } > 0.14
                |--- windspeed <= 0.15
                    |--- truncated branch of depth 7
                |--- windspeed > 0.15
                    |--- truncated branch of depth 4
      -- yr >
               -0.01
        |--- weekday <= -0.25
            |--- windspeed <= 1.37
                |--- hum <= 1.49
                | |--- truncated branch of depth 10
                |--- \text{ hum} > 1.49
                    |--- value: [5.00]
            |--- windspeed > 1.37
                |--- \text{ temp}| <= 0.48
                    |--- value: [29.00]
                |--- temp > 0.48
                     |--- value: [30.00]
        |--- weekday > -0.25
            |---| mnth <= 1.30
                |--- weathersit <= 0.12
                | |--- truncated branch of depth 12
                |--- weathersit > 0.12
                    |--- truncated branch of depth 4
            |--| mnth > 1.30
                |--- value: [11.00]
|--- weekday > 0.75
    |--- yr <= -0.01
        |--- temp <= 0.79
            |--- hum <= 1.78
                |---| atemp <= 0.10
                    |--- value: [31.00]
                |--- atemp > 0.10
                    |--- truncated branch of depth 6
            |--- \text{ hum} > 1.78
                |--- value: [8.00]
        |--- temp > 0.79
            |--- season <= -0.00
                |--- value: [50.00]
            |--- season > -0.00
                |---| atemp <= 1.60
                    |--- truncated branch of depth 3
                |---| atemp > 1.60
                    |--- value: [24.00]
    |--- vr >
              -0.01
        |--- hum <= 1.34
            |--- weathersit <= 1.68
```

```
\mid--- windspeed <= -0.46
                                | |--- truncated branch of depth 6
                                |--- windspeed > -0.46
                                    |--- truncated branch of depth 7
                            |--- weathersit > 1.68
                                |---| atemp <= 0.27
                                    |--- value: [16.00]
                                |--- atemp > 0.27
                                    |--- value: [26.00]
                                |--- \text{ hum} > 1.34
                            |--- value: [11.00]
           -1.45
|--- hr >
    |--- workingday <= -0.39
        |--- hr <= -1.31
            |---| atemp <= -0.17
                |---| atemp <= -0.87
                    |--- season <= 0.45
                        |--- yr <= -0.01
                            |--- mnth| <= 0.43
                                |--- hum <= -0.71
                                | |--- truncated branch of depth 2
                                |--- \text{ hum } > -0.71
                                | |--- truncated branch of depth 7
                            |--- mnth > 0.43
                                |--- value: [2.00]
                        |--- yr > -0.01
                            |--- mnth <= 0.28
                                |--- holiday <= 2.82
                                    |--- truncated branch of depth 8
                                |--- holiday > 2.82
                                | |--- truncated branch of depth 2
                            |--- mnth > 0.28
                                |---| atemp <= -1.31
                                    |--- truncated branch of depth 3
                                |---| atemp > -1.31
                                    |--- value: [7.00]
                      -- season > 0.45
                        |--- temp <= -1.07
                            |--- holiday <= 2.82
                                |--- temp <= -1.18
                                | |--- truncated branch of depth 5
                                 |--- temp > -1.18
                                    |--- truncated branch of depth 3
                            |--- holiday > 2.82
                                |--- value: [18.00]
                        |--- temp > -1.07
                            |--- hum <= -0.43
                               |--- atemp <= -1.05
                            1
```

```
| |--- truncated branch of depth 2
                    |--- atemp > -1.05
                        |--- value: [46.00]
                |--- \text{ hum } > -0.43
                    |--- hum <= -0.19
                       |--- value: [11.00]
                    |--- \text{ hum } > -0.19
                        |--- truncated branch of depth 3
                    1
    |---| atemp > -0.87
        |--- holiday <= 2.82
            |--- yr <= -0.01
                |--- season <= -0.90
                    |---| atemp <= -0.34
                    | |--- truncated branch of depth 2
                    |--- atemp > -0.34
                        |--- truncated branch of depth 2
                |--- season > -0.90
                    |--- temp <= -0.45
                        |--- truncated branch of depth 5
                    |--- temp > -0.45
                    | |--- truncated branch of depth 4
            |--- yr > -0.01
                |--- hum <= 1.28
                    |--- hum <= -1.67
                    | |--- value: [32.00]
                    |--- \text{ hum } > -1.67
                    | |--- truncated branch of depth 8
                |--- hum > 1.28
                    |--- windspeed <= -1.19
                        |--- value: [42.00]
                    |--- windspeed > -1.19
                    | |--- truncated branch of depth 2
        |--- holiday > 2.82
            |---| atemp <= -0.61
                |--- value: [15.00]
            |---| atemp > -0.61
                \mid--- windspeed <= -1.00
                  |--- value: [18.00]
                |--- windspeed > -1.00
                | |--- value: [20.00]
|--- atemp > -0.17
    |--- weekday <= -1.25
        |--- yr <= -0.01
            |--- hum <= 1.49
                |--- hum <= 0.82
                    |--- season <= -0.00
                    |--- truncated branch of depth 3
                    |--- season > -0.00
```

```
| |--- truncated branch of depth 5
            |--- hum > 0.82
                |--| mnth <= 0.57
                    |--- truncated branch of depth 5
                |---mnth>0.57
                   |--- truncated branch of depth 2
        |--- \text{ hum} > 1.49
            |--- value: [106.00]
      -- yr >
             -0.01
        |--- season <= -0.00
            |--- mnth <= -0.59
                |--- value: [56.00]
            |-- mnth > -0.59
                |---| atemp <= 0.54
                    |--- truncated branch of depth 3
                |--- atemp > 0.54
                | |--- truncated branch of depth 2
        |--- season > -0.00
            |--- weathersit <= 0.12
                |--- temp <= 1.21
                | |--- truncated branch of depth 5
                |--- temp > 1.21
                | |--- truncated branch of depth 2
            |--- weathersit > 0.12
                |--- temp <= 0.69
                    |--- truncated branch of depth 3
                |--- temp > 0.69
                    |--- truncated branch of depth 2
|--- weekday >
               -1.25
    |--- weekday <=-0.50
        |--- hum <= 0.45
            |--- value: [14.00]
        |--- \text{ hum } > 0.45
            \mid--- windspeed <= -0.88
                |--- value: [19.00]
            |--- windspeed > -0.88
                |--- temp <= 0.85
                | |--- truncated branch of depth 2
                |--- temp > 0.85
                | |--- value: [39.00]
    |--- weekday > -0.50
        |--- yr <= -0.01
            |--- mnth| <= 0.28
                |---| atemp <= 1.20
                | |--- truncated branch of depth 5
                |--- atemp > 1.20
                1
                   |--- value: [42.00]
            |--| mnth > 0.28
```

```
|--- weathersit <= 0.12
                       | |--- truncated branch of depth 5
                       |--- weathersit > 0.12
                       |--- value: [41.00]
               |--- yr > -0.01
                   |--- mnth <= -0.01
                        |--- weathersit <= 0.12
                       | |--- truncated branch of depth 5
                       |--- weathersit > 0.12
                          |--- truncated branch of depth 2
                   |---mnth>-0.01
                       |--- weathersit <= 1.68
                       | |--- truncated branch of depth 6
                       |--- weathersit > 1.68
                       | |--- truncated branch of depth 3
|--- hr >
    |--- hr <= -1.16
       |--- temp <= -0.87
           |--- holiday <= 2.82
               |--- yr <= -0.01
                    |--- season <= 0.45
                       |--- hum <= -0.92
                       | |--- value: [18.00]
                       |--- \text{ hum} > -0.92
                       | |--- truncated branch of depth 10
                   |--- season > 0.45
                       |---| atemp <= -1.23
                       | |--- truncated branch of depth 6
                       |--- atemp > -1.23
                       | |--- truncated branch of depth 2
               |--- yr > -0.01
                   |---| atemp <= -1.05
                       |--- mnth <= -1.47
                           |--- truncated branch of depth 4
                       |--| mnth > -1.47
                           |--- truncated branch of depth 7
                   |--- atemp > -1.05
                       |--- weathersit <= 0.12
                       | |--- truncated branch of depth 2
                       |--- weathersit > 0.12
                       | |--- value: [46.00]
            |--- holiday > 2.82
               |--- hum <= -0.37
                   |--- weathersit <= 0.12
                      |--- value: [3.00]
                   |--- weathersit > 0.12
                       |--- value: [2.00]
               |-- hum > -0.37
```

```
|--- hum <= 0.79
                |--- yr <= -0.01
                  |--- truncated branch of depth 2
                |--- yr > -0.01
                    |--- value: [6.00]
            |--- \text{ hum} > 0.79
                |--- value: [8.00]
|--- temp >
            -0.87
    |--- weekday <= -1.25
        |--- season <= -0.00
            |--- hum <= 0.04
                |---| atemp <= -0.08
                | |--- truncated branch of depth 2
                |--- atemp > -0.08
                    |--- truncated branch of depth 3
            |--- \text{ hum} > 0.04
                |--- mnth <= -0.88
                | |--- truncated branch of depth 3
                |---mnth> -0.88
                | |--- truncated branch of depth 8
        |--- season > -0.00
            |--- windspeed <= 1.01
                |--- yr <= -0.01
                    |--- truncated branch of depth 8
                |--- yr > -0.01
                    |--- truncated branch of depth 10
                |--- windspeed > 1.01
                |--- value: [79.00]
    |--- weekday > -1.25
        |--- temp <= -0.14
            |--- holiday <= 2.82
                |--- yr <= -0.01
                    |--- truncated branch of depth 6
                |--- yr > -0.01
                    |--- truncated branch of depth 5
            |--- holiday > 2.82
                |--- hum <= 0.82
                | |--- truncated branch of depth 3
                |--- hum > 0.82
                | |--- truncated branch of depth 2
        |--- temp > -0.14
            |--- weekday <= -0.50
                \mid--- windspeed <= -0.33
                   |--- truncated branch of depth 2
                |--- windspeed > -0.33
                    |--- truncated branch of depth 2
            |--- weekday > -0.50
                |--| mnth <= 0.57
```

```
| |--- truncated branch of depth 9
                    |--- mnth > 0.57
                       |--- truncated branch of depth 5
          -1.16
|--- hr >
    |--- \text{ temp}| <= -0.14
        |--- season <= -0.90
            |--- yr <= -0.01
                |--- weathersit <= 1.68
                    |--- hum <= 0.61
                    | |--- truncated branch of depth 9
                    |--- \text{ hum} > 0.61
                        |--- truncated branch of depth 5
                |--- weathersit > 1.68
                    |--- hum <= 0.58
                        |--- value: [1.00]
                    |--- \text{ hum} > 0.58
                       |--- truncated branch of depth 2
            |--- yr > -0.01
                \mid--- windspeed <= 0.83
                    |--- weathersit <= 1.68
                    | |--- truncated branch of depth 9
                    |--- weathersit > 1.68
                        |--- truncated branch of depth 2
                |--- windspeed > 0.83
                    |--- temp <= -1.91
                        |--- value: [1.00]
                    |--- temp > -1.91
                        |--- truncated branch of depth 6
                       -0.90
        |--- season >
            |--- yr <= -0.01
                |---| atemp <= -0.43
                    |--- holiday <= 2.82
                        |--- truncated branch of depth 10
                    |--- holiday > 2.82
                        |--- truncated branch of depth 4
                |--- atemp > -0.43
                    \mid--- windspeed <= -0.58
                       |--- truncated branch of depth 6
                    |--- windspeed > -0.58
                    1
                        |--- truncated branch of depth 6
            |--- yr > -0.01
                |--- hum <= -0.76
                    |--- temp <= -0.71
                    | |--- truncated branch of depth 4
                    |--- temp > -0.71
                    | |--- value: [12.00]
                |--- \text{ hum } > -0.76
                    |--- temp <= -1.18
```

```
|--- truncated branch of depth 6
                |--- temp > -1.18
                    |--- truncated branch of depth 10
|--- temp > -0.14
    |--- yr <= -0.01
        \mid--- windspeed <= -0.09
            |--- hum <= 1.34
                |--- \text{ temp}| <= 0.69
                | |--- truncated branch of depth 10
                |--- \text{ temp} > 0.69
                    |--- truncated branch of depth 7
            |--- \text{ hum } > 1.34
                |--- weathersit <= 0.12
                | |--- truncated branch of depth 5
                |--- weathersit > 0.12
                    |--- truncated branch of depth 3
        |--- windspeed > -0.09
            |---| atemp <= 0.63
                |--- weathersit <= 0.90
                \mid \mid --- truncated branch of depth 4
                |--- weathersit > 0.90
                    |--- truncated branch of depth 2
            |--- atemp > 0.63
                |--- weekday <= 0.25
                | |--- truncated branch of depth 4
                |--- weekday > 0.25
                    |--- truncated branch of depth 3
      -- yr >
              -0.01
        \mid--- windspeed <= 0.15
            |--- mnth| <= -0.30
                \mid--- windspeed <= -0.76
                    |--- truncated branch of depth 5
                |--- windspeed > -0.76
                    |--- truncated branch of depth 5
              -- mnth > -0.30
                |--- mnth <= -0.01
                | |--- truncated branch of depth 7
                |--- mnth > -0.01
                   |--- truncated branch of depth 11
        |--- windspeed > 0.15
            |--- weekday <= -0.50
                |--- hr <= -1.02
                    |--- truncated branch of depth 3
                |--- hr > -1.02
                    |--- truncated branch of depth 2
            |--- weekday > -0.50
                |--- mnth| <= -0.45
                | |--- value: [1.00]
```

```
|--- mnth > -0.45
                            | |--- truncated branch of depth 7
                    |--- workingday > -0.39
    |--- hr <= -1.02
        |--- \text{ hr } <= -1.31
            |--- temp <= -0.35
                |---| atemp <= -1.31
                    |--- \text{ temp}| <= -1.80
                        |--- weekday <= -0.75
                            |--- hum <= -0.76
                                |--- value: [4.00]
                             |--- \text{ hum } > -0.76
                            | |--- value: [3.00]
                        |--- weekday > -0.75
                            |--- mnth| <= -1.47
                            | |--- truncated branch of depth 2
                            |--- mnth > -1.47
                            | |--- truncated branch of depth 3
                    |--- temp > -1.80
                        |--| mnth <= 1.44
                            |--- temp <= -1.59
                                |--- truncated branch of depth 3
                            |--- temp > -1.59
                            | |--- truncated branch of depth 8
                        |--| mnth > 1.44
                            |--- hum <= -0.01
                            | |--- truncated branch of depth 4
                            |--- \text{ hum } > -0.01
                            | |--- truncated branch of depth 2
                  -- atemp > -1.31
                    |--- windspeed <= 0.83
                        |--- weekday <= 0.75
                            |--- temp <= -0.45
                            | |--- truncated branch of depth 13
                            |--- temp > -0.45
                                |--- truncated branch of depth 6
                        |--- weekday > 0.75
                            |--- hum <= 0.71
                            | |--- truncated branch of depth 7
                            |--- \text{ hum } > 0.71
                            | |--- truncated branch of depth 5
                    |--- windspeed > 0.83
                        |---| atemp <= -1.14
                            |--- value: [74.00]
                        |---| atemp > -1.14
                            |--- weekday <= 0.25
                            |--- truncated branch of depth 4
                            |--- weekday > 0.25
```

```
| | |--- truncated branch of depth 4
     --- temp >
               -0.35
        |--- weekday <= 0.75
            |--- weathersit <= 1.68
                |--- weekday <= 0.25
                    |--- windspeed <= 0.15
                    | |--- truncated branch of depth 15
                    |--- windspeed > 0.15
                       |--- truncated branch of depth 9
                |--- weekday > 0.25
                    |---| atemp <= 0.63
                       |--- truncated branch of depth 10
                    |--- atemp > 0.63
                        |--- truncated branch of depth 8
            |--- weathersit > 1.68
                |--- season <= -0.90
                    |--- value: [1.00]
                |--- season > -0.90
                    |--- windspeed <= 1.50
                    | |--- truncated branch of depth 7
                    |--- windspeed > 1.50
                    | |--- value: [1.00]
          -- weekday > 0.75
            |--- hum <= 1.49
                |--- season <= -0.90
                    |--- weathersit <= 0.90
                      |--- value: [7.00]
                    |--- weathersit > 0.90
                        |--- value: [11.00]
                |--- season > -0.90
                    |--- mnth <= -0.88
                    | |--- value: [32.00]
                    |---mnth> -0.88
                       |--- truncated branch of depth 10
            |--- \text{ hum } > 1.49
                \mid--- windspeed <= -0.46
                    |--- season <= 0.45
                    | |--- truncated branch of depth 2
                    |--- season > 0.45
                        |--- value: [20.00]
                    |--- windspeed > -0.46
                    |--| mnth <= 1.30
                        |--- truncated branch of depth 2
                    |--| mnth > 1.30
                      |--- value: [3.00]
l--- hr > -1.31
    |--- mnth <= -0.59
       |--- temp <= -0.35
```

```
|--- \text{ temp}| <= -0.87
            |--- yr <= -0.01
                |---| atemp <= -1.58
                    |--- truncated branch of depth 5
                |--- atemp > -1.58
                    |--- truncated branch of depth 10
            |--- yr > -0.01
                |---| mnth <= -1.47
                | |--- truncated branch of depth 9
                |--- mnth > -1.47
                    |--- truncated branch of depth 9
             temp > -0.87
            |--- hr <= -1.16
                |--- hum <= 0.07
                | |--- truncated branch of depth 5
                |--- \text{ hum} > 0.07
                    |--- truncated branch of depth 7
            |--- hr > -1.16
                |--- hum <= 1.78
                | |--- truncated branch of depth 8
                |--- \text{ hum} > 1.78
                    |--- truncated branch of depth 2
      -- temp >
                -0.35
        |---| atemp <= 0.01
            |--- weekday <= 0.25
                |--- weekday <= -0.75
                   |--- truncated branch of depth 2
                |--- weekday > -0.75
                    |--- truncated branch of depth 5
            |--- weekday > 0.25
                |---| hum <= 0.61
                    |--- truncated branch of depth 5
                |--- \text{ hum } > 0.61
                    |--- truncated branch of depth 5
        |-- atemp > 0.01
            |--- weathersit <= 0.12
                \mid--- windspeed <= 0.64
                   |--- truncated branch of depth 4
                |--- windspeed > 0.64
                    |--- value: [21.00]
            |--- weathersit > 0.12
                |--- weathersit <= 1.68
                    |--- truncated branch of depth 9
                |--- weathersit > 1.68
                    |--- value: [2.00]
|--- mnth > -0.59
    |--- yr <= -0.01
        |--- mnth <= 1.15
```

