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In[1]:= dataPath = FileNameJoin[
    {ParentDirectory[NotebookDirectory[]], "data/dataOccupancyPreprocessed.csv"}];

In[2]:= data = SemanticImport[dataPath, {"DateTime", "Real", "Real",
    "Real", "Real", "Real", "Boolean"}, "Dataset", HeaderLines → 1];

In[3]:= trainData = Values@
    Normal[data[[All, {"Temperature", "Humidity", "Light", "CO2", "HumidityRatio"}]]];

In[4]:= cluster[method_ : "GaussianMixture", numberClusters_ : 2,
    distanceFunction_ : EuclideanDistance] := Module[{clusters, rules, classifier},
    clusters = ClusteringComponents[trainData, numberClusters, 1, Method → method,
        DistanceFunction → distanceFunction, PerformanceGoal → "Quality"];
    rules = Map[clusters[[#]] → data[[#, "Occupancy"]] &, Range[Length[data]]];
    classifier = Classify[rules, Method → Automatic];
    Return[ClassifierMeasurements[classifier, rules]];
]

In[17]:= cm = cluster["GaussianMixture", Automatic, EuclideanDistance];

In[18]:= cm["ClassMeanCrossEntropy"]

Out[18]= <| False → 0.0410651, True → 0.111086 |>

In[19]:= cm["Accuracy"]

Out[19]= 0.984513

In[20]:= cm["FScore"]

Out[20]= <| False → 0.990264, True → 0.962157 |>

In[21]:= cm["ClassMeanCrossEntropy"]

Out[21]= <| False → 0.0410651, True → 0.111086 |>

In[22]:= cm["Specificity"]

Out[22]= <| False → 0.986447, True → 0.98403 |>

In[23]:= cm["Perplexity"]

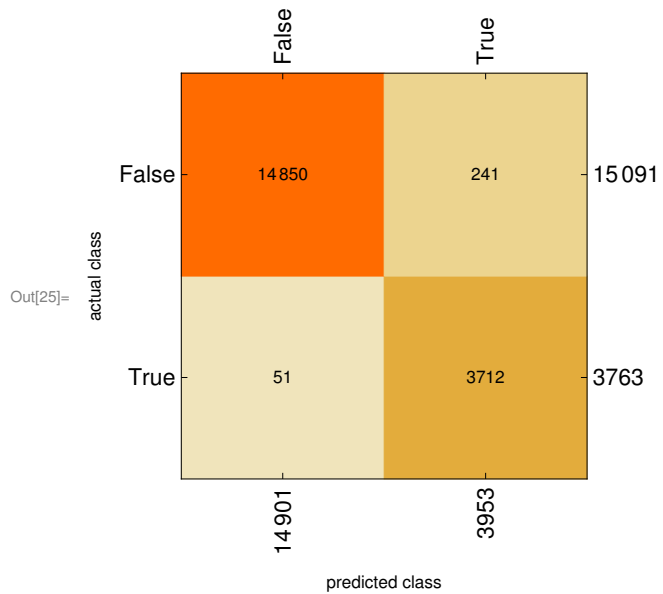
Out[23]= 1.05658

In[24]:= cm["Precision"]

Out[24]= <| False → 0.996577, True → 0.939034 |>

In[25]:= cm["ConfusionMatrixPlot"]

```



In[26]:= `cm["ROCCurve"]`