```
|--- weathersit <= 1.68
                        |--- weekday <= 0.75
                           |--- truncated branch of depth 14
                        |--- weekday > 0.75
                            |--- truncated branch of depth 10
                      -- weathersit > 1.68
                        |--- season <= 0.90
                        | |--- truncated branch of depth 7
                        |--- season > 0.90
                            |--- truncated branch of depth 5
                |--| mnth > 1.15
                    |--- temp <= -0.87
                        |--- windspeed <= 0.64
                            |--- truncated branch of depth 8
                        |--- windspeed > 0.64
                            |--- truncated branch of depth 2
                    |--- temp > -0.87
                        \mid--- windspeed <= -1.19
                            |--- value: [2.00]
                        |--- windspeed > -1.19
                            |--- truncated branch of depth 9
                       -0.01
              -- yr >
                |--- weekday <= 0.75
                    |--- hr <= -1.16
                        |--- weekday <= -0.25
                            |--- truncated branch of depth 10
                        |--- weekday > -0.25
                            |--- truncated branch of depth 14
                    |--- hr > -1.16
                        |--- hum <= 0.09
                        | |--- truncated branch of depth 7
                        |--- \text{ hum} > 0.09
                            |--- truncated branch of depth 18
                |--- weekday > 0.75
                    |--- \text{ temp}| <= -0.97
                        |---| atemp <= -1.40
                            |--- truncated branch of depth 2
                        |---| atemp > -1.40
                            |--- truncated branch of depth 5
                    |--- temp > -0.97
                        |--- season <= -0.90
                            |--- truncated branch of depth 2
                        |--- season > -0.90
                        | |--- truncated branch of depth 11
|--- hr >
    |--- yr <= -0.01
        |--- mnth <= -0.59
            |--| mnth <= -0.88
```

```
|--- windspeed <= 0.64
        |--- mnth <= -1.17
            |---| atemp <= -1.31
                |--- truncated branch of depth 5
            |---| atemp > -1.31
                |--- truncated branch of depth 3
         --- mnth > -1.17
            |--- hum <= -2.29
            | |--- value: [3.00]
            |--- \text{ hum} > -2.29
                |--- truncated branch of depth 7
        windspeed > 0.64
        |---| mnth <= -1.47
            |--- hum <= -0.04
                |--- truncated branch of depth 2
            |--- \text{ hum } > -0.04
                |--- value: [8.00]
        |--- mnth > -1.47
            |--- windspeed <= 1.80
                |--- truncated branch of depth 3
            |--- windspeed > 1.80
                |--- value: [4.00]
            -0.88
    |--- hum <= -0.66
        |--- value: [25.00]
    |--- \text{ hum } > -0.66
        \mid--- windspeed <= 0.15
            |---| atemp <= -0.65
                |--- value: [9.00]
            |--- atemp > -0.65
                |--- truncated branch of depth 4
        |--- windspeed > 0.15
            |--- hum <= -0.24
                |--- truncated branch of depth 2
            |--- \text{ hum } > -0.24
                |--- truncated branch of depth 5
        -0.59
|--- season <= -0.90
    \mid--- windspeed <= -1.19
        |--- value: [16.00]
    |--- windspeed > -1.19
        |--- temp <= -1.23
            |--- value: [10.00]
        |--- temp > -1.23
            |--- windspeed <= 1.07
                |--- value: [8.00]
            |--- windspeed > 1.07
            | |--- value: [9.00]
```

```
|--- season > -0.90
    |--- weathersit <= 1.68
        |--- hum <= 1.34
            |--- temp <= -1.07
                |--- truncated branch of depth 6
            |--- temp > -1.07
                |--- truncated branch of depth 14
        |--- \text{ hum } > 1.34
            |--- windspeed <= 0.15
                |--- truncated branch of depth 9
            |-- windspeed > 0.15
                |--- value: [9.00]
    |--- weathersit > 1.68
        |---| atemp <= 0.49
            |--- weekday <= -0.25
                |--- truncated branch of depth 4
            |--- weekday > -0.25
                |--- truncated branch of depth 4
        |--- atemp > 0.49
            |--- value: [3.00]
  -0.01
season <= -0.00
  -- temp <= -0.76
    |--- mnth| <= 0.43
        |---| atemp <= -1.23
            |---| atemp <= -1.84
               |--- truncated branch of depth 3
            |--- atemp > -1.84
                |--- truncated branch of depth 7
        |---| atemp > -1.23
            |--- weathersit <= 1.68
               |--- truncated branch of depth 10
            |--- weathersit > 1.68
               |--- truncated branch of depth 2
    |--| mnth > 0.43
        |---| atemp <= -1.31
            |--- hum <= 0.20
                |--- value: [9.00]
            |--- \text{ hum} > 0.20
                |--- value: [11.00]
        |---| atemp > -1.31
            |---| atemp <= -1.14
                |--- value: [15.00]
            |--- atemp > -1.14
               |--- value: [13.00]
|--- temp > -0.76
    |--- atemp <= 0.45
        |--- weekday <= -0.25
```

```
|--- mnth <= -0.30
              | |--- truncated branch of depth 8
              |-- mnth > -0.30
                  |--- truncated branch of depth 3
          |--- weekday > -0.25
              |--- season <= -0.90
                  |--- truncated branch of depth 5
              |--- season > -0.90
                  |--- truncated branch of depth 9
      |--- atemp > 0.45
          |--- windspeed <= 0.15
              |--- weekday <= 0.50
                  |--- truncated branch of depth 4
              |--- weekday > 0.50
                  |--- value: [45.00]
          |--- windspeed > 0.15
              |--- hum <= -0.09
                  |--- value: [30.00]
              |--- \text{ hum } > -0.09
              1
                  |--- value: [33.00]
-- season >
            -0.00
 |---| atemp <= -0.39
      |--- hum <= 0.92
          |--- weekday <= -0.25
              |---| atemp <= -0.61
                  |--- truncated branch of depth 2
              |--- atemp > -0.61
                  |--- value: [46.00]
          |--- weekday > -0.25
              |---| atemp <= -0.87
              | |--- truncated branch of depth 7
              |--- atemp > -0.87
              |--- truncated branch of depth 2
      |--- \text{ hum} > 0.92
          |--- temp <= -1.28
              |--- value: [10.00]
          |--- temp > -1.28
              |---| atemp <= -0.52
              | |--- truncated branch of depth 4
              |--- atemp > -0.52
              | |--- truncated branch of depth 3
 |---| atemp > -0.39
      |--- temp <= 0.17
          |--- weekday <= -0.75
              |--- hum <= 0.87
              | |--- truncated branch of depth 2
              |--- \text{ hum} > 0.87
              | |--- value: [45.00]
```

```
|--- weekday > -0.75
                                 |--- windspeed <= 1.19
                                   |--- truncated branch of depth 7
                                 |--- windspeed > 1.19
                                     |--- value: [39.00]
                        |--- temp > 0.17
                             |--- windspeed <= -0.09
                                 \mid--- windspeed <= -0.58
                                    |--- truncated branch of depth 11
                                 |--- windspeed > -0.58
                                     |--- truncated branch of depth 6
                             |--- windspeed > -0.09
                                 |--- weekday <= -0.50
                                     |--- truncated branch of depth 3
                                 |--- weekday > -0.50
                                     |--- truncated branch of depth 5
hr >
      -0.87
|--- workingday <=-0.39
    |--- season <= -0.90
        |--- yr <= -0.01
            |---| atemp <= -1.05
                |--- weekday <= -1.25
                    |--| mnth <= -1.47
                        |--- value: [1.00]
                    |--| mnth > -1.47
                        |--- mnth| <= 0.28
                            |--- mnth <= -1.17
                                 |--- windspeed <= -0.64
                                     |--- value: [3.00]
                                 |--- windspeed > -0.64
                                    |--- truncated branch of depth 2
                            |--- mnth > -1.17
                                |--- value: [4.00]
                        |--| mnth > 0.28
                            |--- value: [1.00]
                |--- weekday > -1.25
                    |--- \text{ temp}| <= -1.70
                        \mid--- windspeed <= -0.58
                            |--- value: [3.00]
                        |--- windspeed > -0.58
                            |--- value: [2.00]
                    |--- temp > -1.70
                        |--- weathersit <= 0.12
                            |---| atemp <= -1.36
                                |--- value: [4.00]
                            |---| atemp > -1.36
                                 |--- value: [2.00]
                        |--- weathersit > 0.12
```

```
|---| atemp <= -1.49
                   |--- value: [5.00]
                |---| atemp > -1.49
                    |--- value: [4.00]
            -1.05
    atemp >
    |--- weekday <= -1.25
        |--- value: [2.00]
    |--- weekday > -1.25
        |---| atemp <= -0.70
            |--- value: [10.00]
        |---| atemp > -0.70
            |---| atemp <= -0.34
                |--- value: [6.00]
            |--- atemp > -0.34
                |--- hum <= -1.44
                | |--- value: [8.00]
                |--- \text{ hum } > -1.44
                | |--- value: [10.00]
yr >
       -0.01
|--- atemp <= -0.34
    |--- holiday <= 2.82
        |--- weathersit <= 1.68
            |--- weekday <= -0.00
                |--- mnth <= -1.17
                     |---| atemp <= -1.98
                         |--- value: [8.00]
                     |--- atemp > -1.98
                         |--- truncated branch of depth 3
                |--- mnth > -1.17
                     |--- hum <= -0.24
                    | |--- truncated branch of depth 2
                     |--- \text{ hum } > -0.24
                         |--- truncated branch of depth 3
            |--- weekday > -0.00
                |---| atemp <= -1.27
                     |--- temp <= -1.33
                        |--- value: [5.00]
                     |--- temp > -1.33
                         |--- value: [7.00]
                |---| atemp > -1.27
                     |--- hum <= 0.51
                         |--- truncated branch of depth 3
                     |--- \text{ hum} > 0.51
                         |--- value: [7.00]
          -- weathersit > 1.68
            |--- value: [1.00]
    |--- holiday > 2.82
        |--- mnth <= -1.47
```

```
|---| atemp <= -1.71
                | |--- value: [13.00]
                |--- atemp > -1.71
                    |--- value: [14.00]
              -- mnth > -1.47
                |--- temp <= -1.39
                    |--- value: [7.00]
                |--- temp > -1.39
                    |--- value: [10.00]
                |--- atemp > -0.34
        |--- value: [30.00]
season > -0.90
|--- yr <= -0.01
    |---| atemp <= 0.54
        |--- hum <= -0.63
            |--- value: [46.00]
        |--- \text{ hum} > -0.63
            |--- windspeed <= -1.19
                |--- holiday <= 2.82
                    |--- weekday <= -0.00
                         |--- temp <= -0.14
                            |--- value: [6.00]
                         |--- temp > -0.14
                            |--- value: [13.00]
                    |--- weekday > -0.00
                        |--- temp <= -0.14
                            |--- truncated branch of depth 2
                         |--- temp > -0.14
                            |--- value: [28.00]
                |--- holiday > 2.82
                    |--- value: [44.00]
            |--- windspeed > -1.19
                |--- temp <= -1.44
                    |---| mnth <= 0.28
                        |--- value: [2.00]
                    |--- mnth > 0.28
                        |--- value: [3.00]
                |--- temp > -1.44
                    \mid--- windspeed <= -0.76
                        |--- season <= -0.00
                        | |--- truncated branch of depth 2
                         |-- season > -0.00
                            |--- truncated branch of depth 3
                    |--- windspeed > -0.76
                        |--- \text{ temp}| <= 0.69
                             |--- truncated branch of depth 9
                        |--- temp > 0.69
                            |--- value: [6.00]
```

```
|--- atemp > 0.54
        |--- hum <= 1.08
            |--- windspeed <= -0.76
                 |--- hum <= 0.66
                     |---| mnth <= -0.01
                       |--- value: [20.00]
                     |--- mnth > -0.01
                         |--- value: [22.00]
                 |--- \text{ hum} > 0.66
                     |--- value: [25.00]
            |-- windspeed > -0.76
                 |--- temp <= 0.69
                     |--- weekday <= -0.00
                         |--- value: [21.00]
                     |--- weekday > -0.00
                         |--- mnth <= -0.01
                             |--- value: [27.00]
                         |--- mnth > -0.01
                             |--- value: [32.00]
                 |--- temp > 0.69
                     |--- temp <= 1.11
                         \mid--- windspeed <= 0.15
                             |--- truncated branch of depth 3
                         |--- windspeed > 0.15
                             |--- value: [29.00]
                     |--- temp > 1.11
                         |--- hum <= -0.09
                             |--- value: [25.00]
                         |--- \text{ hum } > -0.09
                             |--- value: [24.00]
          -- hum >
            |--- weekday <= 0.25
                 |--- hum <= 1.23
                     |--- value: [3.00]
                 |--- \text{ hum} > 1.23
                     |--- temp <= 0.79
                         |--- value: [16.00]
                     |--- temp > 0.79
                         |--- temp <= 0.95
                             |--- value: [14.00]
                         |--- temp > 0.95
                             |--- value: [13.00]
            |--- weekday > 0.25
                 |--- value: [27.00]
|--- yr >
           -0.01
    |--- \text{ temp}| <= -0.76
        |--- weekday <= -0.00
        |--- \text{ temp}| <= -0.92
```

```
|--- hum <= -0.45
            |--- value: [11.00]
        |--- \text{ hum } > -0.45
            \mid--- windspeed <= -0.64
                |--- value: [19.00]
            |--- windspeed > -0.64
                |--- windspeed <= -0.33
                    |--- value: [16.00]
                |--- windspeed > -0.33
                    |--- value: [15.00]
      -- temp > -0.92
        \mid--- windspeed <= -1.00
            |--- value: [6.00]
        |--- windspeed > -1.00
            |--- value: [7.00]
|--- weekday > -0.00
    |--- windspeed <= 0.52
        |--- windspeed <= -0.64
            |--- weathersit <= 0.12
               |--- value: [16.00]
            |--- weathersit > 0.12
                |--- value: [11.00]
        |--- windspeed > -0.64
            |--- temp <= -0.97
                |--- windspeed <= 0.15
                    |--- truncated branch of depth 2
                |--- windspeed > 0.15
                    |--- value: [21.00]
            |--- temp > -0.97
                |--- hum <= -1.05
                    |--- value: [19.00]
                |--- \text{ hum } > -1.05
                    |--- value: [21.00]
      -- windspeed > 0.52
        |--- value: [10.00]
       -0.76
temp >
    weekday <= -1.25
    |---| atemp <= -0.65
        |--- value: [97.00]
    |--- atemp > -0.65
        |--- hum <= 1.03
            |--- windspeed <= 0.83
                |--- windspeed <= -1.19
                    |--- truncated branch of depth 3
                |--- windspeed > -1.19
                    |--- truncated branch of depth 8
            |--- windspeed > 0.83
                |--- value: [39.00]
```

```
|--- \text{ hum } > 1.03
                             |--- season <= 0.90
                                 |--- temp <= 0.74
                                     |--- truncated branch of depth 4
                                 |--- temp > 0.74
                                     |--- value: [15.00]
                             |--- season > 0.90
                                 |--- value: [6.00]
                |--- weekday > -1.25
                    |--- weathersit <= 0.12
                         |--- temp <= -0.50
                             |--- value: [71.00]
                         |--- temp > -0.50
                             |--- weekday <= 0.25
                                 |--- windspeed <= -0.88
                                    |--- value: [15.00]
                                 |--- windspeed > -0.88
                                     |--- value: [20.00]
                             |--- weekday > 0.25
                                 |--- hum <= 0.40
                                 \mid \mid --- truncated branch of depth 4
                                 |--- \text{ hum} > 0.40
                                     |--- truncated branch of depth 6
                                 |-- weathersit > 0.12
                         |---| hum <= 1.15
                             |--- hum <= 0.90
                               |--- mnth| <= 0.28
                                 | |--- truncated branch of depth 2
                                 |--| mnth > 0.28
                                 | |--- value: [30.00]
                             |--- \text{ hum} > 0.90
                                 |--- hum <= 1.03
                                 | |--- value: [31.00]
                                 |--- \text{ hum} > 1.03
                                    |--- value: [28.00]
                         |--- \text{ hum } > 1.15
                             |--- temp <= 0.74
                                 |--- weathersit <= 1.68
                                     |--- truncated branch of depth 2
                                 |-- weathersit > 1.68
                                 | |--- value: [15.00]
                             |--- temp > 0.74
                                 |--- value: [34.00]
                   -0.39
|--- workingday >
    |--- season <= -0.90
        |--- yr <= -0.01
        1
            |---| atemp <= -0.65
            | |--- weathersit <= 1.68
```

```
|--- \text{ temp}| <= -1.59
    |--- hum <= 0.74
        |--- \text{ temp}| <= -2.37
            |--- value: [15.00]
        |--- temp > -2.37
            |--- hum <= -0.79
                 |--- truncated branch of depth 3
            |--- \text{ hum } > -0.79
                |--- truncated branch of depth 6
    |--- \text{ hum} > 0.74
        |--- windspeed <= -1.00
            |--- value: [30.00]
        |--- windspeed > -1.00
            |--- windspeed <= 0.15
                 |--- value: [16.00]
            |--- windspeed > 0.15
                |--- value: [7.00]
  -- temp > -1.59
    |--- weekday <=-0.75
        |--- windspeed <= 1.25
            |--- windspeed <= 0.22
                |--- value: [28.00]
            |--- windspeed > 0.22
                 |--- value: [26.00]
        |--- windspeed > 1.25
            |--- value: [34.00]
    |--- weekday > -0.75
        |--- windspeed <= 0.15
            |---| atemp <= -1.53
                |--- value: [58.00]
            |--- atemp > -1.53
                 |--- truncated branch of depth 6
        |--- windspeed > 0.15
            |--- weekday <= 0.75
                 |--- truncated branch of depth 3
            |--- weekday > 0.75
                 |--- truncated branch of depth 2
weathersit >
               1.68
|--- temp <= -1.13
    \mid--- windspeed <= -1.13
        |--- value: [22.00]
    |--- windspeed > -1.13
        |--- value: [18.00]
  -- temp > -1.13
    |---| atemp <= -0.78
        |--- value: [12.00]
    |--- atemp > -0.78
        |--- value: [11.00]
```

```
|--- atemp > -0.65
    |--- temp <= -0.66
        |--- weekday <= 0.25
            |--- value: [76.00]
        |--- weekday > 0.25
            |--- value: [64.00]
    |--- temp > -0.66
        |--- \text{ temp}| <= -0.40
            |--- mnth <= 0.28
                |--- value: [36.00]
            |---mnth>0.28
                |--- value: [40.00]
        |--- temp > -0.40
            |--- value: [50.00]
       -0.01
yr >
--- mnth <= 0.28
    |--- mnth <= -1.17
        |--- temp <= -1.49
            |--- weekday <=-0.75
                |--- weathersit <= 0.12
                    |--- value: [72.00]
                |--- weathersit > 0.12
                    |--- value: [42.00]
            |--- weekday > -0.75
                |--- hum <= -0.79
                     |--- value: [59.00]
                |--- \text{ hum } > -0.79
                     |--- weekday <= 0.75
                         |--- truncated branch of depth 5
                     |--- weekday > 0.75
                         |--- value: [64.00]
          -- temp > -1.49
            |--- weekday <= 0.75
                |--- weathersit <= 1.68
                     |---| atemp <= -1.49
                         |--- value: [80.00]
                     |---| atemp > -1.49
                         |--- truncated branch of depth 6
                 |--- weathersit > 1.68
                     |--- hum <= 1.49
                     | |--- truncated branch of depth 3
                     |--- \text{ hum} > 1.49
                        |--- value: [89.00]
            |--- weekday > 0.75
                |--- mnth <= -1.47
                     |--- hum <= 0.58
                     1
                         |--- truncated branch of depth 2
                     |--- \text{ hum} > 0.58
```

```
|--- truncated branch of depth 2
                         |--- mnth > -1.47
                             |--- hum <= 1.49
                                 |--- truncated branch of depth 2
                             |--- \text{ hum} > 1.49
                             1
                                 |--- value: [71.00]
             --- mnth > -1.17
                |---| atemp <= -0.34
                    \mid--- windspeed <= -0.33
                         |--- temp <= -0.92
                             |--- hum <= 0.09
                             | |--- value: [91.00]
                             |--- \text{ hum} > 0.09
                             | |--- value: [92.00]
                         |--- temp > -0.92
                             |--- value: [88.00]
                    |--- windspeed > -0.33
                         |--- weekday <= 0.50
                             |--- value: [108.00]
                         |--- weekday > 0.50
                             |--- value: [99.00]
                  -- atemp > -0.34
                    |-- temp <= -0.04
                         |---| atemp <= -0.26
                             |--- value: [109.00]
                         |---| atemp > -0.26
                             \mid--- windspeed <= -0.21
                                 |--- truncated branch of depth 2
                             |--- windspeed > -0.21
                                |--- value: [113.00]
                    |--- temp > -0.04
                         |--- value: [100.00]
        |---mnth>0.28
            |---| atemp <= -1.18
                |--- weekday <= -0.50
                    |--- value: [17.00]
                |--- weekday > -0.50
                    |--- weekday <= 0.25
                        |--- value: [36.00]
                    |--- weekday > 0.25
                         |--- hum <= 0.22
                             |--- value: [51.00]
                         |--- \text{ hum} > 0.22
                             |--- value: [45.00]
            |---| atemp > -1.18
                |--- value: [80.00]
               -0.90
|--- season >
    |--- yr <= -0.01
```

```
|--- mnth| <= -0.59
   |--- atemp <= -0.43
        |--- weathersit <= 1.68
            |--- mnth <= -0.88
                |--- weekday <= 0.75
                    |--- windspeed <= 0.83
                        |--- truncated branch of depth 3
                    |--- windspeed > 0.83
                        |--- value: [50.00]
                |--- weekday > 0.75
                    |--- value: [32.00]
                mnth > -0.88
                |--- weekday <= 0.75
                    |--- temp <= -0.87
                        |--- value: [64.00]
                    |--- temp > -0.87
                       |--- value: [70.00]
                |--- weekday > 0.75
                    |--- hum <= 0.38
                        |--- value: [49.00]
                    |--- \text{ hum} > 0.38
                        |--- value: [35.00]
          -- weathersit > 1.68
            |--- temp <= -1.13
                |--- value: [28.00]
            |--- temp > -1.13
                |--- mnth <= -0.88
                    |--- value: [32.00]
                |---mnth> -0.88
                    |--- value: [34.00]
   |--- atemp > -0.43
        |--- weekday <= -0.25
            |--- windspeed <= 0.64
                |---| atemp <= -0.08
                    \mid--- windspeed <= -0.64
                        |--- value: [54.00]
                    |--- windspeed > -0.64
                        |--- truncated branch of depth 2
                |--- atemp > -0.08
                    |--- weekday <=-0.75
                        |--- value: [66.00]
                    |--- weekday > -0.75
                        |--- value: [65.00]
              -- windspeed > 0.64
                |--- weekday <= -0.75
                    |--- value: [46.00]
                |--- weekday > -0.75
                    |--- value: [38.00]
```

```
|--- weekday > -0.25
        |---| atemp <= 0.18
            |--- weekday <= 0.25
                |--- value: [64.00]
            |--- weekday > 0.25
                |--- windspeed <= 1.98
                    |--- value: [71.00]
                |--- windspeed > 1.98
                    |--- value: [75.00]
        |--- atemp > 0.18
            |--- value: [84.00]
        -0.59
mnth >
|--- weathersit <= 1.68
    |--- \text{ temp}| <= -0.09
        |---| atemp <= -1.14
            |--- weekday <= 0.75
                |--- temp <= -1.39
                    |--- truncated branch of depth 4
                |--- temp > -1.39
                    |--- truncated branch of depth 2
            |--- weekday > 0.75
                |--- hum <= 0.92
                | |--- truncated branch of depth 4
                |--- \text{ hum} > 0.92
                    |--- value: [13.00]
            atemp > -1.14
            |--- weathersit <= 0.12
                |--- weekday <= -0.75
                    |--- truncated branch of depth 4
                |--- weekday > -0.75
                    |--- truncated branch of depth 7
            |--- weathersit > 0.12
                |--- windspeed <= -0.58
                    |--- truncated branch of depth 5
                |--- windspeed > -0.58
                    |--- truncated branch of depth 3
      -- temp >
                -0.09
        |--- weekday <= 0.75
            \mid--- windspeed <= 0.64
                |--- weekday <= -0.75
                    |--- truncated branch of depth 7
                |--- weekday > -0.75
                    |--- truncated branch of depth 10
            |--- windspeed > 0.64
                |--- mnth| <= 0.57
                   |--- truncated branch of depth 6
                |-- mnth > 0.57
                   |--- truncated branch of depth 2
```

```
|--- weekday > 0.75
            |--- hum <= 1.52
                |--| mnth <= 0.28
                    |--- truncated branch of depth 5
                |---mnth>0.28
                    |--- truncated branch of depth 3
            |--- \text{ hum} > 1.52
                |--- value: [57.00]
    weathersit >
                   1.68
    |---| hum <= 0.66
        |--- season <= 0.90
            |--- windspeed <= 1.13
               |--- value: [112.00]
            |--- windspeed > 1.13
                |--- value: [110.00]
        |--- season > 0.90
            |--- value: [75.00]
    |--- \text{ hum} > 0.66
        |--- weekday <= 0.75
            \mid--- windspeed <= -0.58
                |--- temp <= 0.28
                    |--- value: [46.00]
                |--- temp > 0.28
                    |--- value: [75.00]
            |--- windspeed > -0.58
                |---| atemp <= 0.05
                | |--- truncated branch of depth 2
                |--- atemp > 0.05
                    |--- truncated branch of depth 3
        |--- weekday > 0.75
            |--- atemp <= 0.18
                |--- value: [82.00]
            |--- atemp > 0.18
                |--- value: [94.00]
  -0.01
weathersit <= 1.68
  -- temp <= -0.35
    |--- temp <= -0.87
        |--- hum <= 0.92
            |--- mnth <= 0.28
                |--- weekday <= 0.25
                | |--- truncated branch of depth 3
                |--- weekday > 0.25
                    |--- truncated branch of depth 4
            |--| mnth > 0.28
                |--- hum <= 0.51
                    |--- truncated branch of depth 7
                |--- \text{ hum} > 0.51
```

```
| |--- truncated branch of depth 3
        |--- \text{ hum} > 0.92
            |--- atemp <= -1.05
                |---| atemp <= -1.23
                   |--- value: [106.00]
                |---| atemp > -1.23
                    |--- truncated branch of depth 2
            |---| atemp > -1.05
                |--| mnth <= 1.15
                    |--- value: [116.00]
                |-- mnth > 1.15
                1
                    |--- truncated branch of depth 2
    |--- temp >
               -0.87
        |--- mnth <= -0.59
            |--- temp <= -0.76
                |--- hum <= 0.30
                   |--- value: [106.00]
                |--- \text{ hum} > 0.30
                    |--- value: [103.00]
            |--- temp > -0.76
                |--- weekday <= -0.50
                    |--- truncated branch of depth 3
                |--- weekday > -0.50
                | |--- truncated branch of depth 5
        |--| mnth > -0.59
            |--| mnth <= 1.44
                |--- windspeed <= 0.15
                | |--- truncated branch of depth 5
                |--- windspeed > 0.15
                    |--- truncated branch of depth 3
            |--- mnth > 1.44
                |--- windspeed <= -1.00
                    |--- value: [138.00]
                |--- windspeed > -1.00
                    \mid--- truncated branch of depth 3
|--- temp >
             -0.35
      -- weekday <= 0.75
        |--- mnth <= -0.30
            |---| atemp <= 0.14
                |--- hum <= 0.56
                | |--- truncated branch of depth 2
                |--- \text{ hum} > 0.56
                    |--- truncated branch of depth 3
            |---| atemp > 0.14
                |--- weathersit <= 0.12
                    |--- truncated branch of depth 5
                |--- weathersit > 0.12
                | |--- truncated branch of depth 2
```

```
|--- mnth > -0.30
              |--- weekday <= -0.75
                  |--- \text{ temp}| <= 0.07
                      |--- truncated branch of depth 4
                  |--- temp > 0.07
                      |--- truncated branch of depth 5
              |--- weekday > -0.75
                  |--- weekday <= 0.25
                      |--- truncated branch of depth 8
                  |--- weekday > 0.25
                      |--- truncated branch of depth 8
        -- weekday > 0.75
          |---| atemp <= -0.08
              |--- mnth <= -0.01
                  |--- value: [182.00]
              |--- mnth > -0.01
                |--- value: [157.00]
          |---| atemp > -0.08
              |--- mnth <= 0.28
                  |--- hum <= 0.04
                      |--- truncated branch of depth 2
                  |--- hum > 0.04
                      |--- truncated branch of depth 4
              |---mnth>0.28
                  |--- hum <= 1.18
                      |--- truncated branch of depth 3
                  |--- \text{ hum } > 1.18
                      |--- truncated branch of depth 3
-- weathersit >
                1.68
   --- mnth \le 0.72
      |--- temp <= 0.22
          |--- windspeed <= 0.22
              |--- hum <= 1.03
              | |--- value: [26.00]
              |--- \text{ hum} > 1.03
                  |--- value: [37.00]
          |--- windspeed > 0.22
              |--- value: [65.00]
      |--- temp > 0.22
          \mid--- windspeed <= -0.33
              \mid--- windspeed <= -1.13
                 |--- value: [120.00]
              |--- windspeed > -1.13
                  |--- value: [137.00]
          |--- windspeed > -0.33
              |--- weekday <= -0.75
                  |--- windspeed <= 0.70
                  | |--- value: [92.00]
```

```
|--- windspeed > 0.70
                                         |--- value: [79.00]
                                 |--- weekday > -0.75
                                     |--- temp <= 0.53
                                         |--- value: [24.00]
                                     |--- temp > 0.53
                                         |--- truncated branch of depth 2
                                  0.72
                       -- mnth >
                         |--- windspeed <= 1.92
                             |--- weekday <= -0.25
                                 |--- value: [179.00]
                             |--- weekday > -0.25
                                 |--- atemp <= 0.10
                                     |--- value: [124.00]
                                 |--- atemp > 0.10
                                     |--- weekday \leq 0.75
                                         |--- value: [133.00]
                                     |--- weekday > 0.75
                                     |--- value: [131.00]
                         |--- windspeed > 1.92
                             |--- value: [50.00]
       -0.73
- hr >
 --- temp <= -0.14
     |--- yr <= -0.01
         |--- season <= 0.90
             |--- hr <= 1.15
                 |---| atemp <= -0.78
                     |--- workingday <= -0.39
                         |--- hr <= -0.30
                             |--- hr <= -0.59
                                 |--- season <= -0.90
                                     |--- temp <= -1.39
                                         |--- truncated branch of depth 8
                                     |--- temp > -1.39
                                         |--- truncated branch of depth 5
                                 |--- season > -0.90
                                     \mid--- windspeed <= -0.09
                                         |--- truncated branch of depth 4
                                     |--- windspeed > -0.09
                                     1
                                         |--- truncated branch of depth 3
                             |--- hr > -0.59
                                 |--- season <= -0.90
                                     |--- temp <= -1.28
                                         |--- truncated branch of depth 9
                                     |--- temp > -1.28
                                         |--- truncated branch of depth 7
                                 |--- season > -0.90
                                     |--- hum <= -0.53
```

```
| |--- truncated branch of depth 2
              |--- \text{ hum } > -0.53
                  |--- truncated branch of depth 5
            -0.30
  |--- hr >
      |---| season <= -0.90
          |--- hr <= 0.72
              |---| atemp <= -1.05
              | |--- truncated branch of depth 12
              |---| atemp > -1.05
                  |--- truncated branch of depth 11
          |--- hr > 0.72
              |---| mnth <= -1.17
              | |--- truncated branch of depth 10
              |--- mnth > -1.17
              | |--- truncated branch of depth 7
      |--- season > -0.90
          |--- hum <= -1.26
              |--- weekday <= -0.00
                  |--- truncated branch of depth 5
              |--- weekday > -0.00
                  |--- truncated branch of depth 6
          |--- \text{ hum } > -1.26
              |--- temp <= -1.28
                 |--- truncated branch of depth 2
              |--- \text{ temp} > -1.28
              |--- truncated branch of depth 6
--- workingday > -0.39
  |--- hr <= -0.30
      |--- \text{ hr}| <= -0.59
          |--- weathersit <= 1.68
              |--- mnth <= -1.17
              | |--- truncated branch of depth 9
              |--- mnth > -1.17
              | |--- truncated branch of depth 9
          |--- weathersit > 1.68
              |--- mnth <= -0.88
              | |--- truncated branch of depth 4
              |--- mnth > -0.88
                  |--- truncated branch of depth 3
              |--- hr > -0.59
          |--- hr <= -0.44
              |--- weathersit <= 1.68
              | |--- truncated branch of depth 13
              |--- weathersit > 1.68
                  |--- truncated branch of depth 4
          |--- hr > -0.44
              |--- hum <= 1.08
              | |--- truncated branch of depth 9
```

```
|--- \text{ hum} > 1.08
                    | |--- truncated branch of depth 7
        |--- hr > -0.30
            |--- hr <= 0.72
                |---| atemp <= -1.23
                    |--- mnth <= 0.28
                    | |--- truncated branch of depth 14
                    |--- mnth > 0.28
                        |--- truncated branch of depth 2
                |---| atemp > -1.23
                    |--- hum <= 0.40
                    | |--- truncated branch of depth 14
                    |--- \text{ hum} > 0.40
                    | |--- truncated branch of depth 10
            |--- hr > 0.72
                |--- hr <= 1.01
                    |--- hum <= 1.41
                    | |--- truncated branch of depth 12
                    |--- \text{ hum} > 1.41
                        |--- truncated branch of depth 5
                |--- hr > 1.01
                    |--- hum <= 1.41
                    | |--- truncated branch of depth 12
                    |--- \text{ hum} > 1.41
                    1
                        |--- truncated branch of depth 4
              -0.78
|--- atemp >
    |--- weathersit <= 1.68
        |--- hr <= 0.72
            |--- mnth <= -0.88
                |--- hr <= -0.59
                    |--- workingday <= -0.39
                    | |--- truncated branch of depth 4
                    |--- workingday > -0.39
                        |--- truncated branch of depth 3
                |--- hr > -0.59
                    |--- hum <= 0.84
                    | |--- truncated branch of depth 18
                    |--- \text{ hum} > 0.84
                        |--- truncated branch of depth 7
            |--| mnth > -0.88
                |---| hum <= -1.44
                    |--- hr <= 0.43
                        |--- truncated branch of depth 2
                    |--- hr > 0.43
                        |--- truncated branch of depth 2
                |--- \text{ hum } > -1.44
                    |--- hum <= 1.47
                    | |--- truncated branch of depth 13
```

```
|--- \text{ hum } > 1.47
                |--- truncated branch of depth 5
            |--- hr >
    |--- workingday <= -0.39
        |--- season <= -0.90
            |--- hum <= -0.71
                |--- truncated branch of depth 6
            |--- \text{ hum } > -0.71
                |--- truncated branch of depth 6
        |--- season > -0.90
            |--- hr <= 0.86
                |--- truncated branch of depth 3
            |--- hr > 0.86
                |--- truncated branch of depth 6
    |--- workingday > -0.39
        |--- season <= -0.90
            |--- hr <= 1.01
                |--- truncated branch of depth 10
            |--- hr > 1.01
                |--- truncated branch of depth 4
          -- season > -0.90
            |--- hr <= 1.01
               |--- truncated branch of depth 5
            |--- hr > 1.01
                |--- truncated branch of depth 4
weathersit >
               1.68
|--- hr <= 0.72
    |--- season <= -0.90
        |--- hr <= 0.57
            |--- temp <= -0.66
                |--- value: [59.00]
            |--- temp > -0.66
                |--- truncated branch of depth 8
        |--- hr > 0.57
            |--- windspeed <= 0.64
                |--- truncated branch of depth 2
            |--- windspeed > 0.64
                |--- truncated branch of depth 3
    |--- season > -0.90
        |--- windspeed <= 0.15
            |--- value: [164.00]
        |--- windspeed > 0.15
            |--- windspeed <= 0.70
               |--- truncated branch of depth 2
            |--- windspeed > 0.70
                |--- truncated branch of depth 5
|--- hr >
          0.72
   |--- season <= -0.90
```

```
|--- hr <= 0.86
                        |--- weekday <= -0.25
                        | |--- truncated branch of depth 2
                        |--- weekday > -0.25
                            |--- truncated branch of depth 2
                    |--- hr > 0.86
                        |---| atemp <= -0.17
                            |--- truncated branch of depth 4
                        |---| atemp > -0.17
                            |--- value: [131.00]
                |--- season > -0.90
                    |--- hr <= 1.01
                        |--- hr <= 0.86
                        | |--- value: [291.00]
                        |--- hr > 0.86
                            |--- truncated branch of depth 2
                    |--- hr > 1.01
                        |--- value: [159.00]
|--- hr >
           1.15
    |--- \text{ temp}| <= -0.45
        |--- hr <= 1.44
            |--- atemp <= -0.96
                |--- workingday <= -0.39
                    |--- weekday <= 0.25
                        |--- hum <= 1.23
                        | |--- truncated branch of depth 8
                        |--- \text{ hum} > 1.23
                        | |--- truncated branch of depth 2
                    |--- weekday > 0.25
                        |---| atemp <= -1.23
                        | |--- truncated branch of depth 7
                        |---| atemp > -1.23
                            |--- truncated branch of depth 5
                |--- workingday > -0.39
                    |--- hr <= 1.29
                        |--- windspeed <= 0.83
                        | |--- truncated branch of depth 10
                        |--- windspeed > 0.83
                            |--- truncated branch of depth 5
                    |--- hr > 1.29
                        |--- weathersit <= 1.68
                            |--- truncated branch of depth 10
                        |--- weathersit > 1.68
                        | |--- truncated branch of depth 3
            |---| atemp > -0.96
                |--- season <= -0.90
                    |--- weathersit <= 1.68
                      |--- workingday <= -0.39
```

```
|--- truncated branch of depth 9
             |--- workingday >
                                -0.39
                 |--- truncated branch of depth 6
         |--- weathersit > 1.68
             |--- \text{ temp}| <= -0.82
                 |--- value: [55.00]
             |--- temp > -0.82
                 |--- truncated branch of depth 2
     |--- season > -0.90
         |--| mnth <= -0.59
             |---| atemp <= -0.70
                 |--- truncated branch of depth 7
             |---| atemp > -0.70
                 |--- truncated branch of depth 3
         |--- mnth > -0.59
             \mid--- windspeed <= 0.46
                 |--- value: [150.00]
             |--- windspeed > 0.46
             |--- value: [191.00]
- hr >
        1.44
 |--- \text{ temp}| <= -0.76
     |--- hr <= 1.58
         |--- workingday <= -0.39
             |---| atemp <= -1.36
             | |--- truncated branch of depth 5
             |---| atemp > -1.36
                 |--- truncated branch of depth 7
         |--- workingday > -0.39
             |--- \text{ temp}| <= -1.80
             | |--- truncated branch of depth 6
             |--- temp > -1.80
                 |--- truncated branch of depth 11
     |--- hr > 1.58
         |---| atemp <= -1.40
             \mid--- weekday <= -0.75
                 |--- truncated branch of depth 7
             |--- weekday > -0.75
                 |--- truncated branch of depth 7
         |---| atemp > -1.40
             |--- weekday <= 0.25
                 |--- truncated branch of depth 8
             |--- weekday > 0.25
                 |--- truncated branch of depth 9
   -- temp >
             -0.76
     |--- weathersit <= 1.68
         |--- weekday <= 0.25
         |---| hum <=-0.14
             | |--- truncated branch of depth 4
```

```
|--- \text{ hum } > -0.14
                    | |--- truncated branch of depth 5
                |--- weekday > 0.25
                    |--- temp <= -0.56
                        |--- truncated branch of depth 5
                    |--- temp > -0.56
                        |--- truncated branch of depth 3
            |--- weathersit > 1.68
                |---| atemp <= -0.52
                    |--- value: [17.00]
                |---| atemp > -0.52
                    |--- value: [11.00]
|--- temp > -0.45
    |--- hum <= 1.15
        |--- windspeed <= 0.15
            |--- weekday <= 0.25
                |--- mnth <= -0.59
                    |--- hr <= 1.51
                        |--- truncated branch of depth 3
                    |--- hr > 1.51
                      |--- value: [56.00]
                |---mnth>-0.59
                    |--- weathersit <= 0.12
                    | |--- value: [146.00]
                    |--- weathersit > 0.12
                        |--- truncated branch of depth 2
            |--- weekday > 0.25
                |--- hr <= 1.44
                    |--- hum <= -0.01
                    | |--- truncated branch of depth 4
                    |--- \text{ hum } > -0.01
                    | |--- value: [145.00]
                |--- hr > 1.44
                    |--- weekday <= 0.75
                        |--- truncated branch of depth 2
                    |--- weekday > 0.75
                    |--- truncated branch of depth 4
        |--- windspeed > 0.15
            |--- hr <= 1.58
                |--- workingday <= -0.39
                    |--- hum <= -1.28
                        |--- value: [108.00]
                    |--- \text{ hum } > -1.28
                       |--- truncated branch of depth 4
                |--- workingday > -0.39
                    |--- windspeed <= 0.40
                    |--- truncated branch of depth 3
                    |--- windspeed > 0.40
```

```
|--- truncated branch of depth 6
                            1.58
                 |--- hr >
                     |--- season <= -0.00
                         |--- windspeed <= 0.83
                             |--- value: [35.00]
                         |--- windspeed > 0.83
                             |--- truncated branch of depth 2
                     |--- season > -0.00
                         |--- value: [69.00]
        |--- hum >
                     1.15
            |--- windspeed <= -1.19
                 |--- hr <= 1.44
                    |--- value: [14.00]
                 |--- hr > 1.44
                     |--- value: [24.00]
            |-- windspeed > -1.19
                 |--- mnth <= -0.88
                     |--- weathersit <= 0.12
                         |--- value: [30.00]
                     |--- weathersit > 0.12
                         |--- weathersit <= 1.68
                             |--- value: [39.00]
                         |-- weathersit > 1.68
                             |--- value: [45.00]
                 |--| mnth > -0.88
                     |--- windspeed <= 0.95
                         \mid --- \text{ windspeed} \mid --- \text{ of } -0.39
                             |--- truncated branch of depth 2
                         |--- windspeed > -0.39
                             |--- truncated branch of depth 3
                     |--- windspeed > 0.95
                         |--- value: [32.00]
season >
           0.90
|--- hr <= 1.15
    |--- weathersit <= 1.68
        |--- hr <= 0.57
            |--- hum <= 0.71
                 |--- \text{ temp}| <= -0.76
                     |--- hum <= -0.89
                         |--- workingday <= -0.39
                            |--- truncated branch of depth 8
                         |--- workingday > -0.39
                             |--- truncated branch of depth 8
                     |--- \text{ hum } > -0.89
                         |--- workingday <= -0.39
                            |--- truncated branch of depth 10
                         |--- workingday > -0.39
                         | |--- truncated branch of depth 10
```

```
|--- temp > -0.76
         |--- hr <= -0.44
             |--- workingday <= -0.39
                 |--- truncated branch of depth 5
             |--- workingday > -0.39
                 |--- truncated branch of depth 6
          --- hr > -0.44
             |--- workingday <= -0.39
                |--- truncated branch of depth 11
             |--- workingday > -0.39
                 |--- truncated branch of depth 11
             0.71
   -- hum >
     |--- workingday <= -0.39
         |--- hr <= -0.30
             |--- hr <= -0.59
             | |--- truncated branch of depth 6
             |--- hr > -0.59
             | |--- truncated branch of depth 5
         |--- hr > -0.30
             |--- weekday <= -0.00
                 |--- truncated branch of depth 2
             |--- weekday > -0.00
                 |--- truncated branch of depth 3
     |--- workingday > -0.39
         |--- hr <= -0.44
             |--- hr <= -0.59
             | |--- truncated branch of depth 9
             |--- hr > -0.59
                 |--- truncated branch of depth 8
         |--- hr > -0.44
             |--- hr <= -0.30
                 |--- truncated branch of depth 6
             |--- hr > -0.30
                 |--- truncated branch of depth 4
       0.57
- hr >
 |--- workingday <=-0.39
     |--- hr <= 0.86
         |--- \text{ temp}| <= -0.97
             |--- hr <= 0.72
             | |--- truncated branch of depth 3
             |--- hr > 0.72
                 |--- truncated branch of depth 3
         |--- \text{ temp} > -0.97
             |--- weathersit <= 0.12
                 |--- truncated branch of depth 7
             |--- weathersit > 0.12
             |--- truncated branch of depth 3
     |--- hr > 0.86
```

```
|--- \text{ temp}| <= -0.35
                 |--- temp <= -1.28
                 | |--- truncated branch of depth 2
                 |--- temp > -1.28
                     |--- truncated branch of depth 8
             |--- temp > -0.35
                 \mid--- windspeed <= -1.19
                     |--- value: [220.00]
                 |--- windspeed > -1.19
                     |--- value: [335.00]
       -- workingday > -0.39
         |--- hr <= 1.01
             |--- hr <= 0.72
                 |--- weekday <= 0.75
                    |--- truncated branch of depth 5
                 1
                 |--- weekday > 0.75
                     |--- truncated branch of depth 4
             |--- hr > 0.72
                 |--- windspeed <= 2.47
                 | |--- truncated branch of depth 8
                 |--- windspeed > 2.47
                     |--- value: [145.00]
         |--- hr > 1.01
             |--- weekday <= 0.25
                 |--- windspeed <= 1.37
                     |--- truncated branch of depth 7
                 |--- windspeed > 1.37
                     |--- value: [122.00]
             |--- weekday > 0.25
                 \mid--- windspeed <= -1.19
                     |--- truncated branch of depth 2
                 |--- windspeed > -1.19
                     |--- truncated branch of depth 7
- weathersit >
 |--- weekday <= -0.75
     |--- workingday <= -0.39
         |--- hr <= 0.43
             |--- hr <= 0.28
                 |--- value: [308.00]
             |--- hr > 0.28
             | |--- value: [256.00]
         |--- hr > 0.43
             |--- windspeed <= -0.09
                 |--- value: [167.00]
             |--- windspeed > -0.09
                 |--- hum <= 1.10
                 1
                    |--- value: [173.00]
                 |--- \text{ hum} > 1.10
```

```
| |--- value: [206.00]
      -- workingday > -0.39
        |--- hr <= 0.72
            |--- hr <= 0.43
                |--- hr <= 0.28
                | |--- value: [118.00]
                |--- hr > 0.28
                    |--- value: [120.00]
            |--- hr > 0.43
                \mid--- windspeed <= -0.64
                   |--- value: [101.00]
                |--- windspeed > -0.64
                    |--- value: [108.00]
        |--- hr > 0.72
            |--- hr <= 1.01
                |--- hr <= 0.86
                  |--- value: [210.00]
                |--- hr > 0.86
                    |--- value: [192.00]
            |--- hr > 1.01
                |--- value: [137.00]
               -0.75
|--- weekday >
     --- hr <= 0.72
        |--- hr <= -0.30
            |---| atemp <= -1.09
                |--- temp <= -1.18
                | |--- value: [7.00]
                |--- temp > -1.18
                    |--- value: [20.00]
            |---| atemp > -1.09
                |--- hum <= 1.78
                | |--- truncated branch of depth 6
                |--- \text{ hum} > 1.78
                   |--- truncated branch of depth 2
                |--- hr > -0.30
            |--- hum <= 1.41
                |--- windspeed <= 1.62
                | |--- truncated branch of depth 7
                |--- windspeed > 1.62
                    |--- truncated branch of depth 3
                1
            |--- \text{ hum} > 1.41
                |--- temp <= -0.24
                    |--- truncated branch of depth 9
                |--- temp > -0.24
                1
                    |--- truncated branch of depth 6
    |--- hr > 0.72
        |---| atemp <= -0.92
        |--- hum <= 0.69
```

```
|--- value: [106.00]
                    |--- \text{ hum} > 0.69
                        |--- hr <= 0.86
                             |--- value: [31.00]
                         |--- hr > 0.86
                           |--- truncated branch of depth 2
                |---| atemp > -0.92
                    |---| hum <= 1.47
                        |--- windspeed <= 0.15
                        | |--- value: [228.00]
                        |-- windspeed > 0.15
                             |--- truncated branch of depth 4
                    |--- \text{ hum} > 1.47
                        |--- weekday <= -0.25
                             |--- truncated branch of depth 4
                        |--- weekday > -0.25
                        | |--- truncated branch of depth 2
|--- hr >
          1.15
    |--- hr <= 1.44
        |--- workingday <= -0.39
            |--- hum <= 0.66
                |--- temp <= -1.39
                    |--- hum <= -0.17
                        |--- hum <= -0.69
                        | |--- value: [83.00]
                         |--- \text{ hum } > -0.69
                            |--- truncated branch of depth 2
                    |--- \text{ hum } > -0.17
                        |--- weekday <= -0.00
                        | |--- value: [89.00]
                        |--- weekday > -0.00
                            |--- value: [96.00]
                |--- temp > -1.39
                    |--- weekday <= 1.24
                        |---| atemp <= -0.43
                        | |--- truncated branch of depth 3
                         |---| atemp > -0.43
                            |--- truncated branch of depth 2
                    |--- weekday > 1.24
                        |--- hr <= 1.29
                        | |--- truncated branch of depth 5
                        |--- hr > 1.29
                        1
                            |--- truncated branch of depth 2
                        0.66
                |--- weekday <= -0.50
                    |--| mnth <= 1.44
                        |--- mnth <= 1.15
                        | |--- value: [87.00]
```

```
|--- mnth > 1.15
                | |--- truncated branch of depth 2
            |--- mnth > 1.44
                |--- value: [72.00]
        |--- weekday > -0.50
            |---| atemp <= -0.56
                |--- hum <= 0.97
                    |--- value: [31.00]
                |--- \text{ hum} > 0.97
                    |--- truncated branch of depth 3
            |---| atemp > -0.56
                |--- value: [92.00]
|--- workingday > -0.39
    |--- windspeed <= -0.33
        |--- weekday <= 0.75
            |--- temp <= -0.24
                |---| atemp <= -0.43
                    |--- truncated branch of depth 5
                |---| atemp > -0.43
                    |--- truncated branch of depth 6
            |--- \text{ temp} > -0.24
                |--- hum <= 0.61
                | |--- value: [248.00]
                |--- \text{ hum} > 0.61
                | |--- truncated branch of depth 2
          -- weekday > 0.75
            |---| mnth <= 1.44
                |--- hr <= 1.29
                    |--- value: [95.00]
                |--- hr > 1.29
                | |--- value: [85.00]
            |--- mnth > 1.44
                |--- hum <= 0.79
                | |--- value: [140.00]
                |--- \text{ hum} > 0.79
                    |--- value: [150.00]
      -- windspeed > -0.33
        |--- weathersit <= 1.68
            |--- hr <= 1.29
                |--- windspeed <= 1.19
                    |--- truncated branch of depth 6
                |--- windspeed > 1.19
                    |--- truncated branch of depth 2
            |--- hr > 1.29
                |--- mnth <= 1.15
                | |--- truncated branch of depth 4
                |--- mnth > 1.15
                    |--- truncated branch of depth 7
```

```
|--- weathersit > 1.68
            |--- windspeed <= 2.17
                |--- hum <= 0.14
                    |--- value: [143.00]
                |--- \text{ hum} > 0.14
                    |--- truncated branch of depth 4
            |--- windspeed > 2.17
                |--- \text{ temp}| <= -0.92
                    |--- value: [6.00]
                |--- temp > -0.92
                    |--- value: [26.00]
       1.44
hr >
|--- hr <= 1.58
    |--- weekday <= -1.25
        |--- mnth <= 1.15
            |--- temp <= -0.71
                |--- value: [71.00]
            |--- temp > -0.71
                |--- value: [94.00]
        |--- mnth > 1.15
            |--- windspeed <= -0.76
                |--- hum <= 0.45
                | |--- value: [43.00]
                |--- \text{ hum} > 0.45
                    |--- value: [40.00]
            |--- windspeed > -0.76
                |---| atemp <= -1.09
                    |--- value: [49.00]
                |---| atemp > -1.09
                    |--- value: [64.00]
    |--- weekday > -1.25
        |--- weathersit <= 1.68
            |--- atemp <= -0.43
                |--- workingday <= -0.39
                    |--- truncated branch of depth 6
                |--- workingday > -0.39
                    |--- truncated branch of depth 7
            |--- atemp > -0.43
                |--- temp <= -0.24
                    |--- truncated branch of depth 4
                |--- temp > -0.24
                    |--- truncated branch of depth 2
        |--- weathersit > 1.68
            |--- weekday <= -0.25
                |--- weekday <= -0.75
                    |--- value: [78.00]
                |--- weekday > -0.75
                    |--- value: [87.00]
```

```
|--- weekday > -0.25
            |--- hum <= 0.97
                |--- value: [36.00]
            |--- \text{ hum} > 0.97
                |--- value: [46.00]
       1.58
hr >
|--- weekday <= 0.25
    |--- hum <= 0.84
        |--- temp <= -0.35
            |--- temp <= -1.28
                |--- truncated branch of depth 2
            |--- \text{ temp} > -1.28
                |--- truncated branch of depth 5
        |--- temp > -0.35
            |---| atemp <= -0.17
                |--- value: [94.00]
            |---| atemp > -0.17
            | |--- truncated branch of depth 2
    |--- \text{ hum} > 0.84
        |--- weekday <= -0.25
            |--- workingday <= -0.39
                |--- truncated branch of depth 3
            |--- workingday > -0.39
                |--- truncated branch of depth 4
        |--- weekday > -0.25
            |--- hum <= 1.44
            | |--- value: [31.00]
            |--- \text{ hum} > 1.44
            | |--- value: [16.00]
  -- weekday > 0.25
    |---| atemp <= -0.52
        |--- hum <= 0.53
            |---| atemp <= -1.14
               |--- truncated branch of depth 4
            |---| atemp > -1.14
                |--- truncated branch of depth 4
        |--- \text{ hum} > 0.53
            \mid--- windspeed <= -1.13
                |--- truncated branch of depth 2
            |--- windspeed > -1.13
                |--- truncated branch of depth 5
    |--- atemp > -0.52
        |---| atemp <= -0.34
            |--- mnth <= 1.15
                |--- truncated branch of depth 2
            |--- mnth > 1.15
                |--- truncated branch of depth 3
        |---| atemp > -0.34
```

```
|--- hum <= -0.22
                                | |--- value: [90.00]
                                |--- \text{ hum} > -0.22
                                    |--- value: [95.00]
           -0.01
|--- yr >
    |--- hr <= 1.15
        |--- season <= -0.90
            |---| atemp <= -0.96
                |--- workingday <= -0.39
                    |--- hr <= -0.30
                        |--- hr <= -0.59
                            \mid--- windspeed <= -0.58
                                |---| atemp <= -1.14
                                | |--- truncated branch of depth 2
                                |---| atemp > -1.14
                                    |--- value: [41.00]
                            |--- windspeed > -0.58
                                |--- holiday <= 2.82
                                    |--- truncated branch of depth 7
                                \mid--- holiday > 2.82
                                    |--- truncated branch of depth 2
                        |--- hr > -0.59
                            |--- weekday <= 0.50
                                |--- hum <= 0.95
                                | |--- truncated branch of depth 10
                                |--- \text{ hum} > 0.95
                                | |--- truncated branch of depth 3
                            |--- weekday > 0.50
                                |--- mnth| <= 0.28
                                | |--- truncated branch of depth 6
                                |--- mnth > 0.28
                                | |--- truncated branch of depth 3
                              -0.30
                    |--- hr >
                        |--- hr <= 0.72
                            |---| atemp <= -1.23
                               |--- weathersit <= 1.68
                                | |--- truncated branch of depth 11
                                |--- weathersit > 1.68
                                    |--- truncated branch of depth 6
                            |--- atemp > -1.23
                                |--- windspeed <= 1.62
                                | |--- truncated branch of depth 11
                                |--- windspeed > 1.62
                                    |--- truncated branch of depth 6
                        |--- hr > 0.72
                            |--- hum <= -0.32
                                |---| atemp <= -1.58
                                | |--- truncated branch of depth 5
```

```
|---| atemp > -1.58
                | |--- truncated branch of depth 8
            |--- \text{ hum} > -0.32
                |---| atemp <= -1.23
                   |--- truncated branch of depth 7
                |--- atemp > -1.23
                   |--- truncated branch of depth 4
|--- workingday > -0.39
    |--- hr <= -0.44
        |--- hr <= -0.59
            |--- mnth <= 0.13
               |--- weathersit <= 1.68
               | |--- truncated branch of depth 8
                |--- weathersit > 1.68
                   |--- truncated branch of depth 2
            |--- mnth > 0.13
                |--- weekday <= 0.25
                   |--- truncated branch of depth 2
                |--- weekday > 0.25
               |--- truncated branch of depth 2
        |--- hr > -0.59
            |---| mnth <= 0.28
               |--- weathersit <= 1.68
               | |--- truncated branch of depth 9
                |--- weathersit > 1.68
                   |--- truncated branch of depth 2
                |--| mnth > 0.28
                |--- windspeed <= 0.15
                   |--- truncated branch of depth 3
                |--- windspeed > 0.15
                   |--- value: [472.00]
    |--- hr > -0.44
        |--- hr <= 0.72
            |--- weathersit <= 1.68
               |--- hr <= -0.30
               | |--- truncated branch of depth 11
                |--- hr > -0.30
                   |--- truncated branch of depth 13
            |--- weathersit > 1.68
                |--- weekday <= -0.25
                  |--- truncated branch of depth 5
                |--- weekday > -0.25
                1
                   |--- truncated branch of depth 8
        |--- hr > 0.72
            |--- hum <= 0.01
               |--- hr <= 1.01
               |--- truncated branch of depth 9
                |--- hr > 1.01
```

```
| |--- truncated branch of depth 5
                |--- \text{ hum } > 0.01
                    |---| mnth <= 0.13
                        |--- truncated branch of depth 7
                    |--| mnth > 0.13
                      |--- truncated branch of depth 5
                    |---| atemp > -0.96
    |--- hr <= 0.72
        |--- hr <= -0.44
            |--- hr <= -0.59
                \mid--- workingday <= -0.39
                    |---| atemp <= -0.56
                    | |--- truncated branch of depth 2
                    |--- atemp > -0.56
                        |--- value: [86.00]
                |--- workingday > -0.39
                    |---| atemp <= -0.26
                       |--- truncated branch of depth 6
                    |--- atemp > -0.26
                    |--- truncated branch of depth 3
            |--- hr > -0.59
                |--- workingday <= -0.39
                    |--- hum <= 1.60
                    | |--- truncated branch of depth 2
                    |--- \text{ hum} > 1.60
                        |--- value: [218.00]
                |--- workingday > -0.39
                    |--- mnth <= -1.17
                        |--- truncated branch of depth 5
                    |--- mnth > -1.17
                        |--- truncated branch of depth 5
        |--- hr > -0.44
            |--- workingday <= -0.39
                |--| mnth <= 0.28
                    |--- hr <= -0.15
                    | |--- truncated branch of depth 5
                    |--- hr > -0.15
                       |--- truncated branch of depth 13
                |---mnth>0.28
                    |--- hum <= -0.76
                    | |--- truncated branch of depth 3
                    |--- \text{ hum } > -0.76
                        |--- truncated branch of depth 6
            |--- workingday > -0.39
                |--- hr <= -0.30
                    |---| mnth <= -1.17
                    1
                        |--- truncated branch of depth 6
                    |--- mnth > -1.17
```

```
|--- truncated branch of depth 4
        |--- hr > -0.30
            |--- hr <= 0.57
                |--- truncated branch of depth 15
            |--- hr > 0.57
                |--- truncated branch of depth 9
     0.72
|--- workingday <= -0.39
    |--- hum <= -0.79
        |--- hr <= 1.01
            \mid--- windspeed <= -0.27
            | |--- truncated branch of depth 2
            |--- windspeed > -0.27
            | |--- truncated branch of depth 7
        |--- hr > 1.01
            |--- weekday <= -1.25
              |--- value: [143.00]
            |--- weekday > -1.25
                |--- truncated branch of depth 4
    1--- \text{ hum} > -0.79
        |--- hum <= -0.45
            |--- value: [112.00]
        |--- \text{ hum } > -0.45
            |---| atemp <= -0.48
            | |--- value: [102.00]
            |--- atemp > -0.48
                |--- truncated branch of depth 2
  -- workingday > -0.39
    |---| hum <= 0.82
        |--- hr <= 1.01
            |--- temp <= -0.45
               |--- truncated branch of depth 9
            |--- temp > -0.45
                |--- truncated branch of depth 7
        |--- hr > 1.01
            |--- weekday \leq 0.75
            | |--- truncated branch of depth 7
            |--- weekday > 0.75
               |--- truncated branch of depth 3
   |--- \text{ hum} > 0.82
        |--- windspeed <= -0.09
            |--- weekday <= 0.25
                |--- truncated branch of depth 3
            |--- weekday > 0.25
                |--- truncated branch of depth 4
        |--- windspeed > -0.09
            |--- hr <= 0.86
            | |--- truncated branch of depth 2
```

```
| | |--- hr > 0.86
                      | |--- truncated branch of depth 2
               -0.90
|--- season >
    |--- weathersit <= 1.68
        l--- hr <= 0.57
            |--- hr <= -0.44
                |--- workingday <= -0.39
                    |--- holiday <= 2.82
                       |--- hr <= -0.59
                        | |--- truncated branch of depth 8
                        |--- hr > -0.59
                           |--- truncated branch of depth 7
                   |--- holiday > 2.82
                        |---| atemp <= -0.78
                           |--- truncated branch of depth 3
                        |---| atemp > -0.78
                           |--- truncated branch of depth 2
                |--- workingday > -0.39
                    |--- hr <= -0.59
                        |---| atemp <= -0.34
                           |--- truncated branch of depth 11
                        |--- atemp > -0.34
                       1
                           |--- truncated branch of depth 7
                    |--- hr > -0.59
                       |---| atemp <= -0.61
                           |--- truncated branch of depth 11
                        |---| atemp > -0.61
                           |--- truncated branch of depth 9
                      -0.44
            |--- hr >
                |--- workingday <= -0.39
                    |--- hr <= -0.15
                       |--- hr <= -0.30
                       | |--- truncated branch of depth 11
                        |--- hr > -0.30
                           |--- truncated branch of depth 10
                    |--- hr > -0.15
                        |---| atemp <= -0.96
                       | |--- truncated branch of depth 5
                        |--- atemp > -0.96
                        1
                           |--- truncated branch of depth 14
               |--- workingday > -0.39
                    |--- hr <= -0.30
                       |--- temp <= -0.87
                       | |--- truncated branch of depth 9
                        |--- temp > -0.87
                        | |--- truncated branch of depth 9
                    |--- hr > -0.30
                       |--- hr <= -0.01
```

```
| |--- truncated branch of depth 13
                |--- hr > -0.01
                    |--- truncated branch of depth 17
|--- hr > 0.57
    |--- workingday <=-0.39
        |---| atemp <= -0.52
            |--- weathersit <= 0.12
                |--- hum <= 0.43
                | |--- truncated branch of depth 6
                |--- \text{ hum} > 0.43
                    |--- truncated branch of depth 2
            |--- weathersit > 0.12
                \mid--- windspeed <= 0.83
                | |--- truncated branch of depth 3
                |--- windspeed > 0.83
                    |--- truncated branch of depth 2
        |--- atemp > -0.52
            \mid--- windspeed \leq -0.58
                |--- holiday <= 2.82
                | |--- truncated branch of depth 5
                |--- holiday > 2.82
                    |--- truncated branch of depth 2
            |--- windspeed > -0.58
                |--- hr <= 1.01
                    |--- truncated branch of depth 8
                |--- hr > 1.01
                    |--- truncated branch of depth 2
      -- workingday > -0.39
        |--- hr <= 0.72
            |--- weekday <= 0.75
                |--- hum <= 0.30
                | |--- truncated branch of depth 10
                |--- \text{ hum} > 0.30
                   |--- truncated branch of depth 2
            |--- weekday > 0.75
                |--- windspeed <= 1.25
                   |--- truncated branch of depth 6
                |--- windspeed > 1.25
                    |--- value: [520.00]
        l--- hr > 0.72
            |--- hr <= 1.01
                |--- mnth <= 1.15
                | |--- truncated branch of depth 6
                |--- mnth > 1.15
                    |--- truncated branch of depth 13
            |--- hr > 1.01
                |--- temp <= -0.35
                | |--- truncated branch of depth 9
```

```
|--- temp > -0.35
                  |--- truncated branch of depth 2
-- weathersit >
 |--- hum <= -0.63
      l--- hr <= 0.64
          |--- weekday <= 0.50
              |--- value: [202.00]
          |--- weekday > 0.50
              |--- value: [242.00]
      |--- hr > 0.64
          |--- windspeed <= 1.07
              |--- value: [689.00]
          |--- windspeed > 1.07
              |--- value: [585.00]
             -0.63
 |--- hum >
      |--- windspeed <= 0.15
          |--- hum <= 0.58
              |--- holiday <= 2.82
                  |--- weekday <= 0.25
                     |--- truncated branch of depth 6
                  |--- weekday > 0.25
                      |--- truncated branch of depth 3
              \mid--- holiday > 2.82
                  |--- hr <= 0.57
                  | |--- value: [370.00]
                  |--- hr > 0.57
                  | |--- value: [377.00]
          |--- \text{ hum} > 0.58
              |--- hr <= -0.44
                  |--| mnth <= 1.44
                  | |--- truncated branch of depth 4
                  |--| mnth > 1.44
                      |--- truncated branch of depth 2
              |--- hr > -0.44
                  |--- weekday <= -0.75
                      |--- truncated branch of depth 6
                  |--- weekday > -0.75
                      |--- truncated branch of depth 4
        -- windspeed > 0.15
          |---| hum <=-0.12
              |--- value: [398.00]
          |--- \text{ hum } > -0.12
              |--- workingday <= -0.39
                  |---| mnth <= 0.13
                  | |--- truncated branch of depth 6
                  |--- mnth > 0.13
                  1
                      |--- truncated branch of depth 4
              |--- workingday > -0.39
```

```
|--- \text{ temp}| <= -0.61
                              |--- truncated branch of depth 9
                          |--- temp > -0.61
                  |--- truncated branch of depth 3
-- hr >
 |--- hr <= 1.44
      |---| atemp <= -1.05
          |--- season <= -0.00
              |--- workingday <= -0.39
                  |--- hum <= -1.20
                      |--- hum <= -1.26
                          |--- hr <= 1.29
                          | |--- truncated branch of depth 3
                          |--- hr > 1.29
                          | |--- truncated branch of depth 3
                      |--- \text{ hum } > -1.26
                          |--- weekday <= -0.00
                              |--- value: [111.00]
                          |--- weekday > -0.00
                          1
                             |--- value: [110.00]
                  |--- \text{ hum } > -1.20
                      |--- hr <= 1.29
                          |---| atemp <= -1.14
                          | |--- truncated branch of depth 5
                          |---| atemp > -1.14
                          |--- value: [103.00]
                      |--- hr > 1.29
                          |--- mnth <= -1.47
                          | |--- truncated branch of depth 5
                          |--- mnth > -1.47
                          | |--- truncated branch of depth 6
                -- workingday > -0.39
                  |--- mnth| <= 0.28
                      |--- hr <= 1.29
                          |--- temp <= -1.28
                          | |--- truncated branch of depth 5
                          |--- temp > -1.28
                          | |--- truncated branch of depth 2
                      |--- hr > 1.29
                          |---| atemp <= -1.14
                          | |--- truncated branch of depth 7
                          |---| atemp > -1.14
                              |--- truncated branch of depth 2
                  |--| mnth > 0.28
                      |--- hum <= 0.82
                          |---| atemp <= -1.40
                          |--- truncated branch of depth 2
                          |---| atemp > -1.40
```

```
| |--- truncated branch of depth 5
                |--- hum > 0.82
                    |---| atemp <= -1.23
                        |--- truncated branch of depth 2
                    |---| atemp > -1.23
                        |--- value: [20.00]
      -- season >
                   -0.00
        |--- workingday <= -0.39
            |--- hr <= 1.29
                |--- value: [58.00]
            |--- hr > 1.29
                |---| atemp <= -1.31
                  |--- value: [75.00]
                |---| atemp > -1.31
                    |--- value: [87.00]
          -- workingday > -0.39
            |--- hr <= 1.29
                |---| atemp <= -1.36
                    |--- value: [232.00]
                |---| atemp > -1.36
                    |--- hum <= -0.43
                    | |--- value: [223.00]
                    |--- \text{ hum } > -0.43
                      |--- truncated branch of depth 2
            |--- hr > 1.29
                |--- weekday <=-0.25
                    |---| atemp <= -1.14
                    | |--- truncated branch of depth 2
                    |--- atemp > -1.14
                        |--- truncated branch of depth 2
                |--- weekday > -0.25
                    |---| atemp <= -1.27
                        |--- value: [191.00]
                    |---| atemp > -1.27
                        |--- truncated branch of depth 2
              -1.05
|--- atemp >
         weathersit <= 1.68
        |--- workingday <= -0.39
            |--- weekday <= 1.00
                |--- temp <= -0.66
                    |--- mnth <= -1.47
                        |--- value: [126.00]
                    |--- mnth > -1.47
                       |--- truncated branch of depth 6
                |--- temp > -0.66
                    |--- windspeed <= 0.58
                    |--- truncated branch of depth 5
                    |--- windspeed > 0.58
```

```
| |--- value: [83.00]
    |--- weekday > 1.00
        |--- mnth| <= 0.13
            \mid--- windspeed <= -1.00
                |--- value: [102.00]
            |--- windspeed > -1.00
                |--- truncated branch of depth 4
        |--| mnth > 0.13
            |--- hum <= -0.66
               |--- value: [296.00]
            |--- \text{ hum} > -0.66
                |--- truncated branch of depth 6
  -- workingday > -0.39
    |--- hr <= 1.29
        |--- season <= -0.90
            |--- weekday <= 0.75
               |--- truncated branch of depth 8
            |--- weekday > 0.75
                |--- truncated branch of depth 4
        |--- season > -0.90
            |---| atemp <= -0.34
                |--- truncated branch of depth 12
            |--- atemp > -0.34
                |--- truncated branch of depth 9
    |--- hr > 1.29
        |--- season <= -0.90
            |---| atemp <= -0.43
            | |--- truncated branch of depth 8
            |---| atemp > -0.43
                |--- truncated branch of depth 5
        |--- season > -0.90
            |--- mnth <= 1.15
                |--- truncated branch of depth 9
            |--- mnth > 1.15
                |--- truncated branch of depth 11
weathersit > 1.68
|--- windspeed <= -0.46
    |--- value: [241.00]
|--- windspeed > -0.46
    |--- weekday <= 1.00
        |---| atemp <= -0.56
            |--- hr <= 1.29
                |--- truncated branch of depth 3
            |--- hr > 1.29
                |--- truncated branch of depth 2
        |---| atemp > -0.56
            |--- hr <= 1.29
            | |--- truncated branch of depth 2
```

```
|--- hr > 1.29
                            |--- value: [39.00]
                        |--- weekday > 1.00
                    |--| mnth <= -0.88
                        |--- \text{ hr}| <= 1.29
                            |--- value: [111.00]
                        |--- hr > 1.29
                            |--- value: [104.00]
                    |---mnth> -0.88
                        |--- value: [84.00]
|--- hr >
           1.44
    |--- season <= -0.90
        |--- temp <= -0.97
            |--- hr <= 1.58
                |--- mnth <= 0.28
                    |--- temp <= -1.39
                        |--- temp <= -1.80
                            |--- truncated branch of depth 2
                        |--- temp > -1.80
                            |--- truncated branch of depth 6
                    |--- temp > -1.39
                        |--- holiday <= 2.82
                        | |--- truncated branch of depth 7
                        |--- holiday > 2.82
                            |--- truncated branch of depth 2
                |---mnth>0.28
                    |--- hum <= 0.97
                        |--- temp <= -1.13
                            |--- truncated branch of depth 5
                        |--- temp > -1.13
                            |--- value: [19.00]
                    |--- \text{ hum} > 0.97
                        |--- windspeed <= 0.28
                            |--- value: [12.00]
                        |--- windspeed > 0.28
                            |--- value: [11.00]
                       1.58
                |--- weekday <= 0.75
                    |--- weathersit <= 1.68
                        |--- hum <= -0.84
                        | |--- truncated branch of depth 5
                        |--- \text{ hum } > -0.84
                            |--- truncated branch of depth 9
                    |--- weathersit > 1.68
                        |--- holiday <= 2.82
                            |--- truncated branch of depth 2
                        |--- holiday > 2.82
                        | |--- value: [28.00]
```

```
|--- weekday > 0.75
                |--- weathersit <= 1.68
                    |--- mnth <= 0.28
                        |--- truncated branch of depth 5
                    |-- mnth > 0.28
                        |--- truncated branch of depth 2
                  -- weathersit > 1.68
                    |--| mnth <= -1.47
                        |--- value: [38.00]
                    |--| mnth > -1.47
                        |--- value: [20.00]
                 -0.97
         temp >
        |--- hr <= 1.58
            |--- weathersit <= 1.68
                |--- temp <= -0.66
                    |---| atemp <= -0.70
                       |--- truncated branch of depth 8
                    |--- atemp > -0.70
                        |--- truncated branch of depth 2
                |--- \text{ temp} > -0.66
                    |--- weekday <= -0.25
                        |--- truncated branch of depth 3
                    |--- weekday > -0.25
                        |--- truncated branch of depth 6
            |--- weathersit > 1.68
                |--- value: [55.00]
        |--- hr > 1.58
            |--- weekday <= 0.25
                \mid--- windspeed <= -1.19
                    |--- value: [99.00]
                |--- windspeed > -1.19
                    |--- workingday <= -0.39
                        |--- value: [29.00]
                    |--- workingday > -0.39
                        |--- truncated branch of depth 6
               - weekday > 0.25
                  -- temp <= -0.61
                    |--- hum <= 0.30
                        |--- truncated branch of depth 4
                    1--- \text{ hum} > 0.30
                        |--- value: [23.00]
                |--- temp > -0.61
                    |--- weekday <= 0.75
                        |--- truncated branch of depth 2
                    |--- weekday > 0.75
                        |--- truncated branch of depth 3
               -0.90
|--- season >
    |--- hr <= 1.58
```

```
|--- weathersit <= 1.68
        |--- weekday <= -0.25
            |--- temp <= -0.56
                |--- workingday <= -0.39
                    |--- truncated branch of depth 2
                |--- workingday > -0.39
                    |--- truncated branch of depth 9
            |--- temp > -0.56
                |--- weekday <= -1.25
                    |--- truncated branch of depth 4
                |--- weekday > -1.25
                    |--- truncated branch of depth 4
        |--- weekday > -0.25
            |--- holiday <= 2.82
                |--- hum <= -0.66
                | |--- truncated branch of depth 6
                |--- \text{ hum } > -0.66
                | |--- truncated branch of depth 9
            |--- holiday > 2.82
                |--- value: [44.00]
      -- weathersit > 1.68
        |--- temp <= -0.76
            |--- temp <= -0.92
                |--- value: [60.00]
            |--- temp > -0.92
                |--- mnth| <= 0.43
                | |--- value: [13.00]
                |-- mnth > 0.43
                | |--- value: [21.00]
        |--- temp > -0.76
            |--- windspeed <= 0.95
                |--- holiday <= 2.82
                    |--- truncated branch of depth 2
                \mid--- holiday > 2.82
                    |--- value: [107.00]
            |--- windspeed > 0.95
                |--- value: [37.00]
|--- hr >
           1.58
    |--- weekday <= 0.75
        |--- weathersit <= 0.12
            |--- atemp <= -0.70
                |---| mnth <= 1.15
                    |--- truncated branch of depth 6
                |--- mnth > 1.15
                    |--- truncated branch of depth 9
            |---| atemp > -0.70
                |--- temp <= -0.45
                | |--- truncated branch of depth 3
```

```
|--- temp > -0.45
                                   |--- truncated branch of depth 6
                        |--- weathersit > 0.12
                            \mid--- windspeed <= 0.70
                                |--- hum <= 0.97
                                | |--- truncated branch of depth 5
                                |-- hum > 0.97
                                    |--- truncated branch of depth 3
                            |--- windspeed > 0.70
                                |---| mnth <= 0.43
                                    |--- value: [17.00]
                                |-- mnth > 0.43
                                | |--- value: [13.00]
                      -- weekday > 0.75
                        \mid--- windspeed <= -0.21
                            |--- season <= 0.45
                                |--- windspeed <= -1.19
                                    |--- value: [123.00]
                                |--- windspeed > -1.19
                                | |--- value: [42.00]
                            |--- season > 0.45
                                |--- temp <= -0.61
                                | |--- truncated branch of depth 5
                                |--- temp > -0.61
                                    |--- truncated branch of depth 4
                          -- windspeed > -0.21
                            |--- temp <= -1.13
                                |--- value: [57.00]
                            |--- temp > -1.13
                                |--- windspeed <= 1.50
                                    |--- truncated branch of depth 6
                                |--- windspeed > 1.50
                                |--- value: [67.00]
        -0.14
temp >
|--- yr <= -0.01
   |--- hr <= 1.29
        |--- hr <= 0.57
            |--- workingday <=-0.39
                |--- hr <= -0.30
                    |--- hr <= -0.44
                        |--- hr <= -0.59
                            |--- hum <= 0.92
                                |--- season <= -0.00
                                | |--- truncated branch of depth 4
                                |--- season > -0.00
                                | |--- truncated branch of depth 6
                            |--- \text{ hum} > 0.92
                                |--- windspeed <= 1.13
```

```
|--- truncated branch of depth 7
                |--- windspeed > 1.13
                    |--- truncated branch of depth 2
        |--- hr > -0.59
            |--| mnth <= 0.86
                |--- weekday <= 0.25
                   |--- truncated branch of depth 10
                |--- weekday > 0.25
                   |--- truncated branch of depth 6
            |---mnth>0.86
                |--- value: [254.00]
    |--- hr > -0.44
        |--- hum <= 0.92
            \mid--- windspeed <= 1.37
                |---| atemp <= 1.73
                | |--- truncated branch of depth 11
                |--- atemp > 1.73
                    |--- value: [132.00]
            |--- windspeed > 1.37
                |--- value: [53.00]
        |--- \text{ hum} > 0.92
            |--- hum <= 1.34
                |--- hum <= 1.21
                | |--- truncated branch of depth 3
                |--- \text{ hum} > 1.21
                    |--- value: [177.00]
            |--- \text{ hum} > 1.34
                |--- atemp <= 0.27
                    |--- value: [100.00]
                |--- atemp > 0.27
                  |--- truncated branch of depth 2
|--- hr > -0.30
    |--- hum <= 0.82
        |--- hr <= -0.15
            \mid--- windspeed <= -0.58
                |--- atemp <= 1.15
                | |--- truncated branch of depth 4
                |--- atemp > 1.15
                   |--- truncated branch of depth 3
            |--- windspeed > -0.58
                |--- windspeed <= 2.78
                    |--- truncated branch of depth 9
                |--- windspeed > 2.78
                | |--- value: [142.00]
        |--- hr > -0.15
            |---| atemp <= 0.27
                |--- holiday <= 2.82
                | |--- truncated branch of depth 9
```

```
|--- holiday > 2.82
                    | |--- truncated branch of depth 5
                |---| atemp > 0.27
                    |--- temp <= 1.83
                       |--- truncated branch of depth 15
                    |--- temp > 1.83
                        |--- truncated branch of depth 11
                    0.82
          -- hum >
            \mid--- windspeed <= 2.35
                |--- temp <= 1.00
                    |--- season <= 0.90
                    | |--- truncated branch of depth 7
                    |--- season > 0.90
                    | |--- truncated branch of depth 3
                |--- temp > 1.00
                    |--- hum <= 0.97
                    | |--- truncated branch of depth 4
                    |--- \text{ hum} > 0.97
                        |--- value: [68.00]
            |--- windspeed > 2.35
                |--- hum <= 1.21
                    |--- hr <= 0.43
                    | |--- truncated branch of depth 2
                    |--- hr > 0.43
                        |--- value: [78.00]
                |--- hum > 1.21
                    |--- hr <= 0.43
                        |--- value: [23.00]
                    |--- hr > 0.43
                        |--- value: [30.00]
|--- workingday >
    |--- hr <= -0.44
        |--- \text{ hr } <= -0.59
            |--- weathersit <= 1.68
                |--- mnth <= -0.30
                    |--- weathersit <= 0.12
                    | |--- truncated branch of depth 5
                    |--- weathersit > 0.12
                        |--- truncated branch of depth 6
                |--| mnth > -0.30
                    |--- weekday <= 0.75
                        |--- truncated branch of depth 17
                    |--- weekday > 0.75
                        |--- truncated branch of depth 7
            |--- weathersit > 1.68
                |--- season <= -0.00
                    |--- value: [314.00]
                |--- season > -0.00
```

```
|--- windspeed <= 0.28
                   |--- truncated branch of depth 4
                |--- windspeed > 0.28
                    |--- truncated branch of depth 2
               -0.59
    |--- hr >
        |--- weathersit <= 1.68
            |--- weekday <=-0.75
                |--- windspeed <= 1.62
                | |--- truncated branch of depth 9
                |--- windspeed > 1.62
                    |--- value: [476.00]
            |--- weekday > -0.75
                |--- hum <= 1.36
                | |--- truncated branch of depth 13
                |--- \text{ hum} > 1.36
                | |--- truncated branch of depth 3
        |--- weathersit > 1.68
            |---| atemp <= 0.49
                |--- mnth| <= 0.28
                | |--- truncated branch of depth 2
                |--- mnth > 0.28
                    |--- truncated branch of depth 6
            |--- atemp > 0.49
                |--- value: [434.00]
|--- hr >
    |--- hum <= 0.82
        |--- weekday <= 0.75
            |--- hr <= -0.30
                |--- mnth| <= -0.30
                | |--- truncated branch of depth 9
                |--- mnth > -0.30
                | |--- truncated branch of depth 11
            |--- hr > -0.30
                |--- hr <= -0.01
                    |--- truncated branch of depth 16
                |--- hr > -0.01
                   |--- truncated branch of depth 18
        |--- weekday > 0.75
            |--- temp <= 1.99
                |--- hr <= -0.01
                | |--- truncated branch of depth 11
                |--- hr > -0.01
                    |--- truncated branch of depth 16
            |--- temp > 1.99
                |--- hum <= -1.13
                | |--- truncated branch of depth 4
                |--- \text{ hum } > -1.13
                | |--- truncated branch of depth 4
```

```
|--- \text{ hum} > 0.82
                |--- hr <= -0.30
                     |--- hum <= 1.49
                         |--- temp <= 0.59
                             |--- truncated branch of depth 8
                         |--- temp > 0.59
                             |--- truncated branch of depth 4
                     |--- \text{ hum} > 1.49
                         |--- weathersit <= 1.68
                             |--- truncated branch of depth 5
                         |--- weathersit > 1.68
                             |--- truncated branch of depth 4
                |--- hr > -0.30
                    |---| atemp <= 0.54
                         |--- mnth| <= -0.16
                         | |--- truncated branch of depth 8
                         |--- mnth > -0.16
                             |--- truncated branch of depth 11
                    |--- atemp > 0.54
                         |--- temp <= 1.00
                             |--- truncated branch of depth 8
                         |--- temp > 1.00
                            |--- truncated branch of depth 5
|--- hr >
           0.57
    |--- hr <= 1.15
        |--- hr <= 0.72
            |--- workingday <= -0.39
                |--- windspeed <= 1.92
                    |--- temp <= 0.07
                         |--- holiday <= 2.82
                            |--- truncated branch of depth 3
                         |--- holiday > 2.82
                             |--- value: [114.00]
                    |--- temp > 0.07
                         |--- \text{ temp}| <= 2.04
                             |--- truncated branch of depth 10
                         |--- temp > 2.04
                             |--- truncated branch of depth 3
                |--- windspeed > 1.92
                     \mid--- holiday <= 2.82
                         |--- temp <= 0.38
                             |--- value: [33.00]
                         |--- temp > 0.38
                             |--- value: [24.00]
                     |--- holiday > 2.82
                         |--- value: [243.00]
            |--- workingday > -0.39
                |--- hum <= 0.66
```

```
|--- mnth <= -0.59
            |--- mnth <= -0.88
            | |--- truncated branch of depth 7
            |---mnth> -0.88
                |--- truncated branch of depth 7
        |--| mnth > -0.59
            |---| atemp <= 1.77
                |--- truncated branch of depth 14
            |--- atemp > 1.77
                |--- truncated branch of depth 9
    |--- \text{ hum} > 0.66
        \mid--- windspeed <= -1.00
            |--- weekday <= 0.75
                |--- truncated branch of depth 4
            |--- weekday > 0.75
                |--- value: [56.00]
        |--- windspeed > -1.00
            |--- windspeed <= 1.07
                |--- truncated branch of depth 5
            |--- windspeed > 1.07
                |--- truncated branch of depth 4
       0.72
  -- workingday <= -0.39
    |--- hum <= 1.34
        |--- \text{ temp}| <= 0.38
            |--- mnth <= 1.15
            | |--- truncated branch of depth 9
            |--- mnth > 1.15
                |--- truncated branch of depth 6
        |--- temp > 0.38
            |---| hum <= 0.82
            | |--- truncated branch of depth 15
            |--- \text{ hum} > 0.82
            |--- truncated branch of depth 5
    |--- \text{ hum } > 1.34
        |--| mnth <= 0.57
            |--- hr <= 1.01
              |--- truncated branch of depth 2
            |--- hr > 1.01
                |--- value: [71.00]
        |--- mnth > 0.57
            |--- hum <= 1.49
                |--- truncated branch of depth 2
            |--- \text{ hum} > 1.49
                |--- value: [175.00]
|--- workingday > -0.39
    |--- hr <= 1.01
        |--- hum <= 1.21
```

```
|--- mnth <= -0.88
                | |--- truncated branch of depth 6
                |--- mnth > -0.88
                    |--- truncated branch of depth 20
            |--- \text{ hum} > 1.21
                |--- hum <= 1.49
                    |--- truncated branch of depth 6
                |--- \text{ hum} > 1.49
                    |--- truncated branch of depth 5
        |--- hr > 1.01
            |---| atemp <= 0.80
                |--- hum <= 1.49
                | |--- truncated branch of depth 11
                |--- \text{ hum} > 1.49
                    |--- truncated branch of depth 4
            |--- atemp > 0.80
                |--- mnth <= -0.88
                    |--- truncated branch of depth 2
                |---mnth> -0.88
                    |--- truncated branch of depth 18
      1.15
|---| atemp <= 0.80
      -- weathersit <= 1.68
        |---| atemp <= 0.19
            |--- weekday <= -1.25
                |--- hum <= 0.51
                   |--- truncated branch of depth 3
                |--- \text{ hum } > 0.51
                    |--- value: [174.00]
            |--- weekday > -1.25
                |--- season <= 0.90
                | |--- truncated branch of depth 7
                |--- season > 0.90
                    |--- truncated branch of depth 7
        |---| atemp > 0.19
            |--| mnth <= 0.28
                |--- hum <= 1.18
                | |--- truncated branch of depth 8
                |--- \text{ hum} > 1.18
                    |--- truncated branch of depth 2
                1
            |---mnth>0.28
                |--- weekday <= -0.00
                    |--- truncated branch of depth 7
                |--- weekday > -0.00
                    |--- truncated branch of depth 6
    |--- weathersit > 1.68
        |--- mnth| <= 0.28
            \mid--- windspeed <= 0.15
```

```
|--- workingday <= -0.39
                | |--- truncated branch of depth 2
                |--- workingday > -0.39
                    |--- value: [213.00]
            |--- windspeed > 0.15
                |--- value: [105.00]
        |--| mnth > 0.28
            |---| atemp <= 0.45
                |--- season <= 0.90
                    |--- truncated branch of depth 2
                |--- season > 0.90
                    |--- value: [90.00]
            |--- atemp > 0.45
                |--- mnth <= 0.57
                    |--- value: [58.00]
                |--- mnth > 0.57
                    |--- truncated branch of depth 3
|--- atemp > 0.80
    |--- hum <= 0.74
        |--- mnth <= -0.59
            |--- weekday <= 0.50
                |---| atemp <= 0.89
                | |--- truncated branch of depth 2
                |--- atemp > 0.89
                    |--- value: [166.00]
            |--- weekday > 0.50
                |---| mnth <= -1.17
                    |--- value: [124.00]
                |--- mnth > -1.17
                   |--- value: [149.00]
        |-- mnth > -0.59
            |--- workingday <= -0.39
                |--- holiday <= 2.82
                | |--- truncated branch of depth 7
                \mid--- holiday > 2.82
                    |--- truncated branch of depth 2
            |--- workingday > -0.39
                |--- \text{ temp}| <= 1.73
                | |--- truncated branch of depth 14
                |--- temp > 1.73
                    |--- truncated branch of depth 3
    |--- hum >
                0.74
        |--- weathersit <= 1.68
            |--- temp <= 1.21
                |--- hum <= 0.95
                | |--- truncated branch of depth 3
                |--- \text{ hum} > 0.95
                | |--- truncated branch of depth 3
```

```
|--- temp > 1.21
                        |--- value: [256.00]
                 |--- weathersit > 1.68
                     |--- weekday <= 0.75
                          |--- value: [87.00]
                     |--- weekday > 0.75
                         |--- value: [137.00]
- hr >
        1.29
 |--- hr <= 1.58
     |---| atemp <= 0.63
         |--- weathersit <= 1.68
             |--- hr <= 1.44
                 \mid--- windspeed <= 0.52
                     \mid--- weekday <= -1.25
                          |--- \text{ temp}| <= 0.12
                             |--- truncated branch of depth 2
                          |--- temp > 0.12
                              |--- truncated branch of depth 3
                     |--- weekday > -1.25
                          |---| atemp <= 0.19
                              |--- truncated branch of depth 9
                          |--- atemp > 0.19
                          |--- truncated branch of depth 8
                 |--- windspeed > 0.52
                     |--- hum <= -1.75
                          |--- value: [72.00]
                     |--- \text{ hum } > -1.75
                          |--- weekday <= -1.25
                              |--- truncated branch of depth 2
                          |--- weekday > -1.25
                              |--- truncated branch of depth 4
               -- hr > 1.44
                 |--- weekday <= 0.25
                     |--- mnth <= 1.15
                          \mid--- windspeed <= 2.53
                              |--- truncated branch of depth 10
                          |--- windspeed > 2.53
                              |--- value: [64.00]
                      |--- mnth > 1.15
                          |--- weekday <= -1.25
                             |--- truncated branch of depth 2
                          |--- weekday > -1.25
                              |--- truncated branch of depth 3
                 |--- weekday > 0.25
                     |--- mnth <= -1.03
                          |---| atemp <= 0.14
                         |--- value: [76.00]
                          |--- atemp > 0.14
```

```
| |--- value: [107.00]
                |--- mnth > -1.03
                    |--- hum <= 1.18
                        |--- truncated branch of depth 8
                    |--- \text{ hum} > 1.18
                        |--- truncated branch of depth 3
      -- weathersit >
                      1.68
        |---| hum <= 1.34
            |--- \text{ temp}| <= 0.59
                |--- hr <= 1.44
                    |--- season <= 0.90
                    | |--- truncated branch of depth 2
                    |--- season > 0.90
                    | |--- value: [74.00]
                |--- hr > 1.44
                    |--- hum <= 1.15
                      |--- value: [79.00]
                    |--- hum > 1.15
                        |--- value: [39.00]
            |--- temp > 0.59
                |---| atemp <= 0.54
                    |--- value: [141.00]
                |--- atemp > 0.54
                    |--- value: [151.00]
        1--- \text{ hum} > 1.34
            |--- hr <= 1.44
                \mid--- windspeed <= -0.76
                    |--- value: [38.00]
                |--- windspeed > -0.76
                    |---| mnth <= 0.13
                    | |--- truncated branch of depth 2
                    |--| mnth > 0.13
                    | |--- truncated branch of depth 2
            |--- hr > 1.44
                |--- weekday <= 0.75
                    |---| atemp <= 0.32
                        |--- truncated branch of depth 2
                    |--- atemp > 0.32
                        |--- value: [29.00]
                |--- weekday > 0.75
                    |--- value: [26.00]
|--- atemp > 0.63
    |--- hr <= 1.44
        |---| hum <= 0.95
            |--- holiday <= 2.82
                |--- weekday <=-0.75
                    |--- windspeed <= 1.62
                | |--- truncated branch of depth 8
```

```
|--- windspeed > 1.62
                   |--- value: [130.00]
            |--- weekday > -0.75
                |--- season <= -0.90
                    |--- value: [113.00]
                |--- season > -0.90
                    |--- truncated branch of depth 18
        \mid--- holiday > 2.82
            |---| atemp <= 1.24
                |--- value: [457.00]
            |---| atemp > 1.24
                |--- value: [149.00]
    |--- hum >
                0.95
        |---| hum <= 1.49
            |--- mnth| <= 0.28
                |---| mnth <= -0.30
                  |--- value: [229.00]
                |---mnth>-0.30
                    |--- truncated branch of depth 3
            |---mnth>0.28
                |--| mnth <= 0.57
                | |--- truncated branch of depth 4
                |--- mnth > 0.57
                | |--- truncated branch of depth 2
        |--- \text{ hum} > 1.49
            |--- value: [60.00]
|--- hr >
          1.44
    |--- weekday <= -0.75
        |--- holiday <= 2.82
            |--- mnth <= -0.59
                |--- windspeed <= 1.56
                    |--- truncated branch of depth 2
                |--- windspeed > 1.56
                    |--- value: [75.00]
            |--- mnth > -0.59
                |--- windspeed <= 1.25
                    |--- truncated branch of depth 7
                |--- windspeed > 1.25
                    |--- value: [95.00]
        \mid--- holiday > 2.82
            |--- windspeed <= -0.33
                |--- value: [326.00]
            |--- windspeed > -0.33
                |--- value: [106.00]
    |--- weekday > -0.75
        |---| hum <= 1.21
            |--- mnth <= -0.59
               |--- windspeed <= 0.15
```

```
|--- value: [118.00]
                        |--- windspeed > 0.15
                            |--- value: [117.00]
                    |--| mnth > -0.59
                        |--- hum <= -0.27
                           |--- truncated branch of depth 9
                        |--- \text{ hum } > -0.27
                        | |--- truncated branch of depth 10
                |--- \text{ hum } > 1.21
                    |--- value: [77.00]
|--- hr >
           1.58
    |--- weekday <= 0.75
        |--- atemp <= 0.54
            |--- weathersit <= 1.68
                |--- weekday <= 0.25
                    |--- windspeed <= 0.40
                        |--- mnth <= 1.15
                            |--- truncated branch of depth 8
                        |--- mnth > 1.15
                            |--- value: [46.00]
                    |--- windspeed > 0.40
                        |--- temp <= 0.12
                        | |--- truncated branch of depth 2
                        |--- temp > 0.12
                            |--- truncated branch of depth 4
                   - weekday > 0.25
                    |--- season <= 0.90
                        |--- windspeed <= -0.39
                            |--- truncated branch of depth 2
                        |--- windspeed > -0.39
                            |--- value: [103.00]
                    |--- season > 0.90
                        |--- temp <= 0.28
                            |--- truncated branch of depth 2
                        |--- temp > 0.28
                            |--- value: [47.00]
              -- weathersit > 1.68
                |--- temp <= 0.28
                    |--- season <= -0.00
                        |--- value: [42.00]
                    |--- season > -0.00
                        |--- weekday <= -0.25
                            |--- value: [58.00]
                        |--- weekday > -0.25
                            |--- value: [54.00]
                |--- temp > 0.28
                    |--- mnth| <= -0.16
                       |--- value: [54.00]
```

```
|--- mnth > -0.16
                     |--- holiday <= 2.82
                        |--- truncated branch of depth 2
                     \mid--- holiday > 2.82
                         |--- value: [20.00]
        atemp >
        |--- weekday <= -0.25
            |--- hum <= 1.23
                |---| atemp <= 1.51
                    |---| atemp <= 0.63
                         |--- truncated branch of depth 2
                     |--- atemp > 0.63
                         |--- truncated branch of depth 14
                |--- atemp > 1.51
                     |--- value: [132.00]
            |--- \text{ hum } > 1.23
                |--- value: [135.00]
        |--- weekday > -0.25
            |--- hum <= 1.21
                |--- temp <= 0.79
                     |--- hum <= 0.22
                    | |--- truncated branch of depth 4
                     |--- \text{ hum} > 0.22
                         |--- truncated branch of depth 3
                |--- temp > 0.79
                     |---| atemp <= 0.89
                         |--- truncated branch of depth 4
                     |--- atemp > 0.89
                         |--- truncated branch of depth 7
            |--- \text{ hum } > 1.21
                |--- value: [56.00]
|--- weekday > 0.75
    |--- mnth <= -0.30
        |--- hum <= 1.62
            \mid--- windspeed <= 0.15
                \mid--- windspeed <= -0.76
                    |--- value: [145.00]
                |--- windspeed > -0.76
                    |--- temp <= 0.33
                         |--- truncated branch of depth 3
                     |--- temp > 0.33
                         |--- truncated branch of depth 2
            |--- windspeed > 0.15
                |--- weathersit <= 0.12
                    |--- value: [77.00]
                |--- weathersit > 0.12
                    |--- value: [86.00]
        |--- hum >
                    1.62
```

```
|--- value: [44.00]
                -- mnth > -0.30
                  |--- temp <= 1.42
                      |--- mnth <= 0.28
                          |--- windspeed <= -0.58
                              |---| atemp <= 1.24
                                  |--- truncated branch of depth 4
                              |--- atemp > 1.24
                                  |--- value: [177.00]
                          |--- windspeed > -0.58
                              |---| atemp <= 1.11
                                  |--- truncated branch of depth 4
                              |--- atemp > 1.11
                                  |--- value: [146.00]
                      |--| mnth > 0.28
                          \mid--- windspeed <= 0.52
                              |--- temp <= 0.90
                                  |--- truncated branch of depth 5
                              |--- temp > 0.90
                                  |--- truncated branch of depth 4
                          |--- windspeed > 0.52
                              |---| atemp <= 0.93
                                  |--- value: [120.00]
                              |--- atemp > 0.93
                                  |--- value: [108.00]
                              1.42
                     - temp >
                      |--- weekday <= 1.24
                          |--- value: [116.00]
                      |--- weekday > 1.24
                          |--- value: [104.00]
-- yr >
        -0.01
  |--- hr <= 1.29
      |--- hr <= 0.57
          |--- workingday <= -0.39
              |--- hr <= -0.30
                  |--- hr <= -0.44
                      |--- hr <= -0.59
                          |--- weekday <= -0.50
                              |--- hum <= 0.82
                              |--- truncated branch of depth 7
                              |--- \text{ hum} > 0.82
                                  |--- truncated branch of depth 5
                          |--- weekday > -0.50
                              |--- windspeed <= 0.15
                                  |--- truncated branch of depth 7
                              |--- windspeed > 0.15
                              | |--- truncated branch of depth 4
                      |--- hr > -0.59
```

```
|--- mnth <= -0.59
             |---| atemp <= 0.18
               |--- value: [154.00]
             |--- atemp > 0.18
                 |--- value: [597.00]
           -- mnth > -0.59
             |--- weekday <= 0.75
                 |--- truncated branch of depth 12
             |--- weekday > 0.75
                 |--- truncated branch of depth 9
   -- hr >
          -0.44
     |--- weekday <= -0.50
         |---| atemp <= 0.93
             |--- hum <= -0.37
             | |--- truncated branch of depth 4
             |--- \text{ hum } > -0.37
             | |--- truncated branch of depth 7
         |---| atemp > 0.93
             |--- season <= -0.00
             | |--- truncated branch of depth 2
             |--- season > -0.00
                 |--- truncated branch of depth 6
     |--- weekday > -0.50
         |--- weathersit <= 0.12
             |--| mnth \leq 0.57
                 |--- truncated branch of depth 6
             |---mnth>0.57
                 |--- truncated branch of depth 4
         |--- weathersit > 0.12
             |--- windspeed <= 0.40
               |--- truncated branch of depth 3
             |--- windspeed > 0.40
             Ι
                |--- value: [288.00]
- hr >
       -0.30
 |--- hum <= 0.30
     |---| atemp <= 1.15
         |--- holiday <= 2.82
             |--- hr <= -0.15
             | |--- truncated branch of depth 6
             |--- hr > -0.15
                 |--- truncated branch of depth 15
         |--- holiday > 2.82
             |--- hum <= -0.22
             | |--- truncated branch of depth 3
             |--- \text{ hum } > -0.22
                 |--- truncated branch of depth 5
     |--- atemp > 1.15
         |---| atemp <= 2.04
```

```
|--- hr <= -0.15
                    | |--- truncated branch of depth 6
                    |--- hr > -0.15
                        |--- truncated branch of depth 13
                |--- atemp > 2.04
                    |--- windspeed <= 1.80
                        |--- truncated branch of depth 8
                    |--- windspeed > 1.80
                        |--- value: [526.00]
        |--- hum >
                    0.30
            |--- temp <= 0.79
                |--- season <= -0.90
                    |--- hr <= -0.15
                    | |--- value: [443.00]
                    |--- hr > -0.15
                        |--- truncated branch of depth 2
                |--- season > -0.90
                    |--- mnth| <= 0.57
                        |--- truncated branch of depth 9
                    |--| mnth > 0.57
                        |--- truncated branch of depth 4
            |--- temp > 0.79
                |--- hr <= -0.15
                    |--- hum <= 0.48
                    | |--- truncated branch of depth 3
                    |--- \text{ hum} > 0.48
                    | |--- truncated branch of depth 3
                  -- hr > -0.15
                    |--- windspeed <= 1.13
                       |--- truncated branch of depth 7
                    |--- windspeed > 1.13
                        |--- truncated branch of depth 2
|--- workingday >
                  -0.39
   |--- hr <= -0.44
        |--- hr <= -0.59
            |--- weathersit <= 1.68
                |--- hum <= 1.03
                    |--- weekday <= 0.75
                    | |--- truncated branch of depth 15
                    |--- weekday > 0.75
                        |--- truncated branch of depth 6
                |--- \text{ hum} > 1.03
                    |--- atemp <= 0.10
                        |--- truncated branch of depth 3
                    |---| atemp > 0.10
                        |--- truncated branch of depth 8
            |--- weathersit > 1.68
                |--- hum <= 0.92
```

```
|--- weekday <= -0.50
                | |--- value: [407.00]
                |--- weekday > -0.50
                    |--- value: [483.00]
            |--- \text{ hum} > 0.92
                |---| atemp <= 0.05
                    |--- value: [372.00]
                |--- atemp > 0.05
                    |--- truncated branch of depth 5
    |--- hr >
               -0.59
        |--- weathersit <= 1.68
            |--- mnth| <= 0.57
                |--- hum <= 0.92
                | |--- truncated branch of depth 11
                |--- \text{ hum} > 0.92
                    |--- truncated branch of depth 9
            |-- mnth > 0.57
                |--- hum <= 1.49
                | |--- truncated branch of depth 9
                |--- \text{ hum} > 1.49
                    |--- value: [467.00]
           - weathersit > 1.68
            |--- hum <= 1.08
                |--- hum <= -0.19
                | |--- value: [576.00]
                |--- \text{ hum } > -0.19
                    |--- value: [646.00]
              -- hum > 1.08
                \mid--- windspeed <= -0.46
                    |--- value: [535.00]
                |--- windspeed > -0.46
                | |--- truncated branch of depth 2
           -0.44
|--- hr >
    |--- weekday <= 0.75
        |--- hr <= -0.30
            |--- weathersit <= 1.68
                |--- mnth| <= 0.28
                | |--- truncated branch of depth 14
                |---mnth>0.28
                    |--- truncated branch of depth 12
            |--- weathersit > 1.68
                |--- hum <= 1.08
                    |--- truncated branch of depth 3
                |--- \text{ hum} > 1.08
                | |--- truncated branch of depth 4
        |--- hr > -0.30
            |--- hr <= -0.01
               |--- weathersit <= 1.68
```

```
|--- truncated branch of depth 19
                      |--- weathersit > 1.68
                         |--- truncated branch of depth 7
                 |--- hr > -0.01
                      |---| hum <= 0.82
                     | |--- truncated branch of depth 20
                     |--- \text{ hum} > 0.82
                     | |--- truncated branch of depth 8
           -- weekday > 0.75
             |--- season <= -0.90
                 |--- hr <= -0.01
                     |--- hum <= 1.78
                     | |--- truncated branch of depth 2
                     |--- \text{ hum} > 1.78
                     | |--- value: [126.00]
                 |--- hr > -0.01
                     |--- atemp <= 0.10
                         |--- truncated branch of depth 5
                      |--- atemp > 0.10
                         |--- value: [222.00]
             |--- season > -0.90
                 |--- hr <= -0.01
                     |--- hr <= -0.30
                     | |--- truncated branch of depth 10
                     |--- hr > -0.30
                         |--- truncated branch of depth 11
                 |--- hr > -0.01
                     |--- hum <= 0.56
                     | |--- truncated branch of depth 13
                     |--- \text{ hum} > 0.56
                     | |--- truncated branch of depth 5
- hr >
       0.57
 |--- hr <= 1.01
     |--- hr <= 0.72
         |--- weathersit <= 1.68
             |--- workingday <=-0.39
                 |--- \text{ temp}| <= 1.31
                     |--- mnth| <= 0.57
                     | |--- truncated branch of depth 11
                     |--| mnth > 0.57
                     | |--- truncated branch of depth 9
                 |--- temp > 1.31
                     |---| atemp <= 1.86
                     | |--- truncated branch of depth 7
                     |--- atemp > 1.86
                         |--- truncated branch of depth 5
             |--- workingday > -0.39
                 |--- mnth| <= 0.28
```

```
|--- weekday \leq 0.75
                | |--- truncated branch of depth 15
                |--- weekday > 0.75
                    |--- truncated branch of depth 9
            |--- mnth > 0.28
                |--- mnth <= 1.15
                    |--- truncated branch of depth 10
                |--- mnth > 1.15
                    |--- truncated branch of depth 3
    |--- weathersit > 1.68
        |--- hum <= 0.92
            |---| mnth <= -0.01
                |--- hum <= 0.43
                | |--- truncated branch of depth 4
                |--- \text{ hum} > 0.43
                | |--- value: [389.00]
            |--- mnth > -0.01
                |--- weekday <= -0.75
                    |--- truncated branch of depth 2
                |--- weekday > -0.75
                | |--- truncated branch of depth 2
        |--- \text{ hum} > 0.92
            |---| mnth <= 0.28
                |--- hum <= 1.47
                | |--- value: [326.00]
                |--- \text{ hum} > 1.47
                    |--- value: [177.00]
            |---mnth>0.28
                |--- hum <= 1.34
                | |--- truncated branch of depth 2
                |--- \text{ hum} > 1.34
                | |--- value: [173.00]
          0.72
|--- hr >
    |--- workingday <= -0.39
        |--- hum <= 0.53
            |--- atemp <= 1.51
                |--- temp <= 0.28
                | |--- truncated branch of depth 8
                |--- \text{ temp} > 0.28
                    |--- truncated branch of depth 13
                1
            |--- atemp > 1.51
                |--- windspeed <= -0.33
                    |--- truncated branch of depth 6
                |--- windspeed > -0.33
                    |--- truncated branch of depth 8
        |--- \text{ hum} > 0.53
            |--- hum <= 0.95
               |--- windspeed <= -1.13
```

```
|--- value: [500.00]
                    |--- windspeed > -1.13
                        |--- truncated branch of depth 5
                |--- \text{ hum} > 0.95
                    |---| atemp <= 0.49
                       |--- truncated branch of depth 4
                    |--- atemp > 0.49
                        |--- truncated branch of depth 2
          -- workingday > -0.39
            |--- hum <= 0.90
                |--- mnth <= -0.01
                    |--- weathersit <= 1.68
                    | |--- truncated branch of depth 16
                    |--- weathersit > 1.68
                        |--- truncated branch of depth 4
                |--- mnth > -0.01
                    |--- weekday <= 0.75
                        |--- truncated branch of depth 13
                    |--- weekday > 0.75
                        |--- truncated branch of depth 9
            |--- \text{ hum} > 0.90
                |--- hum <= 1.34
                    |--- weathersit <= 0.12
                    | |--- truncated branch of depth 3
                    |--- weathersit > 0.12
                        |--- truncated branch of depth 7
                |--- \text{ hum} > 1.34
                    |--- windspeed <= 1.31
                        |--- truncated branch of depth 2
                    |--- windspeed > 1.31
                      |--- value: [715.00]
|--- hr >
         1.01
    |--- workingday <= -0.39
        |--- hr <= 1.15
            |--- hum <= 0.43
                |---| atemp <= 0.80
                    |--- windspeed <= -0.58
                       |--- value: [215.00]
                    |--- windspeed > -0.58
                        |--- truncated branch of depth 8
                    1
                |--- atemp > 0.80
                    |---| atemp <= 1.24
                        |--- truncated branch of depth 9
                    |--- atemp > 1.24
                    | |--- truncated branch of depth 8
            |--- \text{ hum} > 0.43
                |--- windspeed <= 1.80
                   |--- hum <= 1.21
```

```
| |--- truncated branch of depth 7
                |--- \text{ hum} > 1.21
                    |--- truncated branch of depth 3
            |--- windspeed > 1.80
                |--- value: [54.00]
      -- hr >
        |---| atemp <= 0.80
            |--- windspeed <= 0.70
                \mid--- windspeed <= -0.33
                | |--- truncated branch of depth 3
                |-- windspeed > -0.33
                    |--- truncated branch of depth 6
            |--- windspeed > 0.70
                |---| atemp <= 0.18
                    |--- value: [39.00]
                |--- atemp > 0.18
                    |--- truncated branch of depth 2
        |--- atemp > 0.80
            |--- weathersit <= 0.12
                |--- holiday <= 2.82
                | |--- truncated branch of depth 11
                |--- holiday > 2.82
                | |--- truncated branch of depth 3
            |--- weathersit > 0.12
                \mid--- windspeed <= -0.09
                    |--- value: [104.00]
                |--- windspeed > -0.09
                    |--- truncated branch of depth 4
|--- workingday > -0.39
    |--- hr <= 1.15
        |---| atemp <= 0.71
            |--- weathersit <= 1.68
                |--- season <= -0.90
                  |--- truncated branch of depth 5
                |--- season > -0.90
                    |--- truncated branch of depth 12
            |--- weathersit > 1.68
                |--- hum <= 0.64
                | |--- value: [476.00]
                |--- \text{ hum} > 0.64
                   |--- truncated branch of depth 3
        |---| atemp > 0.71
            |--- mnth <= 0.28
                |--- hum <= -1.46
                | |--- truncated branch of depth 6
                |--- \text{ hum } > -1.46
                |--- truncated branch of depth 12
            |--| mnth > 0.28
```

```
|--- weekday <= 0.75
                         | |--- truncated branch of depth 9
                         |--- weekday > 0.75
                            |--- truncated branch of depth 4
                        1.15
               -- hr >
                 |---| atemp <= 0.63
                     |--- weathersit <= 1.68
                         \mid--- windspeed <= -0.33
                         | |--- truncated branch of depth 7
                         |--- windspeed > -0.33
                             |--- truncated branch of depth 10
                     |--- weathersit > 1.68
                         |--- weekday <= -0.25
                         | |--- truncated branch of depth 2
                         |--- weekday > -0.25
                            |--- value: [51.00]
                 |--- atemp > 0.63
                     \mid--- windspeed <= 2.59
                         |---mnth| <= -0.30
                         | |--- truncated branch of depth 9
                         |-- mnth > -0.30
                             |--- truncated branch of depth 14
                     |--- windspeed > 2.59
                         |---mnth| <= -0.30
                         | |--- value: [204.00]
                         |---mnth>-0.30
                         | |--- value: [202.00]
      1.29
- hr >
 |--- hr <= 1.58
     |--- atemp <= 0.71
         |--- weathersit <= 1.68
             |--- hr <= 1.44
                 |--- weekday <= -1.25
                     |--- temp <= 0.07
                         |--| mnth <= -0.88
                            |--- value: [149.00]
                         |--- mnth > -0.88
                             |--- truncated branch of depth 2
                     |--- temp > 0.07
                         |---| hum <= -1.13
                         | |--- value: [130.00]
                         |--- \text{ hum } > -1.13
                            |--- truncated branch of depth 5
                 |--- weekday > -1.25
                     |--- hum <= 0.92
                         |---| atemp <= 0.27
                         |--- truncated branch of depth 8
                         |--- atemp > 0.27
```

```
|--- truncated branch of depth 7
        |--- \text{ hum} > 0.92
            |--- weekday <= 1.00
                \mid--- truncated branch of depth 5
            |--- weekday > 1.00
                |--- truncated branch of depth 3
           1.44
    |--- weekday <=-0.25
        |--- hum <= 1.47
            |--- hum <= 1.18
                |--- truncated branch of depth 8
            |--- \text{ hum } > 1.18
               |--- value: [55.00]
        |--- \text{ hum } > 1.47
            |--- atemp <= 0.54
               |--- value: [240.00]
            |--- atemp > 0.54
            | |--- value: [207.00]
      -- weekday > -0.25
        |--- \text{ temp}| <= 0.79
            |--- mnth <= -0.59
            | |--- truncated branch of depth 8
            |--- mnth > -0.59
                |--- truncated branch of depth 8
        |--- temp > 0.79
            |--- windspeed <= -0.88
                |--- value: [78.00]
            |--- windspeed > -0.88
                |--- value: [168.00]
weathersit > 1.68
|--- weekday <= -0.25
    |--- mnth| <= 0.28
        |--- windspeed <= -0.09
            |--- season <= -0.00
                |--- value: [68.00]
            |--- season > -0.00
                |--- value: [90.00]
        |--- windspeed > -0.09
            |---| atemp <= 0.27
                |--- value: [165.00]
            |--- atemp > 0.27
                |--- value: [147.00]
    |--| mnth > 0.28
        |--- weekday <=-0.75
            |--- windspeed <= 0.40
                |--- truncated branch of depth 4
            |--- windspeed > 0.40
            | |--- value: [129.00]
```

```
|--- weekday > -0.75
                |--- value: [289.00]
     |--- weekday > -0.25
         |--- windspeed <= 1.01
             |--- temp <= 0.69
                  |--- temp <= -0.04
                      |--- value: [67.00]
                  |--- temp > -0.04
                      |--- truncated branch of depth 3
              --- temp > 0.69
                  |--- temp <= 0.79
                      |--- value: [85.00]
                  |--- temp > 0.79
                      |--- value: [68.00]
         |--- windspeed > 1.01
             |--- weekday <= 1.24
                  |--- value: [122.00]
             |--- weekday > 1.24
                  |--- value: [102.00]
           0.71
- atemp >
 |--- weekday <= -0.75
     |--- hr <= 1.44
         |--- \text{ temp}| <= 0.90
             |--- weathersit <= 0.12
                  |--- season <= -0.00
                      |--- truncated branch of depth 4
                  |--- season > -0.00
                      |--- truncated branch of depth 2
             |--- weathersit > 0.12
                  |--- hum <= -0.09
                  | |--- value: [169.00]
                  |--- \text{ hum} > -0.09
                      |--- value: [143.00]
         |--- temp > 0.90
             |--- workingday <= -0.39
                  |--- temp <= 1.11
                     |--- truncated branch of depth 2
                  |--- \text{ temp} > 1.11
                      |--- truncated branch of depth 5
             |--- workingday > -0.39
                  |--- hum <= -0.14
                      |--- truncated branch of depth 2
                  |--- \text{ hum } > -0.14
                      |--- truncated branch of depth 5
     |--- hr >
         |---| atemp <= 1.33
             |--- weekday <= -1.25
                |--- windspeed <= 1.50
```

```
|--- truncated branch of depth 6
                         |--- windspeed > 1.50
                             |--- value: [226.00]
                    |--- weekday > -1.25
                         |--- hum <= 0.84
                            |--- truncated branch of depth 6
                         |--- \text{ hum} > 0.84
                             |--- value: [161.00]
                |---| atemp > 1.33
                    |--- value: [284.00]
        |--- weekday > -0.75
            \mid--- holiday <= 2.82
                |--- hr <= 1.44
                    |--- weathersit <= 0.12
                        |--- weekday <= 0.75
                        | |--- truncated branch of depth 11
                         |--- weekday > 0.75
                             |--- truncated branch of depth 8
                    |--- weathersit > 0.12
                        \mid--- windspeed <= 0.52
                             \mid--- truncated branch of depth 6
                         |--- windspeed > 0.52
                             |--- truncated branch of depth 3
                |--- hr > 1.44
                    |---| hum <=-0.48
                         |---mnth| <= -0.30
                         | |--- value: [338.00]
                         |-- mnth > -0.30
                            |--- truncated branch of depth 6
                    |--- \text{ hum} > -0.48
                         |--- weekday <= -0.25
                             |--- truncated branch of depth 5
                         |--- weekday > -0.25
                        |--- truncated branch of depth 10
              -- holiday > 2.82
                |--- temp <= 1.73
                    |--- value: [502.00]
                |--- temp > 1.73
                | |--- value: [584.00]
           1.58
|--- hr >
    |--- weekday <=-0.25
        |--- \text{ temp}| <= 0.59
            |--- mnth| <= -0.59
                |--- weekday <=-0.75
                    |--- windspeed <= -1.00
                        |--- value: [82.00]
                    |--- windspeed > -1.00
                       \mid--- windspeed <= -0.33
```

```
|--- value: [65.00]
                |--- windspeed > -0.33
                    |--- truncated branch of depth 3
        |--- weekday > -0.75
            |--- mnth <= -0.88
                \mid--- windspeed <= -1.00
                    |--- value: [90.00]
                |--- windspeed > -1.00
                   |--- value: [87.00]
            |---mnth> -0.88
                |--- temp <= 0.12
                    |--- value: [79.00]
                |--- temp > 0.12
                    |--- value: [82.00]
       - mnth >
                -0.59
        |---| hum <= 0.38
            |--- windspeed <= 0.28
                |--- season <= -0.00
                    |--- truncated branch of depth 2
                |--- season > -0.00
                    |--- truncated branch of depth 4
            |--- windspeed > 0.28
                |--- season <= 0.90
                   |--- truncated branch of depth 2
                |--- season > 0.90
                1
                    |--- truncated branch of depth 3
        |--- \text{ hum} > 0.38
            |--- windspeed <= -1.19
                |---| atemp <= 0.41
                   |--- value: [105.00]
                |--- atemp > 0.41
                    |--- value: [95.00]
            |--- windspeed > -1.19
                |--- weathersit <= 0.12
                    |--- truncated branch of depth 3
                |--- weathersit > 0.12
                    |--- truncated branch of depth 8
|--- temp > 0.59
    |--- workingday <= -0.39
        |--- hum <= 1.08
            |--- temp <= 0.90
                |--- weathersit <= 1.68
                    |--- truncated branch of depth 3
                |--- weathersit > 1.68
                | |--- value: [96.00]
            |--- temp > 0.90
                |---| atemp <= 1.15
                | |--- truncated branch of depth 3
```

```
|---| atemp > 1.15
                    | |--- truncated branch of depth 5
            |--- \text{ hum} > 1.08
                |--- value: [70.00]
          -- workingday > -0.39
            |--- temp <= 1.21
                |--- windspeed <= 0.15
                    |--- hum <= 1.08
                    | |--- truncated branch of depth 7
                    |--- \text{ hum} > 1.08
                        |--- truncated branch of depth 3
                |--- windspeed > 0.15
                    |--- weathersit <= 0.12
                    | |--- truncated branch of depth 4
                    |--- weathersit > 0.12
                       |--- truncated branch of depth 2
            |--- temp > 1.21
                |---| atemp <= 1.15
                    |--- value: [102.00]
                |--- atemp > 1.15
                    |--- weekday <= -0.75
                        |--- value: [166.00]
                    |--- weekday > -0.75
                       |--- value: [192.00]
|--- weekday >
               -0.25
    |--- weekday <= 0.75
        |---| atemp <= 0.71
            |--- weathersit <= 1.68
                |--- season <= -0.90
                    |--- windspeed <=-0.09
                       |--- value: [91.00]
                    |--- windspeed > -0.09
                        |--- truncated branch of depth 2
                |--- season > -0.90
                    |--- weekday <= 0.25
                        |--- truncated branch of depth 6
                    |--- weekday > 0.25
                        |--- truncated branch of depth 7
            |-- weathersit > 1.68
                \mid--- windspeed <= 0.03
                   |--- value: [45.00]
                |--- windspeed > 0.03
                    |--- value: [65.00]
          -- atemp > 0.71
            |--- windspeed <= 0.83
                |--- hum <= -0.40
                    |--- mnth| <= -0.01
                    | |--- truncated branch of depth 3
```

```
|--- mnth > -0.01
                | |--- truncated branch of depth 3
            |--- \text{ hum } > -0.40
                |--- temp <= 1.11
                    |--- truncated branch of depth 5
                |--- temp > 1.11
                    |--- truncated branch of depth 4
        |--- windspeed > 0.83
            |--- value: [239.00]
|--- weekday > 0.75
    |--- weathersit <= 1.68
        |--- hum <= -0.06
            |---| atemp <= 1.51
                \mid--- windspeed <= -0.09
                    |--- truncated branch of depth 5
                |--- windspeed > -0.09
                   |--- truncated branch of depth 4
            |--- atemp > 1.51
                |--- value: [148.00]
        |--- \text{ hum } > -0.06
            |--- weekday <= 1.24
                |--- hum <= 0.95
                | |--- truncated branch of depth 5
                |--- \text{ hum} > 0.95
                    |--- truncated branch of depth 3
            |--- weekday > 1.24
                |---| atemp <= 0.71
                    |--- truncated branch of depth 5
                |--- atemp > 0.71
                    |--- truncated branch of depth 4
    |--- weathersit > 1.68
        |---| mnth <= 0.13
            |--- season <= -0.00
              |--- value: [73.00]
            |--- season > -0.00
                |--- value: [48.00]
        |--| mnth > 0.13
            |---| atemp <= -0.30
                |--- value: [121.00]
            |--- atemp > -0.30
        1
                |--- value: [163.00]
```

performance metrics (MSE and RMSE) averaged over 6 folds. The RMSE values  $\Box$  $\hookrightarrow$  indicate an error that is within acceptable limits relative to the range of the actual bike $\sqcup$  $\hookrightarrow$  counts, and the computational times were very efficient. A clear benefit of decision tree regressors is that, \_  $\hookrightarrow$  like their classification counterparts, they can be easily translated into a set of rules that illustrate $\sqcup$ → exactly how predictions are made. When comparing with the SVM regressor from Part 4, decision trees are  $\Box$  $\rightarrow$  generally more interpretable but might be more prone to overfitting unless properly pruned or  $\Box$  $\rightarrow$  regularized. Ultimately, the choice between a decision tree regressor and other approaches  $\sqcup$  $\hookrightarrow$  such as SVR depends on the requirements for performance versus interpretability in the  $\Box$  $\hookrightarrow practical application.$ 111

[12]: '\nPart 6 - Decision Tree Regressor\nIn the regression setting, a Decision Tree Regressor was used to predict bike counts with\nperformance metrics (MSE and RMSE) averaged over 6 folds. The RMSE values indicate an error\nthat is within acceptable limits relative to the range of the actual bike counts, and the computational\ntimes were very efficient. A clear benefit of decision tree regressors is that, like their classification\ncounterparts, they can be easily translated into a set of rules that illustrate exactly how predictions\nare made. When comparing with the SVM regressor from Part 4, decision trees are generally more\ninterpretable but might be more prone to overfitting unless properly pruned or regularized.\nUltimately, the choice between a decision tree regressor and other approaches such as SVR\ndepends on the requirements for performance versus interpretability in the practical application.\n'

## [13]: pip install nbconvert

Requirement already satisfied: nbconvert in c:\users\dalis\anaconda3\lib\site-packages (7.16.4)

Requirement already satisfied: beautifulsoup4 in c:\users\dalis\anaconda3\lib\site-packages (from nbconvert) (4.12.3)

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Requirement already satisfied: jinja2>=3.0 in c:\users\dalis\anaconda3\lib\site-packages (from nbconvert) (3.1.4)

Requirement already satisfied: jupyter-core>=4.7 in c:\users\dalis\anaconda3\lib\site-packages (from nbconvert) (5.7.2)

Requirement already satisfied: jupyterlab-pygments in c:\users\dalis\anaconda3\lib\site-packages (from nbconvert) (0.1.2)

```
Requirement already satisfied: markupsafe>=2.0 in
c:\users\dalis\anaconda3\lib\site-packages (from nbconvert) (2.1.3)
Requirement already satisfied: mistune<4,>=2.0.3 in
c:\users\dalis\anaconda3\lib\site-packages (from nbconvert) (2.0.4)
Requirement already satisfied: nbclient>=0.5.0 in
c:\users\dalis\anaconda3\lib\site-packages (from nbconvert) (0.8.0)
Requirement already satisfied: nbformat>=5.7 in
c:\users\dalis\anaconda3\lib\site-packages (from nbconvert) (5.10.4)
Requirement already satisfied: packaging in c:\users\dalis\anaconda3\lib\site-
packages (from nbconvert) (24.1)
Requirement already satisfied: pandocfilters>=1.4.1 in
c:\users\dalis\anaconda3\lib\site-packages (from nbconvert) (1.5.0)
Requirement already satisfied: pygments>=2.4.1 in
c:\users\dalis\anaconda3\lib\site-packages (from nbconvert) (2.15.1)
Requirement already satisfied: tinycss2 in c:\users\dalis\anaconda3\lib\site-
packages (from nbconvert) (1.2.1)
Requirement already satisfied: traitlets>=5.1 in
c:\users\dalis\anaconda3\lib\site-packages (from nbconvert) (5.14.3)
Requirement already satisfied: six>=1.9.0 in c:\users\dalis\anaconda3\lib\site-
packages (from bleach!=5.0.0->nbconvert) (1.16.0)
Requirement already satisfied: webencodings in
c:\users\dalis\anaconda3\lib\site-packages (from bleach!=5.0.0->nbconvert)
Requirement already satisfied: platformdirs>=2.5 in
c:\users\dalis\anaconda3\lib\site-packages (from jupyter-core>=4.7->nbconvert)
Requirement already satisfied: pywin32>=300 in
c:\users\dalis\anaconda3\lib\site-packages (from jupyter-core>=4.7->nbconvert)
Requirement already satisfied: jupyter-client>=6.1.12 in
c:\users\dalis\anaconda3\lib\site-packages (from nbclient>=0.5.0->nbconvert)
Requirement already satisfied: fastjsonschema>=2.15 in
c:\users\dalis\anaconda3\lib\site-packages (from nbformat>=5.7->nbconvert)
Requirement already satisfied: jsonschema>=2.6 in
c:\users\dalis\anaconda3\lib\site-packages (from nbformat>=5.7->nbconvert)
Requirement already satisfied: soupsieve>1.2 in
c:\users\dalis\anaconda3\lib\site-packages (from beautifulsoup4->nbconvert)
(2.5)
Requirement already satisfied: attrs>=22.2.0 in
c:\users\dalis\anaconda3\lib\site-packages (from
jsonschema>=2.6->nbformat>=5.7->nbconvert) (23.1.0)
Requirement already satisfied: jsonschema-specifications>=2023.03.6 in
c:\users\dalis\anaconda3\lib\site-packages (from
jsonschema>=2.6->nbformat>=5.7->nbconvert) (2023.7.1)
Requirement already satisfied: referencing>=0.28.4 in
```

```
c:\users\dalis\anaconda3\lib\site-packages (from
jsonschema>=2.6->nbformat>=5.7->nbconvert) (0.30.2)
Requirement already satisfied: rpds-py>=0.7.1 in
c:\users\dalis\anaconda3\lib\site-packages (from
jsonschema>=2.6->nbformat>=5.7->nbconvert) (0.10.6)
Requirement already satisfied: python-dateutil>=2.8.2 in
c:\users\dalis\anaconda3\lib\site-packages (from jupyter-
client>=6.1.12->nbclient>=0.5.0->nbconvert) (2.9.0.post0)
Requirement already satisfied: pyzmq>=23.0 in c:\users\dalis\anaconda3\lib\site-
packages (from jupyter-client>=6.1.12->nbclient>=0.5.0->nbconvert) (25.1.2)
Requirement already satisfied: tornado>=6.2 in
c:\users\dalis\anaconda3\lib\site-packages (from jupyter-
client>=6.1.12->nbclient>=0.5.0->nbconvert) (6.4.1)
Note: you may need to restart the kernel to use updated packages.
```